SCENARIO D01
LIGHT RAIL, FEEDER BUS ROUTES, AND INCREASE FREQUENCY OF EXISTING BUS SERVICE

This scenario studies the effects on U.S. Route 22 travel of providing a light rail transit (LRT) line on its own guideway, providing express bus routes, and increasing the frequency of existing bus service.

The light rail line begins in the Iron Run Industrial Park area, north of U.S. Route 22, in the western portion of Lehigh County and ends in downtown Easton in the eastern portion of Northampton County. Between these two points the line passes through Air Products & Chemicals, Inc., Lehigh Valley Hospital, Downtown Allentown, Bethlehem, and Easton, and Northampton County Community College.

A second LRT line covers the areas of Lehigh University, the proposed Bethlehem Works site, downtown Bethlehem, Lehigh Valley Airport, Lehigh Valley Mall, and stops at downtown Allentown.

Two new feeder express bus routes are also proposed. The bus routes are used to attract riders not living in the direct vicinity of the LRT line to get to and from the LRT line stops.

In addition to the express bus routes, the frequency of the existing bus routes has been increased to 10 minutes in the morning and evening peak periods, 6-9 AM and 4-7 PM, respectively, and 20 minutes in the off-peak periods.

Scenario D01
Transit Improvements: Light Rail on its Own Guideway
Feeder Bus Routes, & Increase Frequency of Existing Bus Service

SCENARIO D01: MEASURES OF EFFECTIVENESS RELATING TO PROJECT NEEDS

Improve Safety on U.S. Route 22

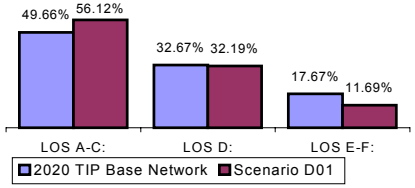
The intent of this scenario is to take enough traffic off the U.S. Route 22 corridor so as to increase gaps between vehicles which, in turn, would reduce the chances of an occurrence of crashes. However, the travel demand model run indicates that the transit ridership did not increase significantly enough to reduce traffic volumes on U.S. Route 22. These results combined with no interchange improvements on U.S. Route 22 lead to no expected safety improvements on U.S. Route 22.

IMPACT: Neutral

Reduce Congestion on U.S. Route 22

Percent of Vehicle Miles of Travel (VMT) by Level Of Service (LOS)
Route 22- PM Peak Hour

	2020 Base	Scenario D01
LOS A-C:	49.66%	56.12%
LOS D:	32.67%	32.19%
LOS E-F:	17.67%	11.69%



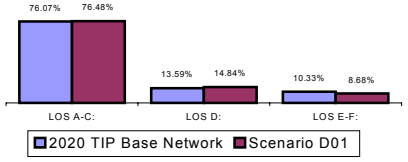
- Comparing the 2020 TIP base year with light rail and express bus routes scenario, the level of travel occurring under desirable traffic conditions of LOS A through C in the afternoon peak hour has improved by 6 percent and a reduction from 18 percent to about 12 percent is achieved in the breakdown traffic conditions of LOS E and F on U.S. Route 22.

IMPACT: Marginal

Recommended improvements must not increase congestion on regional road network

Percent of Vehicle Miles of Travel (VMT) by Level Of Service (LOS)
All Lehigh Valley Region Roads - PM Peak Hour

	2020 Base	Scenario D01
LOS A-C:	76.07%	76.48%
LOS D:	13.59%	14.84%
LOS E-F:	10.33%	8.68%



- The level of travel occurring under desirable traffic conditions of LOS A through C in the afternoon peak hour shows less than 0.5 percent improvement in the overall Lehigh Valley roads and a reduction of less than 2 percent is achieved in the breakdown traffic conditions of LOS E and F in the Lehigh Valley region. This is a very small improvement compared to the infrastructure investment required for this scenario.
- The total transit ridership after these improvements is about 40,000 riders from 12,000 riders for the 'no build' scenario.

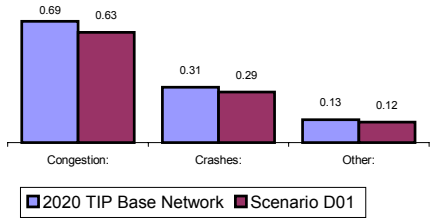
IMPACT: Positive

Reduce Impacts of incidents on U.S. Route 22 traffic flow

Source of Delay
Route 22- PM Peak Hour

Source of Delay	2020 Base Delay*	Scenario D01 Delay*	Difference
Congestion:	0.69	0.63	8.70%
Crashes:	0.31	0.29	6.45%
Other:	0.13	0.12	7.69%
Total Delay	1.13	1.03	8.85%

** Annual Delay Measured in Millions of Hours*



- The source of delay due to various types of incidents is used to gauge the progression of traffic on U.S. Route 22 and is measured in millions of hours per year for this scenario. Annual delay caused by congestion has decreased by 9 percent on U.S. Route 22, delay due to crashes has also decreased by approximately 6 percent, and delay due to breakdowns decreased by 8 percent on U.S. Route 22.

- Total delay due to all incidents on U.S. Route 22 has been reduced by approximately 9 percent from the "no-build" condition.

IMPACT: Positive

Support Land Use and Redevelopment Goals of Regional Comprehensive Plan

Providing light rail transit and express bus routes as well as increasing frequency of existing bus service encourages use of transit services in the Valley without adding more roads. This supports the comprehensive plan goals of providing an alternative to the single-occupancy vehicle to meet the objectives of reduced air pollution and efficient road use and to provide adequate mobility for the elderly, the handicapped, the poor, and those who do not own automobiles.

IMPACT: Positive

FINDINGS/CONCLUSIONS

This scenario is one of the least beneficial in reducing major congestion areas and delay on U.S. Route 22 as well as in the entire Lehigh Valley region. The addition of light rail transit line and improvements to the bus service does significantly increase ridership on these systems. These improvements do not adequately address the traffic problems on U.S. Route 22. This scenario does not adequately meet all five needs of this project.