

SCENARIO F02
WIDEN U.S. ROUTE 22 TO 6 LANES AND INTERCHANGE IMPROVEMENTS
WIDEN I-78 TO 6 LANES AND INTERCHANGE @ I-78/PA 378
WIDEN S. 4TH STREET

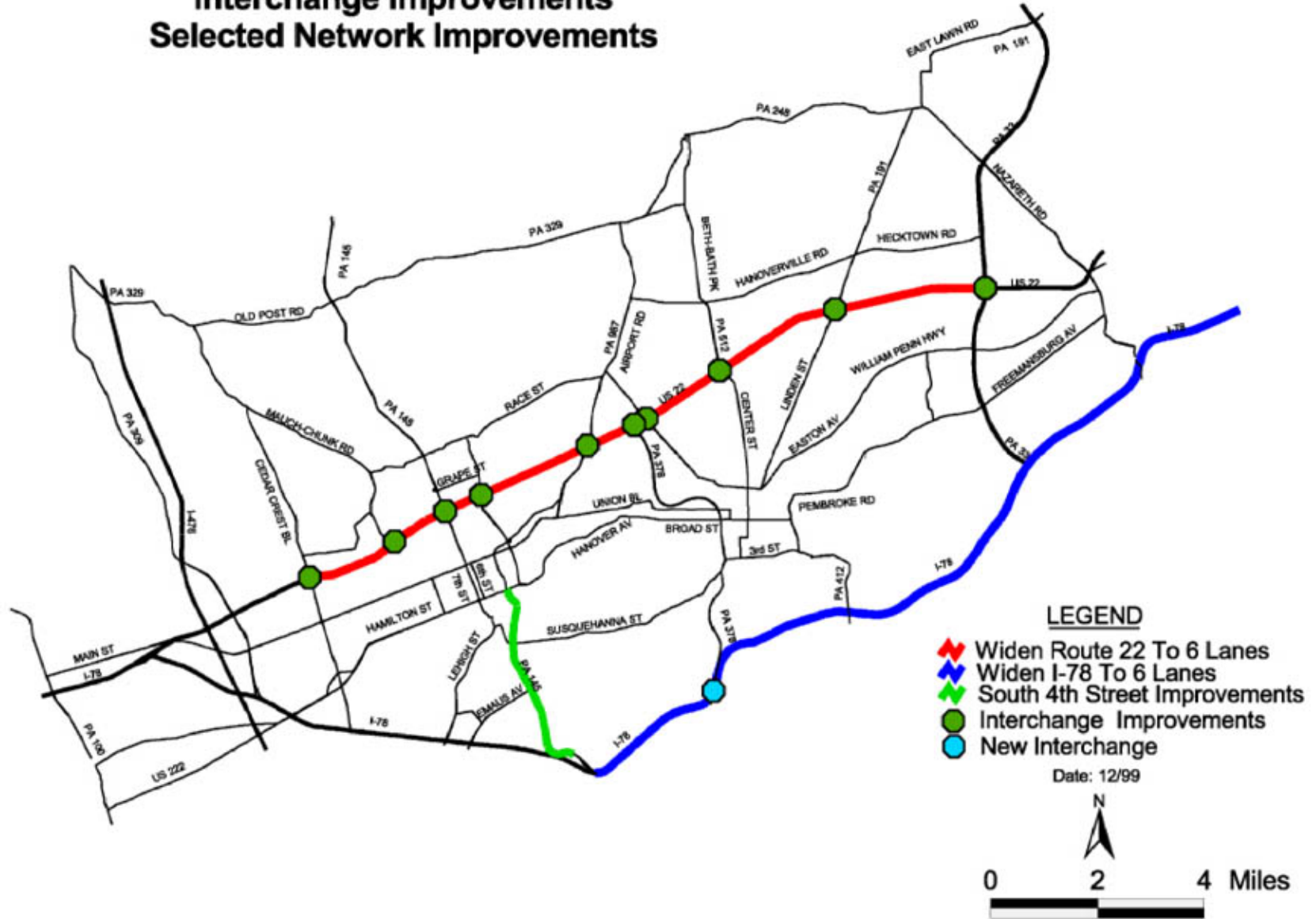
This scenario studies the effects of:

- Widening U.S. Route 22 to six lanes as well as improving interchanges from Cedar Crest Blvd. in the west to Route 33 in the east;
- Widening portions of I-78 from four lanes to six lanes from Route 309 to the New Jersey border;
- Addition of an interchange at I-78 and PA 378; and
- Widening of S. 4th Street from I-78 to Hamilton Blvd.

The intent of this scenario is to limit U.S. Route 22 widening to six lanes by providing capacity on alternate roads.

