10.0 EVALUATION OF ALTERNATIVES CARRIED FORWARD

10.1 Evaluation Relative to Project Goals and Objectives

A. Draft EIS Comments

Federal Agency Comments

Environmental Impacts Related Alternatives

Federal Comment: Environmental impacts of this proposal are minor and EPA has not identified any potential environmental impacts that would require substantive changes to any of the alternatives. The project is confined to existing right-of-way or is located on existing parking lots, streets and other developed lands. There are no residential displacements and up to only six commercial displacements associated with the alternatives. The Metrorail alternative is on the Metropolitan Washington Council of Governments (MWCOG) Constrained Long Range Transportation Plan (CLRP) and it conforms with regional air quality plans. Wetland and stream impacts are less than that associated with a typical residential development in the area. Noise, vibration, and visual impacts were the only significant issues identified in the DEIS and the DEIS identified ways to minimize and mitigate these impacts. (0303, 0303-A –1)

> ***Response:*** *Thank you for your comments. The Dulles Corridor Rapid Transit Project is included in both the current CLRP and the Transportation Improvement Program (TIP).*

Regional Agency Comments

Independent Market Research Shows Strong Desire of Residents and Employee to Use Transit

Regional Comment: Independent market research conducted through the Dulles Corridor Rail Association and paid for jointly by local interests and by the Virginia Department of Rail and Public Transportation, demonstrate that residents and employees in the Dulles Corridor have a "Lexus mentality" and an unusually strong desire to use a transit system if trip times, service standards and convenience are designed to meet their service oriented requirements. The market research results also demonstrate that the Dulles Corridor's reaction to transit differs from national transit norms. For example, the desire to use rail transit over the longer commuting distances increased with income for Dulles Corridor residents up to a household income of $200,000 per annum, after which it began to decline. (0133, 0405- L-10)

> ***Response:*** *Comment noted.*

Consideration of Additional BRT "Features

Regional Comment: Consider adding further BRT features to the existing express bus services where they can increase ridership, reduce trip times, or both. (0133, 0405- L-12)

> ***Response****: The express bus services currently running in the corridor are the responsibility of Fairfax and Loudoun counties, respectively. The Project Team has recommended that the existing transit service provided by Fairfax and Loudoun Counties be further enhanced beyond the bus rapid transit elements that have already been added. Prior to the opening of LPA Phase 1, additional bus rapid transit elements—including the expansion of the Herndon-Monroe park-and-ride lot (site of the future Herndon-Monroe Metrorail Station), ITS enhancements, and facility improvements—should be advanced.*

Local Agency Comments

Comparative Assessment of Alternatives

Local Comment: In order to provide a fair, comparative assessment of the rail alignments in Tysons Corner, a table or matrix should be included in the public hearing report that presents other factors, in addition to costs for each of the alignments. Other factors should include items such as construction impacts, maintenance of traffic impacts and operational issues. (0479, 0479-L –1)

> ***Response****: Table 2.7-4 in the Draft EIS presented the anticipated costs, impacts, and benefits of all alternatives under consideration for the Dulles Corridor Rapid Transit Project, including the No-Build Alternative. Table 10.2-1 presented the essential differences between alternatives, summarizing the trade-offs between the various alignments and modes.*

Station Activity During Off-Peak Period

Local Comment: Will Metro in the median perform well during rush hour, but travel virtually empty for the rest of the day? (0151, 0151-T –7) (0151, 0297-E –12)

> ***Response:*** *No. Estimates of total station activity (station boardings and alightings) for Dulles Corridor Metrorail stations during the peak period versus the off-peak show that peak activity would be between approximately 46to 63 percent of total daily activity. This shows that significant station activity would occur during the off-peak period.*

Public Comments

Comparative Assessment of Alternatives

Public Comment: The comparison of the rail out to Dulles with the BRT is not fair because the rail proposal also includes the extremely costly loop going through Tysons. If you break that out, if you just build the rail down the right of way, which was so wisely put there in the '50s, it's just a straight and simple task of rail laying, much like building the 10 miles in one day done by Crocker of the Central Pacific 133 years ago. The alignment is there, the right of way has been investigated, the footings are known. There are six bridges that are required. I will point out that that highway bridge that fell into the Oklahoma River on Memorial Day is 400 feet long and 140 feet up in the air, and it was closed today. (0083, 0192-T –3)

> ***Response:*** *The Draft EIS was not intended to present a comparison of nearly identical alternatives. It was intended to evaluate the relative merits and impacts of a small range of alternatives. Alignments that differ allow decision makers to better understand the benefits and costs of alternate approaches to providing improvements. The trade-offs identified for different alternatives may lead decision makers to ultimately select a preferred alternative that combines beneficial elements of each. BRT was eliminated from further consideration after the public and interagency review and comment on the Draft EIS.*
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> *The analysis presented in Chapter 10 of the Draft EIS showed that the Metrorail Alternative has several benefits relative to the BRT Alternative, even though BRT costs less and has greater cost effectiveness. In general, Metrorail provides greater improvements in transportation service; greater increases in transit ridership, more support for future development, and it would better serve diverse populations. BRT, on the other hand, provides improvements in corridor transit service sooner, has fewer impacts on the natural environment, fewer noise and visual impacts, and lower traffic impacts in the vicinity of stations (though still higher than the No-Build).*
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> *In response to comments made following publication of the Draft EIS, the Project Team evaluated a new alignment option for the Metrorail Alternative that would provide for express service that bypasses Tysons Corner. The alignment would include a leg that extends along the median of the DIAAH on the north side of Tysons Corner.*

The analysis showed that the leg of the alignment extending along the median of the Dulles Connector Road and the DIAAH would be costly and would have substantial impacts. The alignment would have to be coordinated with the proposed interchange plans at the Capital Beltway. Because current plans consume the median in full, the Connector Road, the DIAAH, and the adjacent ramps would need to be shifted outward, likely resulting in substantial impacts on adjacent properties and residents.

A Spring Hill Road Station for Metrorail would also require shifting the DAAR outward because the current median is not wide enough to accommodate a standard-width Metrorail platform. Shifting the roadway would also require the costly widening of Spring Hill Road overpass bridges and reconstruction of an existing slip ramp between the DIAAH and the Dulles Road.

Given that a substantial portion of the demand for proposed Metrorail Alternative is for travel to and from Tysons Corner (approximately 40 to 50 percent), an alignment that effectively serves the employment concentrations and major activity centers within Tysons Corner will contribute significantly to the success of the Dulles Corridor Rapid Transit Project. An alignment that extends along the DIAAH and serves Tysons Corner via a Spring Hill Road Station would force a transfer for many travelers, degrading the level of service to Tysons Corner, increasing travel times for potential patrons, and thus reducing overall ridership on the line.

Public Comment: That most alternative comparisons provided are on the basis of opening year (2005, 2006 and 2010) and 2025. What's needed is an apple to apples comparison of all options for 2010. (0446, 0218-M –6) (0446, 0146-T –6)

Public Comment: Lack of Comparable Data for Key Out Years. Adequately assessing the value and cost effectiveness of heavy rail vs. alternatives requires comparable data for comparable years. The DEIS provides cost, ridership and other data based only on anticipated opening year of service and 2025. What's needed is comparable data for 2006, 2010 and 2015 to determine the benefit and value of different options in the short term. (0446, 0446-E –5)

Response: *A comparison of all the Draft EIS alternatives at the year 2010 would not be an "apples to apples" comparison, because at that point in time, the BRT and BRT/Metrorail alternatives would have been in operation for several years, whereas it would only be the first year for operation for the Metrorail Alternative. It often takes several years for new improvements to achieve their full potential. Once people have had time to see the benefits of the new improvement, often more people will opt to use it. Therefore, the opening year comparison of Metrorail to alternatives that have been in operation several years would not be a fair comparison. Rather, a comparison of each alternative in its respective opening year provided a better comparison.*

The best comparison, however, is for each alternative in a future horizon year—in this case, 2025. By that point in time, all alternatives would have had ample opportunity to "settle in" and analysis at this point likely represents the full potential of each.

The BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Public Comment: I am a big fan of metro and I use it often to get to work. I reckon some kind of mass transit will be helpful for the Dulles Corridor, but it seems from my reading of the Draft EIS that you all are focusing primarily on the costs of the alternatives and not weighing them against their benefits. Have you calculated the cost/benefit ratio for each alternative? If so, where can I find them? If not, when do you plan to do them? It is hard for me to imagine how you can choose amongst the alternatives if you are only looking at the cost side of the equations. You need to estimate the financial benefit. (0117, 0117-E –4)

Public Comment: I think all of the options-build options seem to have merit and appeal, and it's clearly been well thought out. But in looking at the draft EIS, it's unclear if there's been any serious cost benefit analysis work done of each of the proposals, and I urge that to be done. And by that, I mean, we're not only-I mean, clearly all of the expenses have been well calculated for the various alternatives, and it's easy to compare all of them next to each other in terms of their cost. But more realistic picture is to try to also calculate the benefit that will be gained, both immediately tangible benefits where you can readily calculate the financial impact, as well as more qualitative benefits, but where financial assumptions and values are designed. But then for each of the alternatives, we ought to-we, the public, ought to be able then to look at them, when we're spending this kind of money, in terms of not only what their expenses will be, but what's the value of the benefit of each one, because we clearly should try to pick the one that has the greatest benefit relative to its cost, regardless of the total price tag be four billion, or 300 million. (0117, 0277-T –1)

Public Comment: Is the system cost-beneficial? I see no quantification of the benefits against which to weigh the costs. I see only a comparison among costs. (0166, 0166-T –1)

> ***Response:*** *Chapter 10 of the Draft EIS was essentially a cost-benefit comparison, because it described how each alternative performed against the stated project goals (the benefits), and evaluated the impacts of each alternative (the costs). This analysis included both quantitative and qualitative measures, and was not the type of conventional cost-benefit analysis suggested by several of the commenters. There are many benefits received from the Build Alternatives that are difficult to reflect in such a quantitative cost effectiveness analysis. Although the region will receive a financial benefit from developments and increased tax base, these financial benefits do not accrue to the project and a conventional cost-benefit analysis is not really instructional.*
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> *For major transportation investments, an evaluation plan that relies exclusively on weighting schemes or cost analysis comparisons can be too rigid, making it difficult to compare attributes that are more qualitative or difficult to assign a cost value. Rather, an evaluation that clearly outlines performance relative to a project goals, and summarizes the essential differences between alternatives or the various trade-offs involved in selecting one over the other, is a more instructive and useful tool for decision makers.*
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> *Construction costs and operating & maintenance costs are a significant issue, because they are used by the Federal Transit Administration, along with other measures, to evaluate the effectiveness of a project. However, the hard numbers for cost effectiveness and financial feasibility will not be the bottom line for selecting an alternative.*
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> *Therefore, the analysis presented in Chapter 10 reflected not only the cost effectiveness of each alternative, but also each alternative's effectiveness in meeting more qualitative or non-monetary project goals, such as "supports future development," "supports environmental quality," and "serves low-income and minority populations." The final summary of the relative benefits and impacts of each alternative were outlined in Table 10.2-1 of the Draft EIS.*
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> *The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.*

Public Comment: Transit is vital to the long term health and well-being of Northern Virginia. Environmental Defense supports transit as a centerpiece for building sustainable communities. Before committing to Metrorail, however, we need a better analysis of alternatives, ensuring that we receive the greatest value for our transit investment. (0444, 0444-E –6)

Public Comment: The Center is not opposed to Metrorail – to the contrary, we strongly support transit as one of the best means to reduce congestion, improve air quality, enhance quality of life, and effectively manage growth. Before investing billions in Metrorail, however, it is reasonable to expect a fair and

impartial analysis of the benefits and impacts of that investment as compared with other investments. Unfortunately, the Draft EIS does not come close to providing a fair and impartial analysis and is nothing more than a pretext to justify billions of dollars for Metrorail. (0445, 0445-E –2)

Public Comment: In short, the DEIS appears to have been pre-engineered to support conclusions that are beneficial to the project managers and the consultants. At the same time, the DEIS fails to provide analysis that would lead to cost-effective, near-term solutions that would actually solve our suburban transportation problem. (0138, 0476-L –1)

Public Comment: Transportation investment decisions should be based upon a fair assessment of performance, cost, environmental benefits, land-use issues, and other factors important to the community. The Draft EIS, however, does not come close to a fair assessment. Rather, the document is extraordinarily biased in favor of spending billions of dollars of federal and local funds on Metrorail, and does not provide any credible analysis to support this conclusion. Many of the assumptions in the document, particularly those related to system routing and design, are so flawed that objective analysis is impossible. (0445, 0445-E-1)

