CLRP Aspirations Scenario
Transit Operating Assumptions

BRT Network:

- A collection of 10 BRT routes operating on toll lanes and PCN arterials.
- A supporting set of circulator bus services that provide transit connections between BRT stations and zones receiving jobs and households from the land use component.
- Toll network make-up
    - Converted HOV lanes plus new lanes added, resulting in 2 lanes in each
    - direction.
    - No new capacity in the District: Tolls placed on existing freeways and
    - selected arterials.
    - Some exurban corridors were converted to reversible lanes.
    - Tolls on all NPS Parkways

Vehicles:

- 60-foot articulated vehicles, 5 doors, seating capacity for 60 passengers.

Travel Speeds:

- Assumed 45 MPH travel speed on managed lanes
- Assumed 15 MPH travel speed on priority corridor arterials
- Speeds include stops

Stations:

- Off-board fare payment at all stops/stations
- All-door boarding at suburban stations.
- Urban stops can consider all-door boarding (honor system) or front-only
- boarding.
- These factors only impact resulting travel speed, described above.
- Parking only available at "new" BRT stations outside of activity centers.

BRT Level of Service

- 12-minute headways during AM and PM peak
- 30-minute headways during off-peak
- 10-minute peak headways for circulators
- Direct ramp from toll lane to transit station
- These factors only impact resulting travel speed, described above.

Fare Structure:

- Maintain fare zone system for "non-Metrorail" currently the model.
- Would charge same fare as current commuter rail and bus fares between zones.

Existing "Competing" Bus Service

- All existing parallel bus service will be maintained in the scenario. Further analysis may evaluate the impact of reducing "competing" bus service levels.

Developing the CLRP Aspirations Scenario

The purpose of the CLRP Aspirations scenario is to create an ambitious, yet realistic vision for land use growth and transportation service in the Washington region. More specifically, the scenario seeks to better align land use and transportation planning with the goals of the TPB Vision and of the previous RMAS initiative. These goals include creating "economically strong regional activity centers with a mix of jobs, housing, services, and recreation in a walkable environment", "a web of multi-modal transportation connections which provide convenient access", "a user-friendly, seamless system", and a combination of land use and transportation options that result in the "reduction of per capita VMT." In addition, the scenario seeks to maintain the principles of RMAS, such as capitalizing on existing transit infrastructure through transit-oriented development, addressing geographic imbalances in development, and reducing congestion and commute times by getting jobs and housing closer together. The scenario in its completed form is intended to achieve these goals to the extent possible by creating highly accessible and developed activity centers served by an extensive transit network. It could serve as a regional unconstrained long-range transportation plan in anticipation of the full 2010 CLRP update.

The scenario begins with past TPB studies, including the five transportation and land use scenarios of RMAS and the three scenarios of the Value Pricing Study. These two studies examined various "what ifs," where a growth or policy possibility was studied for its effects on various transportation conditions. This new scenario takes these "what ifs" a step further by using the results of these studies to create a vision for the region that strives to meet the TPB's goals.

The RMAS scenarios examined five different methods of bringing jobs closer to housing and thus reducing VMT: adding more households to the region, moving households from outer jurisdictions to inner jurisdictions, moving jobs from inner jurisdictions to outer jurisdictions, concentrating development around transit, and moving development from the western half of the region to the eastern half. The results illuminated particularly successful strategies, such as adding even more households to the region than was projected and directing them into regional activity centers, but did not achieve as great of a change in travel demand (particularly the reduction of VMT) as may have been expected. The Value Pricing Study resulted in three scenarios that showed that pricing existing and new capacity could provide a viable revenue source for new highway and transit capacity. The study also left room for further study of high quality transit operating on toll lanes in the region.

Based on the principles and lessons from these two studies the CLRP Aspirations scenario has been built with three elements: a land use component, a pricing component, and a transit component, which have been developed concurrently. In order to maintain a realistic foundation, the CLRP Aspirations scenario is limited by two primary criteria: (1)

proposed densities and growth shifts must be "within reach" in order to be considered for possible inclusion in the Cooperative Forecasts; (2) proposed transportation projects should be financially within reach by utilizing realistic funding sources, such as local and/or regional tax revenues, financial contributions from developers, revenue streams from pricing selected facilities, and possible new federal funding.