Scenario F02

Combination Improvements: Widen Route 22, Widen I-78, Interchange Improvements Selected Network Improvements



Prepared by: Lehigh Valley Planning Commission

SCENARIO F02: MEASURES OF EFFECTIVENESS RELATING TO PROJECT NEEDS

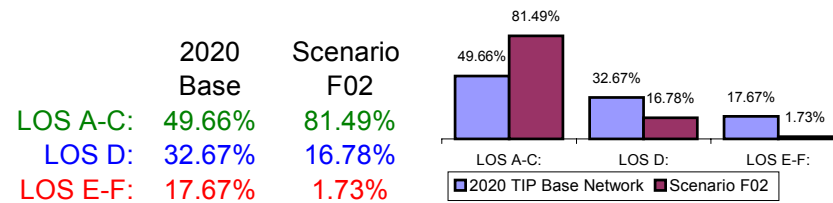
Improve Safety on U.S. Route 22

Along with the added lanes, the length of deceleration and acceleration lanes at interchange ramps will increase with the planned interchange improvements in this scenario. The addition of more lanes should accommodate more traffic with wider gaps between vehicles both on U.S. Route 22 and I-78. This will allow more room to maneuver a vehicle should traffic conditions change unexpectedly, resulting in crash reduction.

IMPACT: Positive

Reduce Congestion on U.S. Route 22

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

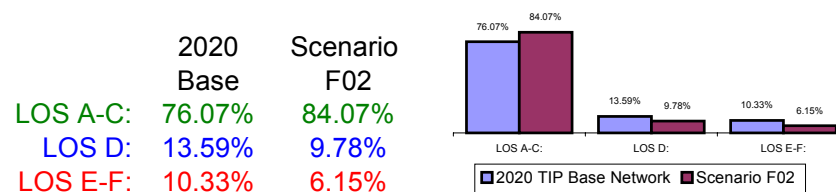


- Comparing the 2020 TIP base year with the combination scenario, the level of travel occurring under desirable traffic conditions of LOS A through C in the afternoon peak hour has improved by 32 percent and a reduction of 16 percent is achieved in the breakdown traffic conditions of LOS E and F on U.S. Route 22.

IMPACT: Positive

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**



- The level of travel occurring under desirable traffic conditions of LOS A through C in the afternoon peak hour has improved by 8 percent and a reduction of 4 percent is achieved in the breakdown traffic conditions of LOS E and F in the Lehigh Valley region.

IMPACT: Positive

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

Source of Delay	Source of Delay		Difference
	2020 Base Delay*	Scenario F02 Delay*	
Congestion:	0.69	0.46	32.65%
Crashes:	0.31	0.19	40.13%
Other:	0.13	0.06	52.71%
Total Delay	1.13	0.71	37.02%

* Annual Delay Measured in Millions of Hours

Source of Delay	2020 TIP Base Network (Millions of Hours)	Scenario F02 (Millions of Hours)
Congestion	0.69	0.46
Crashes	0.31	0.19
Other	0.13	0.06

- 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. Annual delay caused by congestion has decreased by 33 percent on U.S. Route 22, delay due to crashes has decreased by 40 percent, and delay due to breakdowns decreased by 53 percent on U.S. Route 22.
- Total delay due to all incidents on U.S. Route 22 has been reduced by 37 percent from the “no-build” condition.

IMPACT: Positive

Support Land Use and Redevelopment Goals of Regional Comprehensive Plan

This scenario encourages urban redevelopment of facilities within the cities by improving key roads that will provide safe and efficient movement of traffic to and from these major generators of traffic. The improvement of I-78 and interchange at I-78 and Route 378 will give motorists an easier access to and from south Bethlehem and the improvement of south 4th Street in Allentown will improve an important route into downtown Allentown. These improvements will also motivate developers to redevelop urban areas, thereby preserving important farmland.

IMPACT: Positive

FINDINGS/CONCLUSIONS

This scenario enables traffic on the overall Lehigh Valley network to move more efficiently. The interchange improvements along with widening to six lanes on U.S. Route 22 will have the added benefit of safety and reduction of delay due to incidents. A comparison of benefits derived from this scenario with those of Scenario A10 (widen U.S. Route 22 to six lanes from Cedar Crest Blvd. to Route 33) show very similar results. This suggests that the improvements in this scenario beyond widening U.S. Route 22 (i.e., improvements to South 4th Street from Hamilton Street to I-78, widening I-78 to 6 lanes from South 4th Street to the New Jersey border, and the addition of an interchange at I-78 and Route 378) have little direct benefit to U.S. Route 22 travel conditions. These off-corridor improvements however, would have independent utility, i.e., could stand on their own merits. Scenario A10 and Scenario F02 both meet the needs of this study. However, comparison of both of these scenarios shows that Scenario A10 requires fewer improvements to the existing infrastructure for the same benefits.