> ***Response:*** *The Draft EIS documented the systematic approach that was undertaken to assess the potential effects of the proposed alternatives. Each of the chapters and sections of the Draft EIS, which documented the effects of the project, documented the relevant laws and regulations considered, described the methodologies used, defined the study areas assessed, documented the existing conditions in the study areas, predicted the direct and construction related effects, and indicated mitigation measures available to lessen substantial impacts when predicted.*
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> *As described more fully in other responses in Section 6.24, the BRT Alternative defined in the Draft EIS was an appropriate definition of BRT for the Dulles Corridor, given the conditions and constraints in the corridor. Though BRT applications in other cities have different route structures and capacities, the evaluation of a particular mode in a given corridor is dependent on a number of factors. In other cities, the same limitations on space and lane availability may not apply, therefore, the performance and capacities of these applications do not necessarily have relevance for the Dulles Corridor Rapid Transit Project.*
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> *As described in Chapter 2 of the Draft EIS, BRT is an emerging transit mode in which buses are used to provide high-quality service akin to a rapid rail system. It is intended to provide rail-like service and amenities at a lower cost. Therefore, in the context of the Dulles Corridor, the BRT Alternative was developed to serve the same type of travel needs as the proposed Metrorail Alternative. The intent was to evaluate a lower-cost, lower-impact alternative to see if it could have provided the same level of benefit as a Metrorail Alternative.*
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> *Both BRT and Metrorail were designed to primarily serve the east-west travel demand between existing and emerging activity centers along the Dulles Toll Road, and between these centers and the region's core. As described in Chapter 2, both were intended to function as an extension of the existing Metrorail system, taking advantage of the direct connection this system already provides to Arlington and the region's core. In the context of the Dulles Corridor Rapid Transit Project, BRT was meant to be a complement to the existing regional rapid transit system, not a competing regional system.*
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> *As described in Chapter 10 of the Draft EIS, the cost effectiveness for the alternatives in the Dulles Corridor Rapid Transit Project was measured using the then Federal Transit Administration's uniform method for analyzing costs and benefits. This method reflected the relative benefits of the proposed improvements, in terms of the number of riders attracted to the system, as compared to the costs to construct and operate the improvements.*
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> *Overall, the analysis presented in Chapter 10 reflected not only the cost effectiveness of each alternative, but also each alternative's effectiveness in meeting more qualitative or non-monetary project goals, such as "supports future development," "supports environmental quality," and*

"serves low-income and minority populations." The final summary of the relative benefits and impacts of each alternative was outlined in Table 10.2-1 of the Draft EIS.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Public Comment: Conclusion #1: Metrorail service will deliver the highest ridership (more than twice as much as BRT), the highest number of new riders (more than three times as many as BRT), and will result in a higher percentage of people using transit. This conclusion is not supported by the EIS and appears to be based upon biased assumptions about system design and performance. As defined by the EIS, the BRT alternatives offer fewer stations, less desirable routings, lower capacity stations and vehicles, and very little dedicated rights of way. Comparison of Metrorail and BRT Alternatives Considered Number of stations: Metrorail: 10-13 stations per alternative, depending upon the alignment; BRT: 1-5 stations per alternative (plus a few low capacity "stops"). Station location: Metrorail: Multiple stations in the heart of Tyson's corner, providing convenient access to significant office, retail, and residential land uses; BRT: No stations or stops in the heart of Tyson's corner, preventing convenient access to significant office, retail, and residential land uses. Station capacity: Metrorail: High capacity stations that are 600 feet long, capable of handling eight-car trains of 120 persons per car; BRT: In all but one option, lower capacity stations that are 260 feet long, capable of handling four buses of 61 persons each. Vehicle capacity: Metrorail: Roughly 120 passengers per rail car; BRT: Roughly 61 passengers per vehicle, even though existing BRT systems use vehicles that can carry 165 passengers and even 270 passengers per vehicle. Operational Frequency: Metrorail: Frequent operations of six-minute intervals during peak hours and 12-minute intervals during non-peak hours; BRT: Less frequent operations, with up to 24 minute intervals during both peak and non-peak hours. Right-of-way: Metrorail: Dedicated rights-of-way for the entire system, including elevated, at-grade, and underground tracks and stations; BRT: Virtually no dedicated rights-of-way, requiring operations almost exclusively in general traffic. Technology Investments: Metrorail: Significant built-in technologies to enhance performance, such as a control center and passenger information systems; BRT: No built-in technologies that could enhance performance, such as signal prioritization, queue jumping, and vehicle tracking. (0445, 0445-E –3)

Public Comment: Clearly, the BRT alternative was designed to provide a lower level of service than the Metrorail alternative. It is not surprising, therefore, that the EIS concludes that Metrorail will attract more riders. The lack of any fair way to compare the two alternatives is a significant flaw that must be resolved. Otherwise, the region may falsely conclude that Metrorail is the best alternative, and thus may spend billions of dollars on a system that is unnecessary and unwarranted. (0445, 0445-E –4)

Public Comment: Environmental Defense strongly supports transit in the Dulles Corridor. Transit will help build more livable communities, provide better access to jobs and cultural opportunities, reduce traffic congestion, and improve air quality. We are concerned, however, that inadequate consideration is being given to Bus Rapid Transit (BRT), a transit option that can have all the benefits of Metrorail but at a fraction of the cost. Specifically, the current draft Environmental Impact Statement (EIS) needs to be revised to include BRT options that parallel the existing Metrorail options, enabling a fair comparison of the two modes. (0444, 0444-E –1)

Public Comment: The EIS also runs counter to evidence suggesting that BRT can match if not exceed the ridership of comparable rail systems. For example, the United States General Accounting Office compared BRT to light rail projects in a number of cities and concluded that BRT and light rail ridership generally is "quite similar." Another study concluded that "the evidence suggests that one can move three times as many people by dedicated bus-based transitway systems for the same cost [as comparable rail systems]." Similarly, a book recently published by the International Energy Agency concludes that BRT can "make all cities more efficient, cleaner, less gridlocked and more sustainable" and that BRT "opens a new era in low-cost, high-quality transit." The EIS must provide a credible analysis before reaching broad conclusions about ridership. (0445, 0445-E –5)

Public Comment: There are a couple of potential ways to begin addressing the blatant bias in the draft EIS. First, the alternatives could be redrafted so that the Metrorail alternatives are compared with BRT alternatives providing a similar number of stations and similar routing. At a minimum, this would require significant BRT stations in Tyson's Corner as well as the construction of separate rights-of-way for at least part of the BRT system. It also would require the examination of alternatives that provide BRT service to stations other than West Falls Church, such as Rosslyn. This will provide a more accurate assessment of BRT capabilities and potential benefits. (0445, 0445-E –6)

Public Comment: Metrorail service would provide a much greater increase in the capacity to move people through the corridor than either BRT or Combined BRT/Metrorail. As mentioned above, the BRT alternative, as defined in the EIS, is unduly limited in its ability to move people through the corridor. There are not enough stations or stops in the right places, the service is too infrequent, and the station and vehicle capacities are not designed to compete with the capacity of Metrorail. As a result, it is impossible to conclude that Metrorail will provide a much greater capacity increase than Metrorail. (0445, 0445-E –8)

Public Comment: Existing BRT systems clearly demonstrate that BRT can meet or exceed the ridership projected in the EIS. The EIS estimates that the new Orange Line extension would have the capacity to carry roughly 10,000 riders per peak hour in the morning. However, the BRT system in Bogota, Columbia carries more than 40,000 passengers per hour on its main line, roughly four times the number proposed for the Metrorail extension. Similarly, the BRT system in Curitiba, Brazil, carries more than 23,000 passengers per peak hour on one of its lines. A recent study by the Reason Public Policy Institute noted that "with few exceptions[,] some form of express bus system, operating on either an exclusive right of way or shared facility, would have lower costs and higher performance than either light or heavy rail systems in nearly all, if not all U.S. cities." A better analysis must be conducted of the potential capacity increases available with BRT. (0445, 0445-E –9)

Public Comment: Conclusion #3: Metrorail service generally results in the shortest travel time, especially for reverse commute trips and those that begin and end in Tysons Corner. Once again, this conclusion is based upon the extremely biased and limited definition of BRT contained in the EIS. Shortest Travel Time: Even with the limited definition of BRT, the travel times for Metrorail cited in the EIS are not much better than BRT. For example, Table 6.3-4 shows that travel times in selected origin/destination pairs are very similar for BRT and Metrorail, despite the distinct disadvantage placed upon BRT by the EIS. It is reasonable to assume, therefore, that if the BRT alternatives are revised to offer a fair comparison to Metrorail, the BRT alternative may actually provide faster travel times than Metrorail. This result would be consistent with the GAO study, which found that BRT speeds were faster than light rail in five out of six cities analyzed. (0445, 0445-E –12)

Public Comment: Shortest Travel Times for Trips Within Tyson's Corner: This conclusion is simply not credible. None of the BRT alternatives contain stations or stops within the heart of Tyson's Corner. By contrast, each of the Metrorail alternatives contain multiple stations within the heart of Tysons, with alignment T4 containing six stations within Tyson's Corner. Obviously, given such a biased set of alternatives, Metrorail will provide shorter travel times within Tyson's. The BRT alternatives must be revised to provide comparable station locations and infrastructure within Tyson's, so that a fair comparison can be made. (0445, 0445-E –14)

Public Comment: Conclusion #5: More members of the business community, area neighborhood residents, and civic organizations have expressed support for Metrorail than for any other choice. It is not surprising that more people and groups have expressed support for Metrorail than other options, because no other viable options have been presented. The median of the Dulles access road has been reserved for rail since the 1960's. When serious discussions began about the Dulles corridor, there was an assumption that the extension would be Metrorail. Not surprisingly, the 1997 Major Investment Study (MIS) recommended rail. After significant pressure, however, the MIS was supplemented in 1999 to include consideration of BRT. However, as reflected in the EIS, BRT is not being treated as a serious alternative, and there is no real effort to educate the public about the potential benefits of BRT. The EIS must be revised to compare the Metrorail alternatives with comparable BRT alternatives. Moreover, a

public education campaign must be conducted to help reverse some of the significant bias toward Metrorail. Without such a campaign, the public cannot make an informed choice and a Metrorail alternative will be effectively forced upon them. (0445, 0445-E –17)

Public Comment: Conclusion #8: BRT would provide less overall passenger capacity than Metrorail. There simply is no credible information available to support this conclusion. For example, as discussed above: the Metrorail alternatives in the EIS have nearly three times as many stations as the BRT alternatives; the Metrorail stations are significantly larger than the BRT stations, capable of handling 960 passengers per train (8 cars with 120 passengers each) versus 244 passengers (4 BRT vehicles with 61 passengers each, even though vehicles are capable of carrying 2-3 times as many passengers); ·BRT systems in other countries routinely carry several times as many passengers as the proposed Orange Line extension, at a fraction of the cost; the Metrorail alignments go through the heart of Tyson's, whereas the BRT alignments bypass the heart of Tysons; and the Metrorail trains would run at 6-12 minute intervals, whereas the BRT would run at up to 24 minute intervals, even during peak hours. (0445, 0445-E –20)

Response: *Because these comments were related, a combined response was prepared. The response is divided into several subparts.*

Comparison of Comparable Alternatives The Draft EIS was not intended to present a comparison of nearly identical alternatives. It was intended to evaluate the relative merits and impacts of a reasonable number of alternatives that have been determined to meet project area transportation needs. Because the selection of a locally preferred alternative typically depends on an evaluation that focuses on the key differences and possible trade-offs between alternatives, alternatives that differ allow decision makers to better understand the benefits and costs of alternate approaches to providing improvements.

For example, while one alternative might be particularly effective in meeting the transportation and land use goals of the area, the benefits it provides may be small when compared to the costs. At the same time, a different alternative might be more cost-effective, but may not meet project goals and objectives as well as another alternative. Officials would have to make a trade-off between the two alternatives, deciding which criteria have priority. In another example, the relative importance of land use impacts and transportation service improvements may need to be decided if one alternative greatly improves transportation service but has highly negative land use impacts, while another alternative has fewer land use impacts but does not provide as much improvement in transportation service.

Ultimately, the trade-offs identified for different alternatives may lead decision makers to select a preferred alternative that combines beneficial elements of each.

The Definition of BRT in the Dulles Corridor The BRT Alternative defined in the Draft EIS was an appropriate definition of BRT for the Dulles Corridor, given its conditions and constraints in the corridor. Though BRT applications in other cities have different route structures and capacities, the evaluation of a particular mode in a given corridor is dependent on a number of factors. In other cities, the same limitations on space and lane availability may not apply. Therefore, the performance and capacities of these applications do not necessarily have relevance for the Dulles Corridor Rapid Transit Project.

