



Potential Traffic & Circulation Impacts

November 6, 2002

**Partners' Roundtable Meeting
West Windsor Township Senior Center
West Windsor, New Jersey**

Presentation Outline

- **Overview & Description of Objectives & Performance Measures (J. Carnegie)**
 - Question & Answer
- **Summary of Findings & Observations by Objective & Performance Measure (D. Schellinger)**
 - Question & Answer
- **Summary of Findings & Observations by Major Component (D. Schellinger)**
 - Question & Answer
- **Discussion**

The background image shows a street scene with a railroad crossing sign on the left, a white bus in the foreground, and a white car on the right. The scene is slightly faded and has a soft focus. The word "OVERVIEW" is written in large, blue, italicized, serif font across the center of the image.

OVERVIEW



Critical Questions

1. How will the alternatives affect traffic and circulation patterns?
2. How will the alternatives impact the natural environment?
3. How will the alternatives impact the built environment?

Purpose of Presentation

- To review preliminary findings and observations relative to how the alternatives will impact traffic and circulation in the Penns Neck area and its environs.
 - Findings & observations by transportation objective (performance measures)
 - Findings & observations by major component

Presentation Tools

- **Table 1:** Summary of Potential Traffic Impacts (Comparative symbols)
- **Table 2:** Summary of Potential Traffic Impacts (Data)
- **Other:**
 - List of project Goals and Objectives
 - Alignment graphics for each alternative
 - Table of Alternative Major Components
 - Supplemental Data Document






Presentation Tool Design

Project Goals & Objectives

Performance Measure
(e.g., VHT, travel time, etc.)

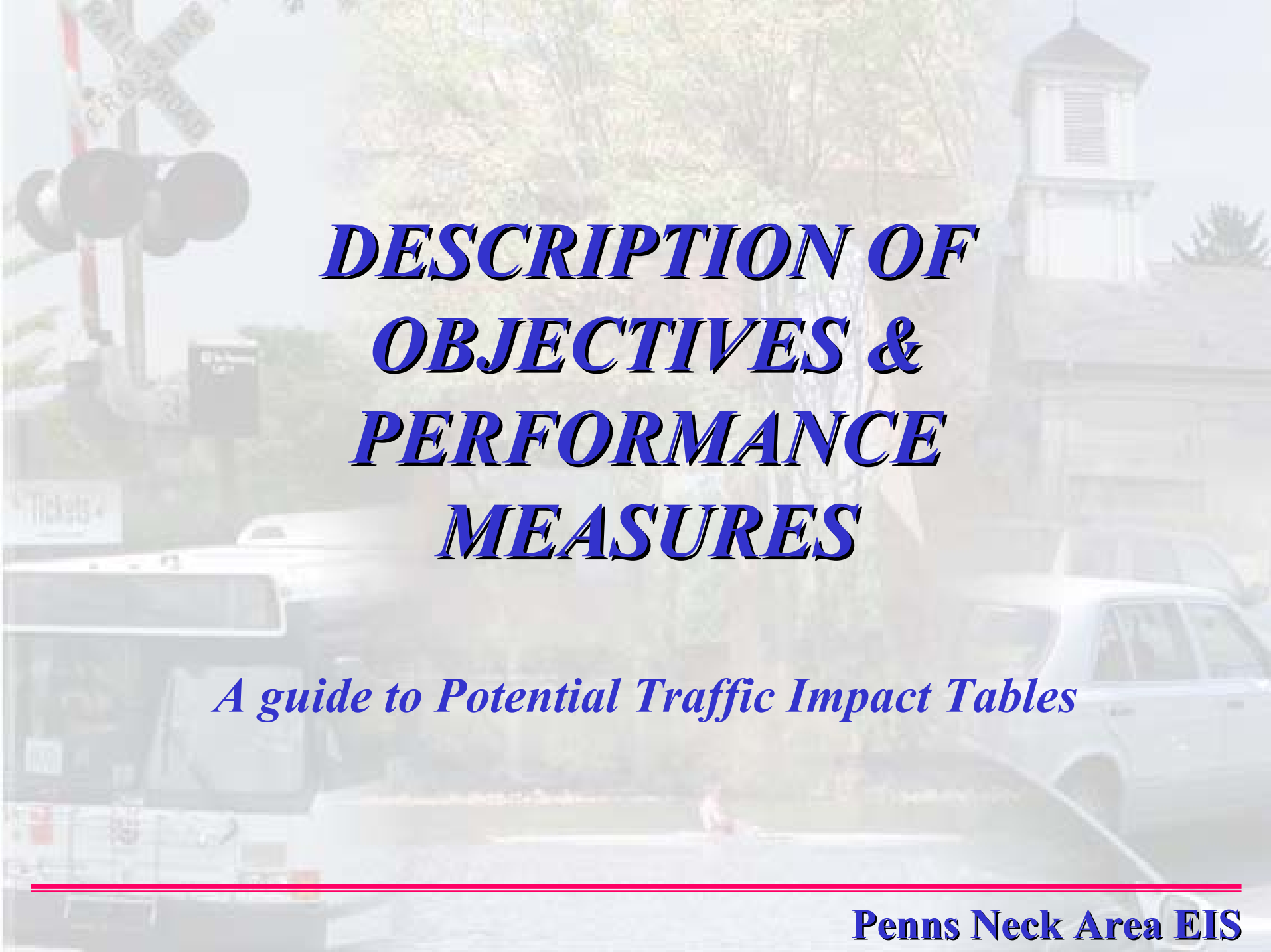
Data
(Table 2)