Land Use Component

In order to achieve the goals of the TPB vision and RMAS, the land use component of the CLRP Aspirations scenario centers on strategic shifts in projected land use growth to concentrate both jobs and housing in activity centers and around existing or planned transit infrastructure. The current demographic forecast for the region (Round 7.1 Cooperative Forecast), shows that only about 45% of new jobs between 2015 and 2030 and about 30% of new households will be added to activity centers. Therefore, there is growth that can be better managed and concentrated to achieve the region's development goals.

However, as evidenced by RMAS, the amount of growth available to shift into existing activity centers is limited. In this study, the growth available for redistribution is limited by assuming that anything planned before 2015 is in the pipeline. This constraint requires a highly strategic framework for shifting growth that directly seeks to achieve the goals within the TPB Vision. This framework is comprised of a series of goal-oriented "rules" for shifting growth. All activity centers and transportation analysis zones (TAZs) with current/planned transit infrastructure will receive the necessary amount of residential and employment growth to be (1) transit supportive, (2) walkable, and (3) mixed use. These areas will be the scenario's "receiving zones."

(1) Transit Supportive:

All receiving zones will have varying residential and employment density goals that reflect what is realistic given their current urban form, but that are high enough to support varying levels of transit service, from local bus service with 30 minute or more headways to rapid transit with 5 minute or less headways. These assessments will be based on the best available research linking density and urban form to transit service, such as the example below in Table 1 from the Institute of Transportation Engineers, 1989:

Table 1: ITE Relationships Between Transit Frequency and Land-Use Density

Transit Mode	Frequency of Service	Density Threshold
Bus	60 Minute Headway	4-5 du/acre
	30 Minute Headway	7 du/acre
	10 Minute Headway	15 du/acre
Light Rail	5 Minute Peak Headway	9 du/acre
Rapid Transit	5 Minute (or Less) Peak Headway	12 du/acre
Commuter Rail	20 trains/day	1-2 du/acre

(2) Walkable:

Similarly, all receiving zones will have varying residential and employment density goals that reflect what is realistic given their current urban form, but that are high enough to

meet regional criteria for walkability. This region has several models of walkable urban centers, each with varying levels of density and scale of development. Two models that can be used to frame different density goals for higher density activity centers and lower density activity centers are available: the Rosslyn-Ballston Corridor, which has high densities of 20 du/acre or more and Old Town Alexandria, which has lower, but walkable densities of 7-10 du/acre.

(3) Mixed Use:
Lastly, all receiving zones will have varying goals for jobs/housing balance that reflect what is realistic given their current urban form. Of the five different types of activity centers (DC Core, Mixed Use, Employment Center, Suburban Employment Center, and Emerging Employment Center) only Mixed Use centers have a residential density requirement. The three types of employment centers have varying levels of density, but in some instances the residential density can be very low, such as only one unit per acre. Therefore, the goal for these types of activity centers is to begin approaching a balance of housing, employment and services. For other centers where the current densities are higher, the goal will be to create a truly balanced mix of uses, enabling a resident to walk to a myriad of destinations. A jobs/housing balance for the region will also be improved by using the strategy of the More Households RMAS scenario, in which additional households were added to the region's 2030 forecast. Jobs/housing balances will also be maintained at the jurisdictional level to guide the inter-jurisdictional shifts of housing and jobs.

As stated in each of the above categories of goals, the density and jobs/housing goals for each receiving zone will vary according to existing or planned conditions. It is clear that some activity centers that currently have lower densities cannot support the density of the DC Core or the Rosslyn-Ballston Corridor, nor is there enough projected growth between 2015 and 2030 to bring the densities of the 58 regional activity centers to those levels. Therefore, the concept of the receiving zone will be disaggregated further to represent the five types of activity centers and zones not in an activity center but with transit infrastructure (either metrorail/transitway or commuter rail), each with different, realistic density and jobs/housing balance goals.

By concentrating growth strategically in these different types of zones, the goals of the TPB Vision as well as the principles of RMAS can be better achieved. Not only is much future growth directed into activity centers, but with the increased growth, the activity centers themselves can be more walkable and amenable to greater, high quality transit infrastructure. Additionally, because growth is directed to areas with current transit infrastructure, great progress is made toward capitalizing on transit assets and concentrating increased development in the eastern portion of the region in order to address current development imbalances.