As described in Chapter 2 of the Draft EIS, BRT is an emerging transit mode in which buses are used to provide high-quality service akin to a rapid rail system. It was intended to provide rail-like service and amenities at a lower cost. Therefore, in the context of the Dulles Corridor, the BRT Alternative was developed to serve the same type of travel needs as the proposed Metrorail Alternative. The intent was to evaluate a lower-cost, lower-impact alternative to see if it could have provided the same level of benefit as a Metrorail Alternative.

Both BRT and Metrorail were designed to primarily serve the east-west travel demand between existing and emerging activity centers along the Dulles Toll Road, and between these centers and the region's core. As described in Chapter 2, both were intended to function as an extension of the existing Metrorail system, taking advantage of the direct connection this system already provides to Arlington and the region's core. In the context of the Dulles Corridor Rapid Transit Project, BRT was meant to be a complement to the existing regional rapid transit system, not a competing regional system. Therefore, BRT routes that provided direct connections between the Dulles Corridor and Arlington, Washington, D.C., or Maryland rather than connect to the existing Metrorail system at the eastern end of the corridor would not be appropriate in the Dulles Corridor. Moreover, given that BRT vehicles would likely have to travel on congested roadways to reach these regional destinations, it is doubtful they would offer faster travel times than the existing Metrorail system, which operates on an exclusive guideway.

As a result, the proposed alternatives would not serve the travel needs of all trip makers in the Dulles Corridor. They would, however—in combination with the planned transit-oriented urban form—help to increase overall mobility in the corridor. Highway and transit improvements that address other travel needs are recommended in the Northern Virginia 2020 Plan, the Statewide Transportation Plan, and local comprehensive plans. Overall, this program of improvements is intended to increase mobility and address the existing and potential future deficiencies in Northern Virginia.

The BRT Alternative made use of the relatively exclusive travel way in the DIAAH to provide rapid, limited-stop service for long-distance trips between the corridor and the region's core. The alternative was also attractive for short-distance trips between activity centers within the corridor, because it offered time-savings over existing corridor transit services for these trips. However, most trips on the proposed alternative were expected to be at least 20 to 30 minutes in length.

An efficient way to serve both the long-distance and short-distance trips in the Dulles Corridor would be to have stations in the median of the DIAAH. These stations would eliminate the need for buses to enter and exit the freeway on local streets, reducing overall travel times, even though many operating patterns make multiple stops along the corridor. This station configuration and the proposed operating patterns also would allow the alternative to efficiently provide access for travelers heading to and from multiple, dispersed origins and destinations.

Some commenters have suggested that because BRT is more flexible than a rail system, its operating pattern should be based on multiple "point-to-point" express services. However, it would be very difficult to provide a cost-effective service for the Dulles Corridor using several, dedicated express routes due to the relatively dispersed land use patterns. For a point-to-point transit service to be as efficient as possible, it must be able to attract a large number of travelers within a relatively small area at the origin end that all want to go to the same destination (or multiple destinations within a small area). Travel time at the "circulation and distribution" end of the trip should not be more than 10 minutes, or the increased travel times make the dedicated service a less attractive travel alternative.

Most travelers in the Dulles Corridor are coming from dispersed, lower-density locations throughout the region, and traveling to dispersed destinations throughout the corridor and the region (some high-density, some not). While travel within the corridor and between the corridor and the region is significant, travel from each dispersed location is, in general, not significant enough to support a dedicated, point-to-point type of service. Therefore, it would not be efficient or feasible to provide rapid transit improvements in the Dulles Corridor primarily using a series of "one-seat ride" express services with circulation/distribution at either end.

On the other hand, the Metrorail and BRT Alternatives of the Draft EIS used several stations to concentrate multiple origins or destinations at a discrete location. Park-and-ride facilities and feeder bus services are able to attract travelers from dispersed origins, and then the multiple stations along the transit line are able to distribute passengers to multiple destinations. In this

way, these alternatives could have efficiently provided access for many travelers heading to and from multiple origins and destinations.

The proposed BRT 3 alignment option used a slightly different operating pattern that includes stops at park-and-ride lots rather than median stations, and more point-to-point express services. This option more closely approximated the "simpler" BRT service suggested by many commenters; the option also had the lowest ridership of the proposed Build Alternatives.

To the extent possible, the BRT and Metrorail alternatives were designed to be similar. However, due to several constraints, it was not possible for BRT to provide the same person-moving capacity through the corridor or to provide the same level of service to Tysons Corner.

Space considerations at West Falls Church limited the ability to increase the number of BRT bus bays at this station to support more than the proposed 80 vehicles per hour in the peak period. Moreover, at this flow rate, vehicles would have arrived at West Falls Church every 45 seconds, on average. More frequent arrivals would have likely resulted in delays as buses are forced to wait for an open bay until buses in front of them pull out.

In Tysons Corner, providing the same level of service as Metrorail with BRT would have reduced the cost and timing advantages associated with the BRT Alternative. Operating the BRT service on congested roadways in Tysons Corner to provide more direct connections to destinations would have increased travel times and offered little benefit over driving. Such a system would not have bees an attractive travel alternative, and would not have likely attracted high ridership. However, Fairfax County and VDOT would have been unlikely to dedicate a lane for exclusive bus use, given that many roadways in Tysons Corner were expected to operate at or above capacity in the future, even after implementing capacity increases (see Chapter 6 in the Final EIS).

Therefore, the only way to provide the same level of service and directness would have been to operate BRT on a grade-separated route through Tysons Corner. Both an elevated route and an underground route would have added considerable expense and construction time to the project, thereby diminishing two of the primary advantages of BRT in the Dulles Corridor. An elevated roadway would also have had the same degree of visual impacts as an elevated Metrorail alignment. Because a grade-separated alignment for BRT through Tysons Corner would increase the cost, construction time, and impacts of the alternative, this was not considered an advantageous configuration for the BRT Alternative, especially given that it would still have required a transfer at West Falls Church, reducing overall ridership as compared to the Metrorail Alternative.

Travel Time Comparisons. The analysis presented in Chapters 6 and 10 of the Draft EIS confirmed that both the BRT and Metrorail alternatives offered similar travel times for many of the analyzed origin-destination pairs. In many of these cases, travel times were competitive with those for automobile travel. For trips within the corridor, Metrorail was and is the most time competitive with automobiles. However, for some of the trips traveling between the corridor and other regional locations, the analysis shows that BRT did offer slightly faster travel times.

Because the BRT operating plans included multiple route patterns, some of which only include stops at a few stations, some individual routes did experience higher average speeds than Metrorail. However, because the alternative could not have provided a direct connection to Tysons Corner and forced a transfer at West Falls Church, the BRT Alternative still had lower ridership overall.

The Draft EIS did not include any conclusions regarding the shortest travel times for trips within Tysons Corner. Rather, as discussed above, the analysis showed that Metrorail generally had the shortest travel times for trips with one end in Tysons Corner.

Public Education. Every public outreach activity conducted as part of the public involvement program, which was outlined in Chapter 11 of the Draft EIS, provided information to the public about bus rapid transit and its unique features. The efficiencies afforded by the BRT Alternative have been shown in the numerous project materials that provide comparative data about the alternatives under consideration. It would be inappropriate to promote one mode under consideration over other modes through the public involvement program.

Ridership. The ridership estimates presented in Tables 6.3-8 and 10.1-5 of the Draft EIS support the statement that Metrorail will deliver the highest ridership (more than twice as much as BRT), the highest number of new riders (more than three times as many as BRT), and would result in a higher percentage of people using transit. Information on how the travel demand models work, the assumptions employed by the Project Team, and the model results can be found in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002).

The General Accounting Office study referenced by the commenter seems to address the relative benefits of regional rapid transit systems that are bus-based versus regional systems that are rail-based. It is not clear from this comment whether the study addressed the relative benefits of the different modes when expanding an existing system. As noted earlier, the BRT Alternative for the Dulles Corridor was intended to function as an extension of the existing regional rail system. It was not intended to serve as a competing regional rapid transit system.

Vehicle Capacity, As the commenter notes, some BRT vehicles are capable of carrying much higher passenger loads than the vehicles proposed for the Dulles Corridor Rapid Transit Project. The BRT system in Bogotá, Colombia, uses 60-foot articulated buses that accommodate approximately 160 passengers (approximately 43 seated and 114 standing). This standee load is based on an area of 4 persons per square meter, or 2.7 square feet per person—a standard that most riders would find very uncomfortable (at this density contact with other persons is unavoidable). In Curitiba, Brazil the BRT system uses an 80-foot bi-articulated vehicle with a capacity of 270 persons, but again, the bus has approximately 57 seats, so most of these passengers are standees.

Loading vehicles to these capacities would not be appropriate or safe in the Dulles Corridor. The Transportation Research Board's Transit Capacity and Quality of Service Manual (1999) notes that, "High-speed bus service on busways and HOV lanes should not allow standees, so capacity calculations should assume that every passenger may be seated" (Page 2-41). In addition, a high reliance on standees is characteristic of a system with short trip lengths—such as Transmilenio, not Dulles. Within the Dulles Corridor, many trips are projected to cover at least two-thirds of the length of the corridor (20 to 30 minutes). Standing for this length of time on a bus would be unacceptable to many travelers. Moreover, because BRT does not have the same quality of ride as Metrorail, loading passengers to a "crush" level would not be tolerated by most patrons.

Station Capacity vs. System Capacity. As described in Chapter 6 of the Draft EIS, transit capacity in the corridor represents the amount of physical space available to carry passengers and provides an understanding of the number of riders that can be comfortably accommodated in the corridor during peak travel times. Total capacity will vary according to the number of vehicles in service and the capacity of each of those vehicles. These calculations are not dependent on the number of stations for each alternative or the size of these stations.

Station size was generally determined based on the peak vehicle requirements generated by projected demand. As outlined in Section 2.3 of the Draft EIS, various BRT platform lengths and station configurations were evaluated in the Draft EIS. Under the BRT 1 alignment option, most stations would have had the same 600-foot platforms as the Metrorail Alternative. BRT 2 would have had 260-foot platforms. The Draft EIS Facilities General Plans (Volume IV), sheets 733 through 738 showed these two configuration options for the Wiehle Avenue Station.

As described in Chapter 2 of the Draft EIS, the operating plan for BRT would have resulted in approximately 80 BRT vehicles serving the eastern end of the corridor in the peak hour in the peak direction. With approximately 61 seats per vehicle, the peak-hour capacity provided by the BRT Alternative would have been 4,880 passengers. The Metrorail operating plan would result in 10 trains traversing the corridor in the peak hour in the peak direction. With 8 cars per train and a loading goal of 120 passengers per car per hour, the Metrorail Alternative would provide capacity for 9,600 passengers during the peak hour. Therefore, Metrorail capacity in the Dulles Corridor would be approximately twice that of BRT.

As noted earlier, space considerations at West Falls Church limit the ability to increase capacity further by increasing the number of BRT vehicles operating in the corridor during the peak hour.

For different applications in other cities, where the same limitations on standees and the volume of buses do not apply, BRT systems can have much higher capacities. In some cases, BRT systems carry the same level of demand as rail systems (as noted by the commenter).

Frequency of Service. As described in Chapter 6 of the Draft EIS, the peak-period headways for the BRT alternative would have generally been 6 to 12 minutes. Some of the routes for BRT 2 and BRT 3 would have operated with 4-minute headways. Many of the high-demand BRT routes would have operated with 6-minute service frequencies using two-vehicle platoons. These two-vehicle platoons can be thought of as bus trains, where the two vehicles run in tandem, though not physically connected like rail cars. In the off-peak period, service would have operated at 12- to 24-minute frequencies. These service frequencies were comparable to Metrorail service frequencies. BRT routes that operated with 12-minute headways in the peak period and 24-minute headways during the off-peak period did so because more frequent service was not required to meet the low demand projected for these routes.

Dedicated Rights-of-Way As described in Chapter 2 of the Draft EIS, the BRT Alternative primarily operated on the relatively exclusive travel way along the DIAAH, and was permitted to use the eastbound shoulder of the Dulles Connector Road during periods of severe congestion, when such use did not present a safety hazard to general-purpose traffic. This would have been no different than bus operations on the shoulder today. Some BRT vehicles would also have used the HOV lanes of the Dulles Toll Road, in certain limited areas between Route 28 and Route 7.

As shown in Table 6.1-2 in the Draft EIS, the DIAAH operates at Level of Service (LOS) C during the peak period. This level of service represents moderately congested conditions and relatively free-flow travel speeds. By 2025, the DAAR is expected to operate at LOS D. This level of service represents more congested conditions, but speeds are only reduced moderately, and, in practice, it is widely considered an acceptable level of service.