Comparative Scale

				
Best	Better	Good	Fair	Poor

Presentation Tool Design

- “Consumer Reports” format
- Performance scales vary by measure
- Assessment based on 2028 AM Peak Hour traffic in the Core Area of analysis
- Alternatives compared to conditions under the No-build alternative
 - No-build alternative includes significant growth in employment and population and numerous planned improvements throughout primary and secondary study area, by the year 2028.
 - No-build, C-series and G-series Alternatives assume constrained development of the Sarnoff property

The background of the slide is a faded, light-colored photograph of a street scene. On the left, a railroad crossing sign is visible, with the words 'RAILROAD' and 'CROSSING' on the arms. Below the sign, a white bus is partially visible. In the center, there are trees and a building with a steeple. On the right, a white car is parked. The overall scene is bright and somewhat washed out.

***DESCRIPTION OF
OBJECTIVES &
PERFORMANCE
MEASURES***







A guide to Potential Traffic Impact Tables

Objective 1: Reduces travel delay and rate of growth in congestion

- **Performance Measures:**

- Vehicle hours traveled (VHT)
- VHT under congested conditions
- Vehicle Miles Traveled (VMT) under congested conditions

- **Performance Scale:**







SCALE FOR OBJECTIVE 1					
Reduces travel delay and congestion					
					
Best >45%	Better 36-45%	Good 26-35%	Fair 15-25%	Poor <15%	Increases congestion

Objective 2: Improves flow of traffic on Route 1

- **Performance Measure:**

- Change in average travel time (Alternative vs. No-build) between Carnegie Center Blvd. in West Windsor and Scudders Mill Road in Plainsboro.

- **Performance Scale:**

SCALE FOR OBJECTIVES 2-3					
Reduces travel time					
					
Best >25%	Better 21-25%	Good 16-20%	Fair 10-15%	Poor <10%	Increases travel time

Objective 3: Improves flow of traffic on east-west routes

- **Performance Measure:**

- Change in average travel time (Alternative vs. No-build) between the intersection of CR571 and Clarksville Road in West Windsor and Nassau Street in Princeton in the vicinity of:




- Alexander Road
- Washington Road
- Harrison Street

- **Performance Scale:**

SCALE FOR OBJECTIVES 2-3					
Reduces travel time					
●	◐	○	◑	●	●↑
Best >25%	Better 21-25%	Good 16-20%	Fair 10-15%	Poor <10%	Increases travel time

Objective 4: Reduces intersection delays when crossing Route 1

- **Performance Measure:**
 - Average intersection delay for east-west travelers approaching and crossing Route 1 at:
 - Alexander Road
 - Washington Road
 - Harrison Street
- **Performance Scale:**

SCALE FOR OBJECTIVE 4		
Average intersection delay		
		
Best	Good	Poor
LOS A-B (<20sec)	LOS C-D (20-55 sec)	LOS E-F (56-80+ sec)

Objective 5: Ensures equitable balance of traffic on east-west routes

- **Performance Measures:**

- Total two-way traffic volume west of Faculty Road; and
- Percent distribution of total two-way traffic west of Faculty Road on:
 - Alexander Road
 - Washington Road
 - Harrison Street

- **No Performance Scale – Raw data presented**

Objective 6: Change in traffic volume on key routes

- **Performance Measure:**

- Increase/decrease in traffic volumes:

- Core area between D&R Canal and NEC rail line
- West of D&R Canal
- Vicinity of NEC rail line

- **Performance Scale:**

SCALE FOR OBJECTIVE 6				
Decreases traffic			Increases traffic	
●	◐	○	◐↑	●↑
Best >30	Better 15-30%	Good 0-15%	Fair 1-15%	Poor >15%



Objective 7: Discourages heavy truck through movements on local east-west streets

- **Performance Measure:**
 - Heavy trucks as a percent of total traffic crossing the D&R Canal at:
 - Alexander Road
 - Washington Road
 - Harrison Street
- **No Performance Scale – Raw data presented**

Objective 8: Includes Commute Options Package

- **Incorporates multiple objectives:**
 - Encourages alternative transportation choices
 - Encourages regional use of travel demand management (TDM) strategies
 - Provides better access and safety for pedestrians and bicyclists; and
 - Provides effective transportation options for underserved populations
- **Performance Scale – YES/NO**



Objective 9: Reduces Route 1 curb cuts and uses collector/distributor roads as appropriate

- **Performance Scale:**

- **YES** – eliminates driveway access points and uses a frontage road system
- **SOME** – eliminates some driveway access points, but does not use frontage road system
- **NO** – does not eliminate driveway access points or use a frontage road system

Objective 10: Addresses the needs of emergency response personnel

- **Performance Scale:**

- **YES** – reduces east-west travel time, reduces north-south travel time, and maintains east-west access across Route 1 at Washington Road and Harrison Street
- **SOME** – reduces east-west travel time, reduces north-south travel time, but eliminates east-west access across Route 1 at Washington Road
- **NO** – does not reduce north-south or east-west travel time.

