

## APPENDIX D

### TRANSIT MODELING MEMORANDUM



## Memorandum

To	Mr. Steve Thieken, Burgess & Niple	Page 1
CC	Mr. Bill Austin, Morgantown Monongalia Metropolitan Planning Organization Mr. David Bruffy, Mountain Line	
Subject	Transit Scenario Methodology	
From	Jamie L. Snow	
Date	November 27, 2012	Project Number 60276837

The purpose of this memorandum is to document the steps taken to create a transit alternative for the 2040 Long Range Transportation Plan. The model currently does not contain a mode choice step. The methodology described below was used to reduce the vehicle trip table assigned during highway assignment so that the impacts of a transit scenario could be considered.

### Methodology

1. First, the bus routes listed on Mountain Line's website were compared to the 2040 model network to create a list of traffic analysis zones (TAZ) through which each bus route travels.
2. Using the headways for each route, the number of buses in each zone during an average weekday hour could be calculated. This effectively weights the zones by how much transit activity they have.
3. If a zone had at least 1 bus per hour it was assumed that a percent of the vehicle trips associated with that zone were, in actuality, transit trips. To create the transit percentages, or mode split, an elasticity equation was implemented that assumed the percentage of transit trips would increase proportionally with increased service. As the number of buses in a zone increases, the mode split for that zone becomes more transit oriented.
4. These mode split percentages by zone were then applied to the vehicle trip table to determine the number of transit trips.
5. To verify assumptions, the annual reported ridership for Mountain Line was obtained from The National Transit Database and converted it to an average weekday number of transit trips.
6. Steps 3-5 were an iterative process until the number of calculated transit trips removed from the vehicle trip table matched the number of transit trips estimated using The National Transit Database. This set the base mode split percentages and the elasticity used in the equation.
7. Using the same process, the three new bus routes in the transit scenario were added and the number of additional transit trips that could be removed from the trip table was calculated. It was assumed that each new route would add 4 buses per hour to each zone that the route traveled through (15 minute headways). The additional transit trips were then removed from the vehicle trip table.
8. The reduced vehicle trip table was then used in the highway assignment step.