Table 6.2-1 showed that, for the BRT Alternative in 2025, the DIAAH was projected to operate at LOS C—an improvement over the LOS D projected for the No-Build Alternative. Tables 6.1-2 and 6.2-1 also showed that the HOV lane on the Dulles Toll Road operates at LOS and is expected to continue operating at LOS C under all alternatives. Therefore, introducing BRT vehicles to the DIAAH and the HOV lane did not hinder traffic operations on the roadway, nor did the expected levels of roadway traffic hamper BRT operations.

As described earlier, it would not have been cost effective to provide an elevated guideway for BRT through the core of Tysons Corner. Such an alignment would also have had more severe visual impacts than the alternative proposed in the Draft EIS.

Other. Please note that BRT was advanced in the MIS Supplement as an interim step to rail, and was not envisioned as a stand-alone alternative or system. As summarized in Section 2.1.2 of the Draft EIS, DRPT had concluded that BRT was best suited as an interim transit solution in the

Dulles Corridor, which would have immediately started addressing transit needs and ultimately allow for implementation of rail in the corridor.

Because BRT operated in a relatively exclusive guideway with dedicated slip ramps to access median stations, it would not have required technology enhancements such as queue jumpers or signal prioritization to improve performance. WMATA has been incorporating ITS information capabilities, such as smart cards, next train arrival information, and escalator/elevator outage information, into the existing Metrorail system. Similar information technologies would be incorporated into the final design of the LPA.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Public Comment: Second, some attempt should be made to "normalize" the analysis by providing common measures upon which to compare all of the alternatives. There are established techniques, such as cost-per-new-rider and cost-per-revenue mile, that must be included in the EIS to make a fair comparison and rational determination. Such measures are likely to show that Metrorail is a less attractive alternative, because in addition to the high construction costs, most subway systems require operational subsidies in the range of 40 cents per passenger. By contrast, the best BRT systems are not only much cheaper to build, they actually make a profit on their operations, requiring no subsidies from the taxpayer. Lessons can be learned from these systems, and these lessons should be incorporated into the EIS analysis. (0445, 0445-E –7)

Public Comment: Also we believe that BRT is going to be much less expensive than the amount projected in the EIS because the EIS requires these special stations and so forth to be built, but if you just go with BRT, you don't need those. You can use a much simpler type of station, you have more stations. BRT systems typically have three to four times more stations and more consumer choice than the rail can provide. (0138, 0241-T –7)

Response: *As described in Chapter 2 of the Draft EIS, there were three different BRT alternatives representing different approaches to BRT station type and design. The cost estimates for each BRT alignment were presented in Chapters 2, 8, and 10 of the Draft EIS. The BRT 3 alignment option used stops at park-and-ride lots rather than median stations, with more point-to-point types of express service. Although it did not have more stations than other alignments, this option most closely approximated the "simpler" BRT suggested by the commenter; the option also had the lowest ridership of the proposed Build Alternatives.*

The BRT service proposed for the Dulles Corridor Rapid Transit Project was intended to serve the same type of travel needs as the proposed Metrorail service. In the Dulles Corridor, the BRT Alternative took advantage of the relatively exclusive right-of-way in the DIAAH to provide rapid, limited-stop service for long-distance trips between the corridor and the region's core. The alternative was also attractive for short-distance trips between activity centers within the corridor, because it offered time savings over existing corridor transit services for these trips. However, most trips on the proposed alternative were expected to be at least 20 to 30 minutes in length.

An efficient way to serve both these long-distance and short-distance trips was to have stations in the median of the DIAAH. These stations eliminated the need for buses to enter and exit the freeway, reducing overall travel times, even though many operating patterns make multiple stops along the corridor. This station configuration and the proposed operating patterns also allowed the alternative to efficiently provide access for travelers heading to and from multiple, dispersed origins and destinations.

Therefore, for the BRT Alternative proposed in the Draft EIS, it would not have been possible to have "simpler" stations. Median stations (which facilitate more rapid service) require pedestrian

bridges and associated vertical circulation, which includes both elevators and escalators. Dulles Corridor BRT costs also included structured parking at certain stations, new acceleration/deceleration ramps for station access along the DIAAH, and Metrorail vehicle costs for the increased ridership on the Orange Line that would result from the BRT Alternative.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Public Comment: In conclusion, my point is that we don't have a -- the EIS doesn't make a fair evaluation of the bus rapid transit, it doesn't make a fair evaluation of the metrorail alternatives, either, because of the problem of connectivity. (0255, 0255-T –7)

Response: *The Final EIS was approved by the Federal Transit Administration for distribution as a fair evaluation of the Build Alternatives under consideration. System connectivity was one of the components evaluated in the Final EIS.*

Public Comment: A review of the DEIS indicates there is a bias toward rail. To have an efficient rail system requires a significant increase in bus service. Therefore, in anticipation that rail is transit choice and that bus service to serve the rail is required, answers to the following questions are required: What will be the increase in bus ridership? What will be the bus unit costs (costs per mile or hour)? What will the cost to operate the required bus service to serve the rail transit needs? What agency will assume responsibility to provide the bus service? What will be the cost to each district? What will be the source of the funding to meet this cost according to each district? (0147, 0459-L –25)

Response*: As stated in Section 6.3.1 of the Draft EIS, operating plans for the No-Build Alternative and each Build Alternative were developed based on a comment set of assumptions. The operating plan for each Build Alternative reflected both rapid transit services operating within the corridor and complementary local and feeder bus service. Data on ridership increases just by bus were not calculated as part of the ridership estimation process for this project. However, new transit trips were outlined in Table 6.3-8. All BRT alignment options and Metrorail alignment options resulted in an increase in regional transit trips. Fairfax and Loudoun Counties contract their bus service to private operators. The per unit cost is simply the fee paid to the contractors. Bus operating unit costs for WMATA were calculated using WMATA's cost model. Operating costs for each alternative for each operator are shown in Chapter 11 of the Transit Operations and Maintenance Plan, (June 2002). Operating agencies responsible for bus service in the corridor would have remained responsible for operations. These agencies include Fairfax County, Loudoun County, and WMATA. Operating costs by district were not calculated since this was not required for project analysis. Funding and subsidy estimates for each jurisdiction in the corridor were shown in the Draft EIS Chapter 8. As noted, local and feeder bus plans were developed for the No-Build and each of the Build Alternatives. These bus plans reflected estimated demand as well as detailed input from the jurisdictions responsible for operating the bus systems. Operations and maintenance costs for each bus service were calculated and included as part for the overall operations and maintenance cost for the project and were included in Section 8.3 of the Draft EIS.*

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Costs per Rider

Public Comment: What will be the cost per new rider based on cost escalation or failure to reach ridership projections? (0147, 0459-L –30)

Public Comment: What will be cost annually per new rider? (0147, 0459-L –29)

> ***Response****: Using the methodology used by the Federal Transit Administration for New Starts projects, the total cost per new transit rider for the Wiehle Avenue Extension is estimated to be approximately $24.73 (in 2004 dollars). This is based on total annualized capital and operating costs divided by the number of new transit riders, which is estimated in the travel demand forecasting process.*

Public Comment: Over a 20 year career (rider using the rail), what is the gross spending per new rider under the ridership projections? (0147, 0459-L –31)

> ***Response****: The cost per new rider is a measure of cost effectiveness, and is not applicable to being assigned to a specific individual. Once the individual begins to use the transit system, he or she is no longer a new rider, and the incremental cost and ridership are adjusted.*

Public Comment: As projects proceed to implementation, costs often increase. What is the cost per new rider at beginning and at five year increments? (Cost per new rider is calculated using 450 annual trips which is multiplied by the operating and capital cost per new ride.) (0147, 0459-L –32)

> ***Response****: The cost per new rider is a Federal Transit Administration (FTA) cost-effectiveness measure that has specific input requirements. One input measure is that the number of new transit riders in the project's forecast year (2025). Calculation at 5-year intervals would require a new series of ridership estimates combined with the annualized capital and operating costs for the Build Alternatives at 5-year intervals. This is a significant amount of work that would produce results not greatly different from that published in Table 10.2-1 of the Final EIS.*

Concern of Metrorail Delays Not Being Incorporated Into Travel Demand Forecasts

Public Comment: The EIS also ignores the significant delays experienced on Metrorail as a result of mechanical malfunction and other problems. If a car or train on Metrorail experiences a problem, all other trains on the same track will be delayed. For example, just this month, a broken down train on the Red Line caused all Red Line traffic inbound from Shady Grove to come to a stop for twenty minutes, causing major delays for thousands of commuters. Earlier that same morning, a switch broke, requiring single-track operations and causing even more delays. On the other hand, BRT does not suffer from the same vulnerability. BRT vehicles are independent of each other – when one breaks down the entire system is not brought to a standstill. Even when operating in a dedicated right-of-way, a well-designed BRT system can avoid the types of delays that frequently are suffered by Metrorail riders. To properly assess travel times for both systems, the EIS must address the frequency of delays and their impact on the overall system. (0445, 0445-E –13)

> ***Response****: Travel demand forecast models are designed to evaluate travel patterns and volumes under "average" conditions for both the transit and highway system; therefore, "events" such as mechanical breakdowns are not factored into these analyses. Because these types of events are not regular occurrences, and their frequencies are difficult to predict, it would not be practical to include "breakdown" scenarios in travel demand forecasts. Additional information on how the travel demand models work, the assumptions employed by the Project Team, and the model results can be found in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002).*
>
> *The commenter is correct in stating that a breakdown in the Metrorail system would have greater potential for a "ripple effect" on service throughout the system than a breakdown in a BRT system, because it is much easier to route operations around a malfunctioning bus than around a malfunctioning train. However, WMATA's Standard Operating Plan for Metrorail contains plans and procedures to maintain service and safety in emergency situations. This plan provides*

procedures to prevent collisions with other Metrorail cars and disruptions in operations along the line or at stations.

Note that even though a breakdown in the BRT system would have had less potential to affect overall system operations, because BRT in the Dulles Corridor would function as an extension of the existing Metrorail system, a breakdown or delay in the regional system would have affected BRT operations in the corridor to the same extent it would have affected Metrorail operations in the corridor.

Impacts on Reverse Commutes

Public Comment: Shortest Travel Times for Reverse Commutes: The EIS contains no analysis for this conclusion and is not clear regarding the definition of "reverse commute." Moreover, the EIS offers no alternatives to meaningfully analyze the impact on reverse commuters. All of the BRT alternatives connect with Metrorail at West Falls Church. BRT, however, can be configured to connect with many other Metrorail stations in Arlington, the District, or Maryland, most likely at a fraction of the cost of building a Metrorail extension through the Dulles Corridor. These alternatives could provide better travel times for reverse commuters than Metrorail and thus must be considered before a conclusion is reached that Metrorail is the preferred option for reverse commuters. (0445, 0445-E –15)

***Response**: A "reverse commute" is generally understood as a trip from home to work that is in the opposite direction of most commuters. Someone who lives in Washington, D.C. but works in Reston would have a reverse commute, because most people travel from the suburbs to downtown for work. This definition was implied in Chapter 10 of the Draft EIS.*

Tables 6.3-4 and 10.1-4 in the Draft EIS showed forecast travel times for select origin-destination pairs. Because the direction of a trip can be understood by knowing its origin and destination, these tables demonstrate travel times for several reverse commute trips (Union Station to Reston Town Center, Tysons Corner to Dulles Airport). As indicated in the supporting text in Chapter 10, the Metrorail and Phased Implementation alternatives provided the shortest travel time by transit for the reverse commute trips shown.

All alternatives analyzed in the Draft EIS provided service in both the eastbound and westbound directions. Because the travel demand forecasting models used to determine patronage estimates produced estimates of all travel in the region, for all modes and all trip purposes, it was possible to tell from the results of the model the direction of travel and the volume of travel in each direction by all modes. The travel times shown in Tables 6.3-4 and 10.1-4 were one of the numerous model outputs that reflect directional travel and the potential benefits for reverse commuters. Additional information on how the models worked, the assumptions employed by the Project Team, and the model results can be found in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002).