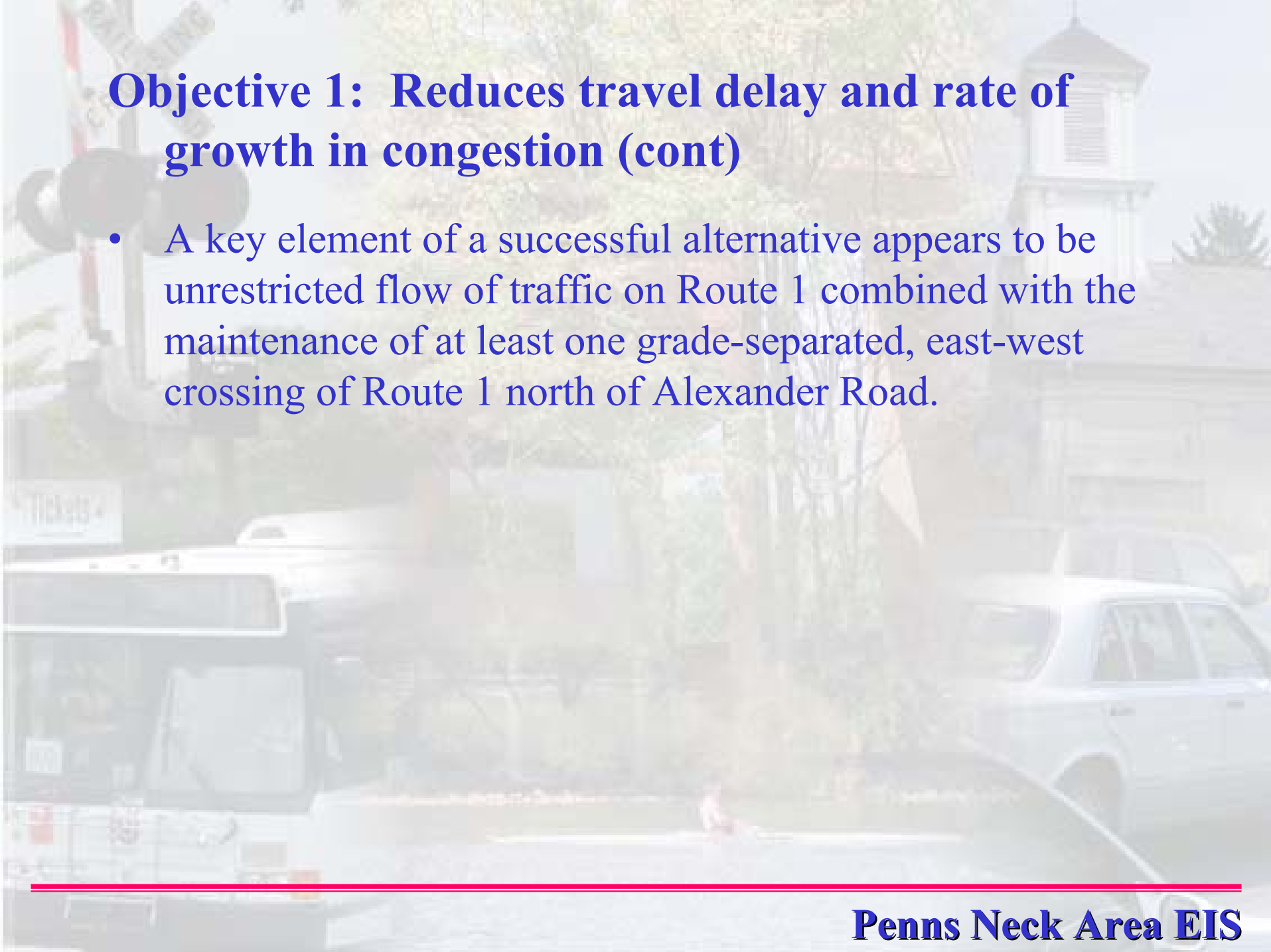


PRELIMINARY FINDINGS & OBSERVATIONS

***Summarized by:
Objective/Performance Measure***

Objective 1: Reduces travel delay and rate of growth in congestion

- All alternatives except the G-series and No-build provide for uninterrupted flow of traffic along Route 1 (e.g., signals removed) **AND** at least one grade-separated east-west crossing of Route 1 north of Alexander Rd.
- The A, B, C, D, E & F-series alternatives provide significant public benefit in terms of system-wide congestion relief:
 - VHT reduced 21% to 45%;
 - VHT under congested conditions reduced 23% to 50%; and
 - VMT under congested conditions reduced 11% to 34%.
- Alternatives F and F.1 are the best performers.
- The G-series Alternatives are the worst performers. G.2 increases VMT under congested conditions.



Objective 1: Reduces travel delay and rate of growth in congestion (cont)

- A key element of a successful alternative appears to be unrestricted flow of traffic on Route 1 combined with the maintenance of at least one grade-separated, east-west crossing of Route 1 north of Alexander Road.