Transportation Component

The transportation component of the CLRP Aspirations scenario focuses on providing increased accessibility to the areas receiving the growth shifts described in the previous

section: the regional core and activity centers. This accessibility will be provided for transit riders, car-pools and those willing to pay tolls to drive low-occupant vehicles on variably priced lanes and facilities.

Activity centers and transit station areas will have increased local transportation infrastructure to facilitate the shifted growth. It is assumed that local streets and circulator transit services would be funded by various sources, such as special tax districts, tax-increment financing or developer proffers.

The transportation component consists of two interconnected components: a network of variably priced highway lanes, and high-quality transit service. The transit services to be studied include commuter rail and transit-way projects as well as a regional network of bus rapid transit (BRT) operating on the network of variably priced highway lanes.

Pairing the priced lanes with BRT service provides the potential for great synergy: toll lanes function as dedicated right-of-way for the bus rapid transit vehicles, and toll revenue offsets the cost of BRT facilities and service. BRT services reduce the demand for the priced lanes, allowing them to operate more smoothly and preventing congestion. Both the BRT and priced lanes should provide mode-shift incentives, providing congestion relief to the existing general purpose lanes.

Regional Network of Variably Priced Highway Lanes

In February, 2008, the TPB completed an 18-month study of networks of variably priced lanes for the Washington region. The study evaluated the demand and revenue forecasts for different combinations of pricing of newly constructed and existing lanes. One such network included new lanes on all freeways outside the District and selected urban arterials outside the Capital Beltway in addition to the tolling of selected existing facilities: US National Park Service Parkways and all freeways and river crossings in the District. This network resulted in large revenue forecasts that approached the estimated cost of constructing and operating the toll facilities.

This regional network of variably priced lanes will be the basis for the CLRP Aspirations scenario. The network will be modified to remove the dedicated interchanges between the priced and general purpose road networks that do not provide access to regional activity centers. This should result in a large reduction of the total construction costs of the toll network while focusing accessibility improvements on the regional activity centers.

Regional Bus Rapid Transit Network Operating on Toll Lanes

A high-quality network of bus rapid transit (BRT) service will layered onto to the regional network of priced lanes. This high-quality transit will use the priced lanes as its dedicated right-of-way, allowing for rail-like travel speeds and levels of service. The BRT network will provide service to BRT stations in the regional activity centers as well as connections to Metrorail stations and existing park-and-ride lots via dedicated access ramps. The station areas can be considered the focus areas for the increased density described above.

Bus transit service levels will depend on the assigned target densities specified in the Land Use Component. Lines connecting to the core will have headways between 10 and 12 minutes (5 or 6 trips per hour). Lines connecting less-dense activity centers will operate less frequently.

Bus transit operating on freeway lanes will provide service to bus stations via dedicated access ramps. All stations will include BRT design standards and technologies (off-board fare payment, level-boarding, multi-door access) to reduce the dwell time. This reduced dwell time, dedicated access ramps and pseudo-dedicated right-of-way should result in an average BRT operating speed of approximately 45 mph where the transit service operates on freeway lanes.

Within the urban core, where few priced lanes will be evaluated, the bus transit service will operate in mixed traffic lanes along selected priority corridors as identified by WMATA in its Priority Corridor Network plan. Technologies and techniques such as transit signal priority, queue jump lanes and selective dedicated bus lanes are being considered for these Metrobus corridors. Along these corridors, an approximate average speed of 15 mph will be assumed.

Bus stations will also be provided to areas recommended by advisory groups (Regional Bus Subcommittee and Scenario Study Task Force) consulted in the development of this scenario. These locations include Fort Detrick (Frederick Co.), Westphalia (Prince George's Co), Fort Belvoir (Fairfax Co.) and Landmark (City of Alexandria).

Selected RMAS Projects

Finally, selected projects previously evaluated under RMAS will be included in this scenario. These selected projects provide high quality transit service to activity centers not connected to the network of variably priced lanes and therefore not served by the BRT network to be evaluated. The included RMAS projects are:

- Purple Line Extension from Silver Spring to New Carrollton
- Georgia Avenue Transitway, from Glenmont to the Intercounty Connector (ICC)
- US 1 Transitway, from King Street Metrorail station to Potomac Mills via Fort Belvoir and Woodbridge.
- VRE Extension from Manassas to Haymarket, via "Innovation" and Gainesville.