Both BRT and Metrorail were designed to primarily serve the east-west travel demand between existing and emerging activity centers along the Dulles Toll Road, and between these centers and the region's core. As described in Chapter 1, both were intended to function as an extension of the existing Metrorail system, taking advantage of the direct connection this system already provides to Arlington and the region's core. In the context of the Dulles Corridor Rapid Transit Project, BRT was meant to be a complement to the existing regional rapid transit system, not a competing regional system. Therefore, BRT routes that provide direct connections between the Dulles Corridor and Arlington, Washington, D.C., or Maryland rather than connect to the existing Metrorail system at the eastern end of the corridor would not be appropriate in the Dulles Corridor. Moreover, given that BRT vehicles would likely have to travel on congested roadways to reach these regional destinations, it was doubtful they would have offered faster travel times than the existing Metrorail system, which operates on an exclusive guideway.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Ability of BRT/Metrorail to Support Comprehensive Plan Goals

Public Comment: Conclusion #4: Metrorail would have higher growth potential in station areas along the corridor due to planned increases in allowable densities at rail stations, and better contributes to the objectives of adopted county master plans. There is no support for this conclusion. According to the EIS, BRT is consistent with the Loudoun and Fairfax County master plans. There is no indication that Metrorail "better contributes" to the objectives of these plans. In addition, there is no indication that Metrorail would create higher growth potential than BRT. One of the hallmarks of BRT is that the station can serve as an attractive and vital link to the community, providing a focal point for investment and transit-oriented development. A BRT station can have all of the attributes of a rail station: advance fare collection, level-boarding platforms, passenger information systems, and ample parking. It also can be high-capacity, providing the passenger throughput necessary to support high density zoning. As mentioned above, however, the BRT stations in the EIS are relatively small and are not designed for the same capacity as Metro stations. (0445, 0445-E –16)

Public Comment: Conclusion #7: BRT does not support land development patterns in Tyson's Corner as well as Metrorail, Combined BRT/Metrorail, or Phased Implementation, and cannot penetrate Tysons Corner to effectively serve its workers, shoppers, and residents. There is no credible information to conclude that BRT cannot support land development patterns in Tyson's. First, all of the BRT alternatives bypass the heart of Tyson's corner, thus making it impossible to assess BRT impact on land development patterns. Second, as mentioned above, the EIS itself concedes that BRT is consistent with the Fairfax and Loudoun Country master plans. BRT stations can be every bit as permanent and attractive to transit-oriented development as Metrorail stations. New alternatives must be developed and analyzed before concluding that Metrorail will better support land-use patterns. (0445, 0445-E –19)

***Response**: Chapters 3, 5, 9, and 10 of the Draft EIS presented information on land use effects and the planned development densities at rapid transit stations in the Dulles Corridor. The conclusions cited above were based on the information presented in these chapters. As indicated below, BRT was consistent with county plans, but did not support the plans as well as Metrorail because density bonuses in Tysons Corner only apply to rapid rail stations.*

Alignment BRT 1 would be consistent with adopted comprehensive plans. However, construction of only Alignment BRT 1, without any Metrorail service through Tysons Corner, would not achieve several of the goals for Tysons Corner, including the creation of transit-oriented development that is allowed only with the construction of rapid rail through the core of Tysons Corner." Similar statements were made in each of the other chapters referenced above.

In Tysons Corner, providing the same level of service as Metrorail with BRT would reduced the cost and timing advantages associated with the BRT Alternative. Operating the BRT service on congested roadways in Tysons Corner to provide more direct connections to destinations would have increased travel times and offered little benefit over driving. Such a system would not have been an attractive travel alternative, and would not have likely attracted high ridership. However, Fairfax County and VDOT would have been unlikely to dedicate a lane for exclusive bus use, given that many roadways in Tysons Corner are expected to operate at or above capacity in the future, even after implementing capacity increases (see Chapter 6 in the Final EIS).

Therefore, the only way to provide the same level of service and directness would have been to operate BRT on a grade-separated route through Tysons Corner. Both an elevated route and an underground route would have added considerable expense and construction time to the project, thereby diminishing two of the primary advantages of BRT in the Dulles Corridor. An elevated roadway would also have had the same degree of visual impacts as an elevated Metrorail

alignment. Because a grade-separated alignment for BRT through Tysons Corner would have increased the cost, construction time, and impacts of the alternative, this was not considered an advantageous configuration for the BRT Alternative, especially given that it would still have required a transfer at West Falls Church, reducing overall ridership as compared to the Metrorail Alternative.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Need to Leverage Prior Transportation Investments in the Corridor

Public Comment: Conclusion #6: Metrorail would provide the best opportunity to capture previous investment made in regional infrastructure. This conclusion is not supported in the EIS. Among other things, the EIS does not adequately address BRT's ability to leverage prior investments in both the region's roads and in Metrorail. Without such an analysis, it is impossible to reach the conclusion set forth in the EIS. For example, a BRT vehicle carrying sixty or more passengers is a far better use of roadway assets than sixty or more cars carrying one passenger each. Moreover, technologies such as signal prioritization actually increase the speed of all traffic, not just the BRT vehicle, because cars can move through the signals with the BRT vehicle. Similarly, even under the flawed BRT alignments contained in the EIS, BRT will transport a significant number of passengers to the Orange Line at nearly one-tenth the cost of the Metrorail extension. This will provide Metrorail with significant revenue opportunities at relatively little cost, thus leveraging previous investments in Metrorail. Other potential BRT alignments, not considered in the EIS, could transport passengers to other Metrorail lines, such as the Yellow and Blue lines. More analysis is required before a conclusion is warranted regarding which mode will best recapture prior investments in regional infrastructure. (0445, 0445-E –18)

Response: *The BRT Alternative was developed to provide high-quality service akin to a rapid rail system. It was intended to provide rail-like service and amenities at a lower cost. The intent was to evaluate a lower-cost, lower-impact alternative to see if it could have provided the same level of benefit as a Metrorail Alternative.*

Every effort was made to leverage prior transportation investments in the Corridor. The BRT Alternative made use of the relatively exclusive travel way in the DIAAH to provide rapid, limited-stop service for long-distance trips between the corridor and the region's core. However, operating the BRT service on congested roadways, particularly in Tysons Corner, to provide lower cost transit solutions would have increased travel times and offer little benefit over driving. Such a system would not have bees an attractive travel alternative, and would not likely have attracted high ridership. In addition, Fairfax County and VDOT would have been unlikely to dedicate a lane for exclusive bus use, given that many roadways are expected to operate at or above capacity in the future.

Therefore, BRT would need to operate on a grade-separated route through Tysons Corner. Both an elevated route and an underground route would have added considerable expense and construction time to the project, thereby diminishing two of the primary advantages of BRT in the Dulles Corridor. Because a grade-separated alignment for BRT through Tysons Corner would have increased the cost, construction time, and impacts of the alternative, this was not considered an advantageous configuration for the BRT Alternative, especially given that it would still have required a transfer at West Falls Church, reducing overall ridership as compared to the Metrorail Alternative.

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Need to Provide Comparable Level of Accessibility for Minority and Low-Income Populations

Public Comment: Conclusion #9: BRT does not provide the same level of accessibility for minority and low-income populations to regional job choices that include Metrorail. This conclusion does not make sense and is not supported by the EIS. BRT, unlike Metrorail, has the ability to travel on arterial streets and into neighborhoods. Thus, BRT alignments could be designed to pick up low income and minority customers and feed them into the Metrorail system. This would provide greater access for minority and low income customers than Metrorail alone. Moreover, it could reduce the need for many of these customers to purchase vehicles to transport themselves to a Metrorail station, thus reducing congestion and helping low income people reduce transportation expenses. Much more research and analysis must be conducted before the above conclusion can be reached. (0445, 0445-E –21)

> ***Response****: The information presented in Sections 3.8 and 10.1.5 of the Draft EIS demonstrated that low-income and minority populations near the proposed Route 28 Station would not have been served by the BRT 2 and BRT 3 alignment options, because these options did not include a station or stop at this location. In addition, because the BRT Alternative (all alignment options) would not have included the Tysons East Station, it would not have provided the same level of access for a concentration of minority residents along the south side of the Dulles Connector Road near the Route 123 interchange at the eastern edge of Tysons Corner.*
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> *Overall, all Build Alternatives would have provided improved accessibility between jobs in the corridor and low-income and minority populations throughout the region by providing a direct rapid transit connection to the regional Metrorail system. However, the BRT Alternative did not provide the same level of access for minority populations in Tysons Corner as the other alternatives. BRT 2 and 3 did not provide the same level of access for minority populations in the vicinity of Route 28 as other alternatives.*
>
> *The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.*

Need for Clarification on Measures of Effectiveness

Public Comment: I found that the use of different measures in the various tables and statistics made developing a baseline virtually impossible; e.g., passenger miles vs. passenger trips, years presented in varying increments, etc. Recommendation: Review the document and define the data in common terms. (0427, 0427-E –1)

> ***Response****: Chapter 10 of the Draft EIS presented the evaluation of alternatives relative to numerous measures, which were based on the project goals and objectives. For major transportation investments, an evaluation plan that relies exclusively on weighting schemes or cost analysis comparisons can be too rigid, making it difficult to compare attributes that are more qualitative or difficult to assign a cost value. Rather, an evaluation that clearly outlines performance relative to a project goals, and summarizes the essential differences between alternatives or the various trade-offs involved in selecting one over the other, is a more instructive and useful tool for decision makers.*
>
> *The analysis presented in Chapter 10 reflected not only the cost effectiveness of each alternative, but also each alternative's effectiveness in meeting more qualitative or non-monetary project goals, such as "supports future development," "supports environmental quality," and "serves low-income and minority populations." The final summary of the relative benefits and impacts of each alternative were outlined in Table 10.2-1. Table 2.7-4 presented the anticipated costs, impacts, and benefits of all alternatives then under consideration for the Dulles Corridor Rapid Transit Project, including the No-Build Alternative.*

The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.

Concern of Travel Demand Forecasts Used in Considering Alternatives

Public Comment: Please reconsider the evaluation of alternatives set forth in the draft EIS to increase the forecast ridership for alignment T4. (0084, 0458-E –5)

Public Comment: Reduce your estimate of the visual and aesthetic impact on the residential community along Westpark [from T4]. (0084, 0458-E –6)

Public Comment: Please reconsider the evaluation of alternatives set forth in the draft EIS to increase the forecast ridership for alignment T4 and to reduce your estimate of the visual and aesthetic impact on the residential community along Westpark. (0084, 0084-L –7)

***Response**: The demand forecasting model used to estimate ridership for each of the Metrorail alignments in the Draft EIS took into account a number of factors including overall trip time (including access to the station), station proximity to key employment concentrations, station proximity to residential concentrations, and ease of station access for pedestrians, autos, buses, and other modes. The same model algorithms and procedures were applied to each alternative in order to ensure consistent results. It should be noted that transfers do carry a penalty in calculating trip times. This was because surveys have shown that riders perceive wait times for transfers to be longer than the wait times actually are. Because of this people avoid transfers and will often not make a trip by transit if a transfer is required. This transfer penalty is reflected in the lower ridership numbers associated with Alignment T4. As an example, anybody wishing to go east who boards at Tysons Central A or Tysons Central B under Alignment T4 would first have had to go west to the Tysons West station, where they would then have had to transfer to a westbound train. This added time to the overall trip and included the transfer penalty as well. The same held true for eastbound passengers who wished to go to Tysons Central A or Tysons Central B. Finally anybody making a trip to Tysons from the east and wishing to get to Tysons Central C or Tysons Central D (the commercial core of Tysons) would have had to stay on the train through Tysons and then transfer at Tysons West for an eastbound trip.*

A more detailed description of the demand-forecasting model is available in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002).

Assessment of visual and aesthetic impacts is more qualitative than patronage estimates. As outlined in Section 3.4 of the Final EIS, the Federal Highway Administration visual assessment methodology was used in assessing visual impacts. The assessment of significant impact from Alignment T4 was due to the relatively high aerial structures, and the large aerial station structures that would be built in proximity to residences.

Public Comment: Some have advocated measuring the success of an alternative by the number of people who use the system in a given year, such as 2025. I think this is a flawed measure of success because the rail system would result in raising tolls on the Toll Road to finance it, and this would naturally divert people off of the highway and onto the alternative. (0286, 0286-T –3)

***Response:** As described in Chapter 10 of the Draft EIS, the cost effectiveness for the alternatives in the Dulles Corridor Rapid Transit Project was measured using the then Federal Transit Administration's uniform method for analyzing costs and benefits. This method reflected the relative benefits of the proposed improvements, in terms of the number of riders attracted to the system, as compared to the costs to construct and operate the improvements.*

The travel demand models used to estimate patronage and the anticipated traffic volumes on area roadways accounted for all costs associated with a particular travel choice, including tolls, fares, parking costs, and the perceived "costs" of travel time. The output of the models reflected the choices travelers would be likely to make based on knowledge of travel times, costs, and other socioeconomic factors. In the Draft EIS, the model did not assume the toll increases proposed in the financing plan; rather it applied the current toll structure and expiration date (toll varies from $0.50 to $0.85 in each direction; tolls expire in 2016). The ridership estimates used to determine the cost effectiveness of the Build Alternatives did not reflect the effect of potential toll increases, because increasing the tolls was one of the many options under consideration for financing the project. Since increases in the tolls have been determined to be an appropriate way to fund the LPA, the effects of raising the tolls have been included in the Final EIS. Additional information on how the models worked and the assumptions employed by the Project Team can be found in the Travel Demand Forecasting Methodology and Results Report (June 2002).

Note that the toll increases proposed in the capital funding plan of the Draft EIS would result in tolls that are lower than the proposed transit fares for most trips on the proposed rapid transit alternatives. As outlined in Chapter 8 of the Draft EIS, the proposed toll increases would have resulted in a maximum toll of approximately $2.35 on the Dulles Toll Road in 2015. It is assumed in the Draft EIS that the Dulles Corridor transit line would use the same fare structure as the existing Metrorail system and that this fare would be adjusted for inflation over time. The maximum fare on the Metrorail system is $3.25 at the time of the Draft EIS. For trips between most parts of the corridor and Arlington and the core, the maximum fare would apply. In addition, parking fees would apply at rapid transit stations. Since the Metrorail has been selected as the Locally Preferred Alternative, and the ultimate funding plan includes extending or increasing the tolls, then the transit ridership projections and cost effectiveness measures in the Final EIS have been updated to reflect the effect the toll increases have on transit ridership.

Overall, the analysis presented in Chapter 10 of the Draft EIS reflected not only the cost effectiveness of each alternative, but also each alternative's effectiveness in meeting more qualitative or non-monetary project goals, such as "supports future development" and "serves low-income and minority populations." The final summary of the relative benefits and impacts of each alternative were outlined in Table 10.2-1.

Mode Capacity

Public Comment: The EIS also ignores the significant difficulties experienced by Metrorail in obtaining new rail cars. Without an adequate supply of reliable and reasonably priced cars, it is difficult to imagine how Metrorail will continue meeting demand. More alternatives must be developed, and additional analysis must be conducted, before a fair conclusion can be reached regarding whether Metrorail is more likely to provide greater future capacity than BRT. (0445, 0445-E –11)

***Response**: In preparing the Final EIS , the Project Team developed and evaluated the No-Build Alternative with the assumption that WMATA would be funding and implementing eight-car train operations to satisfy forecast demand prior to the Project. WMATA has been emphasizing to the Commonwealth of Virginia and to the Project's other funding partners the critical importance of the implementation of eight-car train operations. Under its Metro Matters campaign (see www.wmata.com/about/metro-mattersfactsheet.pdf), WMATA is presently seeking the absolute minimum funding of its near-term capital needs to sustain the Metrorail and Metrobus systems. Within the $3.3 billion Metro Matters campaign, there is over $600 million for the eight-car train operations.*

As outlined in Chapter 2 of the Draft EIS, the operating plan for BRT would have resulted in approximately 80 BRT vehicles serving the eastern end of the corridor in the peak hour in the peak direction. With approximately 61 seats per vehicle, the peak-hour capacity provided by the BRT Alternative would have been 4,880 passengers. The Metrorail operating plan would have resulted in 9 trains traversing the corridor in the peak hour in the peak direction. With 8 cars per

train and a loading goal of 120 passengers per car per hour, the Metrorail Alternative would provide capacity for 8,640 passengers during the peak hour. Therefore, Metrorail capacity in the Dulles Corridor would be approximately twice that of BRT.

Public Comment: The rail alternative is projected to carry 9600 passengers per hour, compared with 2370 for bus rapid transit. Rail, with the ability to carry 50 to 60,000 passengers per hour, has the capacity over the long term to serve the growing trip demands in the corridor. (0131, 0131-T –7)

Response: *The commenter's first statement reflects data shown in Table 10.1-3 of the Draft EIS. This table presents the capacity provided by each alternative at the Wiehle Avenue Station, not projected passenger demand.*

Although the capacity provided by Metrorail at the Wiehle Avenue Station reflects the capacity provided through the whole corridor (9,600 passenger per hour), this was not true for the BRT Alternative. Because not all of the "routes" proposed in the BRT operating plan included a stop at Wiehle Avenue, the capacity shown for this station was lower than the capacity provided by the BRT Alternative throughout the corridor. Overall, the BRT Alternative provided for 80 buses in the peak hour in the peak direction. With a vehicle capacity of 61 passengers, this volume of service resulted in a capacity of 4,880 passengers per hour for BRT.

Metrorail as defined in the Dulles Corridor does not have the ability to carry 50,000 to 60,000 passengers per hour. As noted above, it would have a maximum capacity of 9,600 passengers per hour.

Public Comment: Bus service, even if equal to rail service in all respects, would attract only seventy (70) percent of the rail passengers that rail service would, according to Transportation Research Board Special Report 1221 of 1989. A more recent TRB report by Professor Gregory L. Thompson found in an analysis of the 1990 US Census in Sacramento's suburbs that electric rail service attracted sixty to seventy (60-70) percent more riders than equal bus service would. These are not theoretical computerized projections. These are mathematical measurements of the real world. (0013, 0013-L –9)

Response: *Metrorail does provide many advantages over bus service, including higher passenger capacity and higher operating speeds. These advantages were reflected in the higher estimated ridership for the Metrorail Alternative.*

Public Comment: The Dulles Rail Line should be very similar to BART. Each bus driver can move only 80 passengers maximum comfortably, but a single MetroRail operator can move 720. If buses have their own right-of-way and stations, far more bus labor will required for maintenance and staffing. (0013, 0013-L –12)

Response: *It was correct to comment that BRT would have required more drivers to provide the same level of capacity that a single Metrorail train could provide but there are other operating costs associated with Metrorail, including track maintenance, Metrorail vehicle maintenance, and traction power that were not associated with BRT. Total annual operating costs for each alternative were outlined in Table 6.3 –12 of the Draft EIS. Total operating costs were considered in the selection of the Locally Preferred Alternative.*

Concern for Costs Associated with Metrorail

Public Comment: If metrorail costs eight to 10 times more, is metrorail really worth $2.8 billion to $3 billion more? What are the advantages that would possibly make that the case? (0138, 0169-T –2)

Public Comment: What is it about metrorail that justifies doubling the Dulles road tolls starting next year, increasing the BPOL tax and the sales tax, and imposing a new special tax on commercial office and rental apartments? (0138, 0241-T –4)

Public Comment: METRO has been an unmitigated failure, costing 500% of its estimate to build and running an ever-growing operating deficit every year, both totally different than what the public was told when it was proposed. This is typical of urban mass transit projects. Why would the Dulles Corridor effort be any different? (0299, 0299-E –1)

Public Comment: What is it about metrorail that justifies spending $3 billion more than the BRT costs? (0138, 0241-T –2)

> ***Response:*** *As outlined in Chapter 10 of the Draft EIS, Metrorail had several benefits relative to BRT. In general, Metrorail provided greater improvements in transportation service, greater increases in transit ridership, more support for future development, and it would have better served diverse populations. Specifically, Metrorail would have had the highest ridership, highest number of new riders, and highest corridor transit mode share among the Build Alternatives. Metrorail was the most time competitive with automobiles for trips within the corridor. For these trips, as well as trips to and from the corridor, Metrorail required the fewest number of transfers. Metrorail provided the greatest increase in person-capacity in the corridor. Metrorail also provided the greatest benefits for the Orange Line, in terms of relieving overcrowding on the Vienna service.*
>
> *In addition, Metrorail supported comprehensive plans in Tysons Corner better than BRT, and allowed for higher growth in station areas throughout the corridor. Metrorail also served minority populations in the Tysons Corner area better than BRT.*
>
> *The advantages of BRT relative to Metrorail included improvements in corridor transit service at an earlier date, fewer impacts on the natural environment, fewer noise and visual impacts, lower traffic impacts in the vicinity of stations (though still higher than the No-Build), lower costs, and higher cost effectiveness (while Metrorail attracted more riders than BRT overall, the BRT Alternative cost much less than the Metrorail Alternative to build; therefore, the cost effectiveness for the BRT Alternative was lower). The final summary of the relative benefits and impacts of each alternative were outlined in Table 10.2-1 in the Draft EIS.*
>
> *The decision-makers considered these factors in their selection of the Metrorail Build Alternative as the Locally Preferred Alternative. Concurrently, the BRT, BRT/Metrorail and Phased Implementation Alternatives were eliminated from further consideration after the public and interagency review and comment on the Draft EIS.*

Ridership Forecasts

Public Comment: ACTION REQUESTED

1. Calculate new riders as someone who is new to using transit, not someone who used the Orange Line or a bus before.
2. Don't count rail riders as two trips if the person arrive by bus.
3. Explain why there are 11,000 fewer boardings at Vienna, Dunn Loring and East Falls Church in 2025 with Dulles rail over the base case (no rail).
4. Use average speeds to determine ridership and ride times, not "permitted attainable speeds." Provide station-to-station travel times for ALL stations, including BRT. A matrix would be helpful.
5. Do any ridership numbers include passengers who shifted from bus to rail?
6. How much of the regionally approved forecast riders (Table 22-2) is from outside the corridor?
7. Why do the total trips differ from table 22-1? What's the difference between riders and boardings? (0112, 0462-L –30)

Public Comment: How much of the regionally approved forecast riders (Table 22-2) is from outside the corridor? (0112, 0382-L –20)

Public Comment: Why do the total trips differ from Table 22-1? What's the difference between riders and boardings? (0112, 0382-L –21)

> ***Response****: The "new riders" information contained in Table 6.3-8 of the Draft EIS reflected totally new transit trips (rail and bus) and did not count people shifting from the Orange Line or other transit modes. They also did not double count people who started their trip on bus and then transferred to Metrorail or BRT. The 11,000 fewer boardings at Orange Line stations reflected the fact that riders living in the Dulles Corridor would board in the corridor rather than driving to an Orange Line Station. Total travel time (which translates into an average speed), not permitted attainable speeds, was used to determine ridership. Station-to-station travel times were included in the Transit Operations and Maintenance Plan (June 2002). Ridership estimates showed that approximately 27,000 rail trips would have been attracted into the corridor from outside the corridor under Metrorail Alignment T6 (the selected LPA). The numbers in Table 22-1 reflected new transit riders on a regional basis. The numbers in Table 22-2 referred to trips in Tysons, Reston, and Herndon. Boardings referred to a specific boarding at a rail station. A trip included all of the legs of a trip, including transfers from bus to rail.*

Public Comment: Only 32,700 of the 71,900 weekday passengers are estimated to be "new" passengers so the difference will be Orange Line passengers and bus riders shifting over to the Dulles Line. This will make more room for Orange Line passengers. In 2002, from 6:45am to 8:45am and from 4:15pm to 6:15pm, the Orange Line moves 164 cars in the prevailing direction, with proper space for 20,000 passengers in each peak period. With Dulles Rail in 2010, there should be 242 cars in the peak two hours, with space for 29,500 passengers. (0013, 0013-L –31)

> ***Response:*** *It was anticipated that passengers from the Dulles Corridor that now drive to Vienna or Dunn Loring to access Metrorail service would board in the Dulles Corridor, thus alleviating crowding on the Orange Line from Vienna. This shift to the Dulles Line was reflected in the car loadings on the Orange Line under the No-Build versus the Metrorail Alternative, as shown in Table 6.3-6 of the Draft EIS. Loadings on the Orange Line decreased for each of the Metrorail alignment options relative to the No-Build Alternative.*
>
> *Existing peak hour, peak direction service on the Orange Line was comprised of a mix of 4 and 6 car trains on two different services (Vienna and 'Tripper' services). Combined, these two services currently provide peak hour passenger carrying capacity of 12,000 based on six minute headways and WMATA's loading standard of 120 passengers per car. This capacity would have increased to 19,200 in 2010 based on an increase in train length (but no change in service frequencies), as analyzed in the Draft EIS.*

Public Comment: With 32,700 "new" passengers, it is likely that only 5,750 will be in the peak two hours, so there should be fewer standees with Dulles Rail than without it. Some Reston, Herndon, and Loudoun commuters who now drive to Vienna or West Falls Church to park will use the Dulles line making room for more new passengers on the Orange Line. (0013, 0013-L –32)

> ***Response:*** *For the Draft EIS, the Project Team did not estimate ridership in the peak two hours. However, based on available data, it was anticipated that passengers from the Dulles Corridor that drive to Vienna or Dunn Loring to access Metrorail service would have boarded in the Dulles Corridor, thus alleviating crowding on the Orange Line from Vienna. This shift to the Dulles Line was reflected in the car loadings on the Orange Line under the No-Build versus the Metrorail Alternative, as shown in Table 6.3-6 on page 6-46 of the Draft EIS. Loadings went down on the Orange Line for each of the Metrorail alignment options relative to the No-Build Alternative, as analyzed in the Draft EIS.*

Public Comment: Mid-day, the Orange Line service will be doubled from East Falls Church east, and the number of cars will increase by 33 percent on busy days and 100 percent on lights days when four-car trains are used. This will be good for every one. As ridership continues to grow in the more distant

years, more cars and more service will be needed, but experience will tell us how much. The capacity will be there, within realistic limits. (0013, 0013-L –33)

> ***Response:*** *Orange Line service will increase under the LPA during the mid-day, east of East Falls Church. Currently mid-day service consists of trains from Vienna running every 12 minutes. Since the Metrorail Alternative has been selected as the LPA, a 12 minute mid-day Dulles service will be added, thus resulting in a combined six minute frequency east of East Falls Church. Future mid-day train lengths on both services will be 4 cars, with the exception of the Vienna-New Carrollton Orange Line in the summer, which will have a mix of 4 and 6 car trains..*

Public Comment: Enough Trains and Seating: During rush-hour on the west end of the Orange Line, if you don't get on the train at Vienna or Dunn Loring stations, you will not ever, ever get a seat. Imagine that there are people who travel the Metro to places between West Falls Church and Farragut West who have never got to sit down going to work or going home. I bet they are looking for an alternative or anything that includes sitting down. (0108, 0108-E –3)

> ***Response:*** *It is anticipated that passengers from the Dulles Corridor that now drive to Vienna or Dunn Loring to access Metrorail service will now board in the Dulles Corridor, thus alleviating crowding on the Orange Line from Vienna. This shift to the Dulles Line was reflected in the car loadings on the Orange Line under the No-Build Alternative versus the Metrorail Alternative, as shown in Table 6.3-6 of the Draft EIS.*

Public Comment: I am looking for ridership estimates for any of the modes? Can you provide those estimates to me by station as well as full length of each line? (0112, 0112-E –1)

> ***Response:*** *Passenger boardings by station or stop for each of the Build Alternatives were included in the Draft EIS in Table 6.3-10. More detailed ridership data was available in the Travel Demand Forecasting Methodology and Results Technical Report Appendix (June 2002). These boardings by station have been replaced by the ridership forecasts of the Wiehle Avenue Extension and Full LPA presented in Section 6.1 of the Final EIS.*

Public Comment: The evaluation of T4 identifies several disadvantages that either appear to be incorrect or can be mitigated. The draft EIS forecasts transit ridership for T4 that is less than the other rail alignments. This forecast is inconsistent with the other data presented in the draft EIS that shows T4 brings transit to the greatest number of residents and employees. The ridership projections are artificially depressed by assuming the one way loop alignment will prevent huge numbers of potential riders from choosing to use transit. (0084, 0084-L –3)

Public Comment: The evaluation of T4 identifies several disadvantages that either appear to be incorrect to can be mitigated. The draft EIS forecast transit ridership for T4 that is less than the other rail alignments. This forecast is inconsistent with the other data presented in the draft EIS that shows T4 brings transit to the greatest number of residents and employees. The ridership projections are artificially depressed by assuming the one-way loop alignment will prevent huge numbers of potential riders from choosing to use transit. The Metro system, like most large transit systems, depends on line transfers. Riders from suburban locations are accustomed to transferring lines to get to their destination. The effect of the additional transfer on one leg of rider's round trip is overstated in the ridership forecasts. Based on the significant difference in station area population and employment, the ridership should be much greater for Alignment T4. Regardless of the effect on longer transit trips, no other alignment creates any internal transit system within and through Tysons Corner, which T4 would. This will also serve to increase ridership. (0084, 0458-E –3)

> ***Response****: For the Draft EIS, the demand forecasting model used to estimate ridership for each of the Metrorail alignments took into account a number of factors including overall trip time (including access to the station), station proximity to key employment concentrations, station proximity to residential concentrations, and ease of station access for pedestrians, autos, buses, and other modes. The same model algorithms and procedures were applied to each alternative in*

order to ensure consistent results. It should be noted that transfers do carry a penalty in calculating trip times. This is because surveys have shown that riders perceive wait times for transfers to be longer than the wait times actually are. Because of this people avoid transfers and will often not make a trip by transit if a transfer is required. This transfer penalty is reflected in the lower ridership numbers associated with Alignment T4. As an example, if Alignment T4 had been part of the selected LPA, anybody wishing to go east who boards at Tysons Central A or Tysons Central B under T4 would have first gone west to the Tysons West station, where they would then have transferred to a westbound train. This added time to the overall trip and included the transfer penalty as well. The same held true for eastbound passengers who wished to go to Tysons Central A or Tysons Central B. Finally anybody making a trip to Tysons from the east and wished to get to Tysons Central C or Tysons Central D (the commercial core of Tysons) would have stayed on the train through Tysons and then transferred at Tysons West for an eastbound trip.

A more detailed description of the demand-forecasting model has been available in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002).

Public Comment: Given the proposed level of improvement afforded by any of the rail alternatives, it's inconceivable to me that the number of new riders in this corridor is as low as claimed in the report and it's impossible to ascertain the validity of these projections with the background information presented. Obviously, the number of new riders is a critical consideration as the cost per new rider is one of the important evaluation factors FTA presently uses to compare projects across the country which are competing for a limited amount of federal funding, a limited amount that's very likely to become even more limited in the future. (0387, 0387-L –8)

***Response**: The methodology for completing the ridership estimates for the Draft EIS was outlined in detail in the Travel Demand Forecasting Methodology and Results Technical Report (June 2002). The NVMISM model used for the Project ridership projections was an adaptation of the Metropolitan Washington Council of Governments model used to estimate regional travel flows and transportation demand. FTA reviewed the forecasting methodology used in the Draft EIS and gave its approval. Additional modifications requested by FTA have been incorporated into the model runs for the Final EIS.*

Public Comment: One also has to question the figure of 31-33,000 new boardings on rail given an anomaly in the boardings data provided in "Travel Demand Forecasting Methodology and Results - Appendix." One of the tables, "Rail/BRT Station Activity: 2025 Base" shows the following total boardings without Dulles Rail, and with the highest ridership projected alternative for Dulles Rail (Alternative T6): Why would there be about 11,000 fewer boardings at the Vienna, Dunn Loring and West Falls Church Orange Line stations in 2025 when Dulles Rail is factored in? (See Exhibit 4) WMATA and VDRPT need to explain this because there are also dropoffs in numbers for other Dulles Rail alternatives. Perhaps one can assume that the reason there are fewer boardings at these three stations is because these folks are using Dulles Rail instead, leading to this question - how much of the boardings you are projecting for Dulles Rail are actually diversions from the Orange Line? It would seem from this phenomena that 1/3 of the boardings are coming off the Orange Line. Obviously, commuters who previously had to drive to Vienna, Dunn Loring or West Falls Church can use the Dulles Rail line instead. But there are no similar data for BRT, so don't know if BRT draws people off the Orange Line. (0112, 0462-L –27)

Public Comment: Why is there a drop in daily boardings in 2025 at the Vienna, Dunn Loring, and West Falls Church stations? I counted about 11,000 fewer boardings at these stations in 2025. Why? Are these boardings folks who would use Dulles Rail instead of the Orange Line? (0112, 0382-L –18)

***Response**: The Vienna, Dunn Loring, and West Falls Church stations are currently the point of access to the Metrorail system for riders from the Dulles Corridor. Once the Metrorail Extension is implemented, Dulles Corridor riders will no longer have to access one of these stations in order to utilize Metrorail, since there will be a station closer to home. This explains the drop in boardings at these stations.*

Data on station boardings under each of the BRT alignment options, versus the No-Build Alternative, were included in the Travel Demand Forecasting Methodology and Results Technical Report Appendix (June 2002). These data showed that there would have been some diversion from the Orange Line to BRT stations, though the shift would not have been as significant as will occur under the Metrorail Extension.

Public Comment: More details on the development of the ridership projections are required. It's not clear how the ridership projections for the Tysons Corner stations, or any of the other stations for that matter, were developed. More information is needed on the service areas assumed for each station, the level of development assumed for each station service area, transit and other shuttle systems feeding the station (particularly in the Tysons Corner area) and especially important, how the number of new riders was determined. (0387, 0387-L –6)

***Response**: The methodology for completing the ridership estimates in the Draft EIS was outlined in detail in the Travel Demand Forecasting Methodology and Results Technical Report, (June 2002). The model used for the project ridership projections was an adaptation of the Metropolitan Washington Council of Governments model used to estimate regional travel flows and transportation demand (the model is adapted from the regionally focused model to one which is more corridor focused). Regarding development levels, the travel demand forecasts in the Draft EIS were based on the Metropolitan Washington Council of Governments' Round 6.2 Cooperative Land Use Forecasts. For the Final EIS, the Round is 6.3. These Rounds forecast represent the regionally adopted population and employment forecasts through 2025, for the metropolitan Washington area, including Fairfax and Loudoun County. By federal regulation, such regionally approved land use forecasts must be used in the travel demand analysis of each alternative studied in an EIS. The feeder bus system for each Build Alternative in the Draft EIS was described in great detail in the Transit Operations and Maintenance Plan Technical Report (June 2002).*

Public Comment: What is the projected increase in the number of people expected to come into the corridor each day as the result of rail being constructed and what percentage of these are expected to use rail or other mass transit? (0454, 0454-E –5)

***Response**: In the Draft EIS, total person trips into the corridor were not anticipated to change significantly under any of the Build Alternatives. Rail trips into the corridor from outside the corridor (this does not include intra-corridor trips) would increase by nearly 27,000 with the Metrorail Alignment T6, which has been selected as the LPA). This data was included in the Production/Attraction tables in the Travel Demand Forecasting and Methodology Results Appendix, June 2002.*

Public Comment: We also encourage you to reexamine the DEIS evaluation of T4, which we believe draws some conclusions that may not be entirely justified. The DEIS forecasts lower transit ridership for T4 than for the other rail alignments, contradicting other data in the DEIS showing that T4 provides Metro access to a larger number of residents and employees. The DEIS projects the one-way loop alignment would decrease ridership by discouraging a large number of potential riders. We contend, however, that this has been overstated and that the effect on ridership of the additional transfer on one portion of a round trip would be insignificant. (0455, 0455-L –2)

Public Comment: Regardless of the effect on longer transit trips, no other alignment creates any internal transit system within and through Tysons Corner, there we assert that T4 would greatly increase ridership. (0455, 0455-L –3)

Public Comment: The Metro system, like most large transit systems depends on line transfers. Riders from suburban locations are accustomed to transferring lines to get to their destination. The effect of the additional transfer on one leg of a rider's round trip is overstated in the ridership forecasts. Based on the significant difference in station area population and employment, the ridership should be much greater for alignment T4. Regardless of the effect on longer transit trips, no other alignment creates any internal

transit system within and through Tysons Corner, which T4 would. This will also serve to increase ridership. (0084, 0084-L –4)

***Response**: The demand forecasting model used to estimate ridership in the Draft EIS for each of the Metrorail alignment options took into account a number of factors when producing ridership estimates. These factors included overall trip time (including access to the station), station proximity to key employment concentrations, station proximity to residential concentrations, and ease of station access for pedestrians, autos, buses, and other modes. The same model algorithms and procedures were applied to each alternative in order to ensure consistent results. It should be noted that transfers did carry a penalty in calculating trip times. This was because surveys have shown that riders perceive wait times for transfers to be longer than the wait times actually are. Because of this people avoid transfers and will often not make a trip by transit if a transfer is required. This transfer penalty was reflected in the lower ridership numbers associated with Alignment T4. As an example, if Alignment T4 had been the selected LPA, anybody wishing to go east who would have boarded at Tysons Central A or Tysons Central B under T4 would have gone west to the Tysons West station, where they would have then transferred to a westbound train. This added time to the overall trip and included the transfer penalty as well. The same held true for eastbound passengers who would have gone to Tysons Central A or Tysons Central B. Finally anybody making a trip to Tysons from the east and wished to get to Tysons Central C or Tysons Central D (the commercial core of Tysons) would have stayed on the train through Tysons and then transferred at Tysons West for an eastbound trip.*

A more detailed description of the demand-forecasting model was available in the Travel Demand Forecasting Methodology and Results Draft Technical Report (June 2002).

Commuting Costs

Public Comment: Will people use BRT? In Maryland, Montgomery County recently made a number if the County's bus routes free to users. Bus ridership increased about 15 percent during that time, which isn't too bad. It says a lot about the sensitivity of area workers about the costs of commuting, and it also shows what the probable reaction will be from the low to moderate-income workers who have to use the Toll Road if the tolls are increased. (0183, 0183-T-7)

***Response:** As shown in Table 6.3-8 in the Draft EIS, between 47,100 and 49,400 people would have ridden BRT per day in 2025, depending on the BRT alignment option. The fares charged to ride BRT would have been consistent with those charged to ride on the Metrorail system.*

Mode Transfers

Public Comment: Most of the travel is to and from Arlington and Washington, D.C. which requires a physical transfer between bus and MetroRail at West Falls Church. This inhibits transit use but would become a bottleneck if use expanded too much as the projected transit travel is too great for such a transfer. The crowding, congestion and delay would severely inhibit use. (0013, 0013-L –6)

***Response:** Transfers between modes (i.e. bus to rail) would increase rider inconvenience and thus could inhibit transit ridership. This transfer penalty was incorporated into the demand forecasting model used on the project. The bus transfer facility on the north side of the West Falls Church station has been near capacity so additional bus service into the facility could, at some point, result in degraded operations.*

Public Comment: While what I call Tysons rail can be appropriate if accompanied by walkability to Tysons, there is not much hope of what I call Western rail to have a good cost-benefit ratio. In fact, I cannot believe that anyone who seriously proposes the Reston rail segment has both ridden transit regularly and looked at the numbers. According to the 1997 Major Investment Study, a mere 1 percent - that's 1 percent -- of the riders of the combined Tysons-Western rail system would be going to or from Dulles airport itself. In contrast, 50 percent of the users of the combined Tysons-Western rail system

would be residents living west of Tysons, commuting all the way into Arlington and D.C. These users are much better served by existing transfer-free, door-to-door express buses. (0134, 0134-T –7)

> ***Response:*** *One of the primary advantages of the Metrorail Alternative in the Draft EIS versus the existing express service was that trips within the Dulles Corridor would be much better served by transit. As noted, the existing express service does a good job of serving peak direction trips into the region's core, including Arlington, Alexandria, and downtown Washington, D.C. However, the existing bus service does not serve intra-corridor trips well. This was proven by the increase in intra-corridor transit mode share versus the No-Build Alternative. This data was contained in the Travel Demand Forecasting Methodology and Results Technical Report Appendix (June 2002). In all instances except one, transit mode share for intra-corridor trips increased over the No-Build. This increase reflected the much higher quality service available to passengers wishing to make intra-corridor trips (the one Origin/Destination pair where mode share falls is for trips within Tysons. This reflected the fact that some bus service serving intra-Tysons trips is modified as part of the Metrorail Alternative in the Draft EIS).*
>
> *In addition, express bus trips might have still required a transfer to Metrorail because there were multiple destinations within the core. It would not be possible to serve all of these multiple destinations with dedicated express service. The Metrorail system is required for the distribution of passengers to multiple destinations.*

Public Comment: As for commuting to Herndon, Reston, places of business, only 12 percent of the users of combined Tysons-Western rail system would be doing that, or about 6000 people. The number is so low, of course, because due to the highway median station placement and unwalkable sprawl development, the people would have to take shuttle or circulator buses after their metrorail rides. More time-consuming, disruptive transfers. (0134, 0134-T –9)

> ***Response:*** *Total transit trips from areas outside of Reston and Herndon to these areas were calculated by the demand forecasting model for the Draft EIS and were included in the Travel Demand Forecasting Methodology and Results Technical Report Appendix (June 2002). The data showed (for Metrorail Alignment T6 and T9 of the Draft EIS) that the number of transit trip going to Reston is 8,767 on a daily basis. The number of trips going to Herndon on a daily basis is 6,747.*

Public Comment: Most of you have probably seen the articles about how much we love our cars. The presumption that commuters will take buses to Metro is unsupported by either evidence or current practice. They're going to use their cars. (0150, 0150-T –5)

> ***Response:*** *Mode of arrival at each station is one of the pieces of data that is generated by the travel demand forecasting model. The model results do show that driving to a station will be the predominant mode of arrival for stations that do have parking, but the data also show that large numbers of passengers will be arriving via both bus and walking. For instance, based on analyses in support of the Draft EIS, 59 percent of passengers are projected to arrive at the Herndon-Monroe station by auto, but 19% are projected to arrive by bus. At Route 28, the percentages are 18 percent and 44 percent respectively, while at Wiehle Avenue the percentages are 24 percent and 45 percent respectively with the selected LPA).*

Characteristics of Express Bus Service

Public Comment: During the FEIS and rail PE process we need hard work on…Many BRT characteristics should be incorporated in an improved express bus system (pre-payment of fares, rapid boarding of buses at park and ride facilities, provision of real-time bus arrival information, accurate schedules at all stops, improvements in neighborhood service, much improved timed-transfer services, fine-tuning of service to fit changing demand, etc.). (0173, 0213-M –7)

***Response**: The express bus services currently running in the corridor are the responsibility of Fairfax and Loudoun counties, respectively. The Project Team has recommended that the existing transit service provided by Fairfax and Loudoun Counties be further enhanced beyond the bus rapid transit elements that have already been added. Prior to the opening of LPA Phase 1, additional bus rapid transit elements—including the expansion of the Herndon-Monroe park-and-ride lot (site of the future Herndon-Monroe Metrorail Station), ITS enhancements, and facility improvements—should be advanced.*

Mode Shift

Public Comment: Are there any shifts from buses to rail in the forecasted ridership? (0112, 0382-L –19)

Public Comment: How many other Dulles Rail passengers are diverted from Metrobus? It is reasonable to assume this. A 1996 COG study found that of 600,000 Metrorail riders, about 450,000 of them were actually previous bus riders. Hence, most of Metro's ridership is not "new people to transit," but people whose bus service was cut out when rail was extended to various locations. So, how many of your 30,000 to 33,000 new riders/trips are people who would have used Metrobus or the Fairfax Connector service? It is reasonable to assume that besides the drift of passengers from the Orange Line to the Dulles line, is it not possible that some of those 30,000-33,000 trips/boardings in 2025 are former bus users? (0112, 0462-L –28)

Public Comment: What percent of automobile trips will be attracted to each transit alternative for each of the areas? (0147, 0459-L –28)

***Response**: Yes. As presented in the Draft EIS, many of the trips now made by bus in the corridor would shift over to BRT or Metrorail. An important set of these trips would be those riders currently using Fairfax Connector express services to West Falls Church Station. Since the Wiehle Avenue Extension has been identified as the first phase of the Full LPA, this service would be provided by Corridor express bus service that will feed into the Wiehle Avenue Station. The last row in Table 6.1-3 of the Final EIS presents new transit trips, not trips that were attracted from another transit mode.*

Data on the specific number of trips once made by automobile that would shift to transit was not calculated as part of the Draft or Final EIS. However, a very good proxy for this is shown in Table 6.1-5 of the Final EIS. This table shows the changes in mode share (the portion of all corridor trips that are completed by transit). The data in this table show that the Full LPA will increase the transit mode share by approximately 4 percent in Tysons Corner, approximately 3 percent in the Reston area, approximately 3.5 percent in the Herndon/Dulles area, and 1. percent in eastern Loudoun County. These overall increases in transit mode share reflect people shifting from their automobiles to transit.

Need for Clarification of "New Riders" Versus "New Trips"

Public Comment: WMATA and VDRPT also express "new trips" and "new riders" interchangeably. They do not explain why there are 11,000 fewer boardings on three Orange Line stations in 2025 when Dulles Rail is factored in - leading to an assumption that of 53,000 estimated boardings on Dulles rail, 11,000 are not new boardings. WMATA and VDRPT also do not explain if any of the new riders are in fact people new to transit, or just people who formerly used buses. (0112, 0462-L –6)

Public Comment: But it is also difficult to distinguish "new riders" from "new trips" and "boardings" for Metrorail alternatives (T1, T4, T6, T9). It appears the terms new trips and new riders are used interchangeably when in fact new riders refer not to new individuals using the facility but new trips. Under this definition a new transit rider traveling to work and back is counted as two new riders. This is very misleading. (See Vol I Chap 6.3.4.1, Tables 6.3-8 and 6.3-9) For argument purposes, I will work with the

"new riders" numbers, which range from 37,300 to 38,500, or "total boardings" in 2025, which ranges from 31,000 to 33,000. (0112, 0462-L –23)

Public Comment: Lack of Definitive New Rider Estimates. The DEIS fails to provide a count of the number of new individuals estimated to make use of Dulles corridor transit. Data presented as "new riders" is actually the number of new trips. Given that most new riders will make multiple trips per day, DEIS estimates significantly overstate the actual number of new persons likely to use this service. The general public needs a more definitive estimate of actual number of new persons using this system. (0446, 0446-E –4)

> ***Response****: Table 6.3-8 of the Draft EIS did use the terms new riders and new trips interchangeably. The new riders column in the table did not refer to a new person or individual now taking transit (a person would presumably make two trips per day) because of implementation of the BRT or Metrorail Alternative. Rather the column referred to the new number of total trips by riders resulting from implementation of either Metrorail or BRT. The Project Team did not estimate new riders because the number of trips, or boardings, is of greatest relevance for station area planning, operations planning, and the Federal New Starts funding process. The fewer boardings at Orange Line stations reflected the fact that Dulles Corridor riders now boarding on the Orange Line would access rail at Dulles Corridor stations in the future. This shift of existing riders was not reflected in the new riders (or new trips, as explained above) column in Table 6.3-9 of the Draft EIS. The numbers in this column reflected entirely new transit trips.*

Model Forecasting Programs

Public Comment: COG version 2 is now available and validated. The project Team should rerun numbers using Version 2, and compare the results with the NVMISM model. (0112 10-1)

> ***Response:*** *For the analysis in support of Final EIS and New Starts criteria, the Project Team chose to retain the NVMISM travel demand forecasting model of the Draft EIS.*

Service Qualities

Public Comment: Express rail service that would bypass Tysons Corner was properly dismissed, but it was not made sufficiently clear that express service would destroy service quality for everyone while increasing costs. Noted that headway degradation and overloaded local versus express trains due to demand for travel to Tysons. Also noted “bunching” effect of differences in travel times for local versus express service. (0013 10-1)

> ***Response****: In response to the above requests, the Project Team evaluated the suggested alternative using the same social, environmental, economic, and transportation factors used for the evaluation of alternatives documented in the* Final Alternatives Analysis Report *(May 2001). This new alternative, called Alignment T12, was not recommended for further consideration in the Dulles Corridor Rapid Transit Project. The reasons for this recommendation are summarized below.*
>
> *Alignment T12 would have numerous deficiencies relative to the alternatives previously considered in the Final EIS. These deficiencies include increased costs, substantial impacts associated with shifting roadways to accommodate the alignment, reduced ridership, and operational complications.*
>
> *The full evaluation for Alignment T12 is documented in a technical memorandum, now part of the Final Alternatives Analysis Report Addendum (October 2004).*

B. Supplemental Draft EIS Comments

Regional Agency Comments

Coordination with Dulles Airport Layout Plan

Regional Comment: Regarding issues to be resolved (page 10-5), it should be noted that the current Airport Layout Plan (ALP) for IAD dated February 2003 does include a rail alignment and a proposed rail yard on Airport property. Although the rail alignment shown on the ALP in the area northeast of the Main Terminal differs somewhat from that shown in the SDEIS, the Airports Authority is committed to working with the Virginia Department of Rail and Public Transportation to facilitate the FAA approvals necessary for the project.
0131 0166-6

> ***Response:*** *The current alignment of the Full LPA was included in an update to the Dulles International Airport ALP that was approved by FAA in March 2004.*

Public Comments

High Rail Cost

Public Comment: Rail simply costs too much and does too little.
0061 0069-15

> ***Response:*** *Comment noted. Your participation in the public hearings and your opinions regarding what you believe would best serve the needs of the Dulles Corridor and region are important to us and were considered by decision-makers in selecting the LPA.*

No Build is Not Adequate

Public Comment: 4.4 buses will be needed in each direction to carry what Dulles Rail would have carried. Since it is not possible to build 0.4 lane, fire lanes will be necessary, each way. Ten lanes from Washington DC to Herndon VA would cost very roughly $11 billion, over five times as much as Dulles Rail. People need to know. No build is not a choice unless we want to tolerate gridlock, economic stagnation or decline, air pollution, loss of federal financial aid we paid for and intolerable living conditions.
0054 0055-5

> ***Response:*** *Comment noted. Your participation in the public hearings and your opinions regarding what you believe would best serve the needs of the Dulles Corridor and region are important to us and were considered by decision-makers in selecting the LPA.*

Comments to FTA

Public Comment: Defective DEIS: To the extent the SDEIS relies on the DEIS, we incorporate our comments in our letter to The Honorable Jennifer Dorn, Administrator, Federal Transit Administration, dated Nov. 4, 2003, [Re: New Starts Program: Pending Va. DRPT/WMATA Application for Authorization Preliminary Engineering Dulles Corridor Rapid Transit Project] with attachments.
0072 0150-2

> ***Response:*** *Comment noted. Your participation in the public hearings and your opinions regarding what you believe would best serve the needs of the Dulles Corridor and region are important to us and were considered by decision-makers in selecting the LPA.*