Objective 2: Improves flow of traffic on Route 1

- All alternatives except G.2 reduce north-south travel time, especially in the non-peak direction:
 - Northbound travel time reduced 4% to 26%
 - Southbound (non-peak direction) travel time reduced 15% to 43%
 - G.2 increases north-south travel time.
- Alternatives C & C.1 are the best performers, while the G-series are the worst performers.
- From the data, it appears that Alternatives C and C.1 constrain access to Route 1 to the point that less traffic is attracted to Route 1. This results in more traffic on parallel routes, less congestion on Route 1 and better north-south travel times on Route 1.



Objective 2: Improves flow of traffic on Route 1 (cont)

- A key component of a successful alternative again appears to be unrestricted flow of traffic on Route 1, which requires the elimination of the Route 1 Penns Neck area traffic signals.

Objective 3: Improves flow of traffic on east-west routes

- All alternatives except C.1 and G.2 reduce east-west travel time from 3% to 31%.
- Alternatives A and D are the best overall performers, with the most consistent reductions to all three points on Nassau St.
- Alternative C increases east-west travel time between West Windsor and Nassau St in the vicinity of Washington Rd.
- Alternatives C.1 and G.2 increase travel time on all east-west routes between West Windsor and Nassau St in the vicinity of Alexander Rd, Washington Rd, and Harrison St.
- The G-series are the worst performers.

The background image shows a street intersection. On the left, there is a railroad crossing sign with the word 'CROSSING' visible. In the foreground, the rear of a white bus is visible. In the middle ground, there is a white car. In the background, there is a building with a prominent tower or steeple. The overall scene is slightly faded and serves as a backdrop for the text.

Objective 3: Improves flow of traffic on east-west routes (cont)

- Reduction in east-west travel time varies by alternative; however, alternatives with grade-separated crossings of Route 1 at both Washington Rd and Harrison St (A, D, E and F-series alternatives) perform best.

Objective 4: Reduces intersection delays when crossing Route 1

- Changes to E-W Access:
 - The B and C-series alternatives eliminate east-west access across Route 1 at Washington Rd.
 - The F-series alternatives eliminate east-west access across Route 1 at Harrison St.
 - Alternative E moves the east-west crossing of Route 1 south of Harrison St.

Objective 4: Reduces intersection delays when crossing Route 1 (cont)

- All alternatives except the G-series significantly reduce intersection delays on Washington Rd and Harrison St approaching Route 1, where through movement is permitted.
 - Delays at Washington Rd and Harrison St under future no-build conditions are estimated to exceed 16 minutes.
 - For those alternatives that include grade-separated through movement of east-west traffic across Route 1, delays are reduced to 1 minute or less.
- Intersection delays on Alexander Rd approaching Route 1 are largely unaffected by the alternatives.

Objective 5: Ensures an equitable balance of traffic on east-west routes

- The distribution of traffic into and out of Princeton on Alexander Rd, Washington Rd and Harrison St will change over time with or without improvements in the Penns Neck area.
- All alternatives except the C and G-series significantly improve access to/from Route 1 at Harrison St. As such, these alternatives enhance the function of Harrison St as an attractive east-west travel corridor.
- This effect is more significant for those alternatives that include an east-side connector road.

Objective 5: Ensures an equitable balance of traffic on east-west routes (cont)

- Most of the variation in the distribution of traffic appears to be shifting between Washington Rd and Harrison St.
- Alternatives C, C.1, G, and G.1 provide the least variation in distribution compared to the No-build.
- Alternative B.2 provides the most equal distribution between the three routes.

Objective 6: Change in traffic volume on key routes

- *Core area between D&R Canal and NEC rail line:*
 - All alternatives except G and G.1 decrease traffic on **Washington Road in Penns Neck**. Reductions range from 25% (Alt. C.1) to 80% (Alt. E).
 - All alternatives decrease traffic on **Washington Road between the Canal and Route 1**. Reductions range from 6% (Alt. G & G.1) to 86% (Alt. B.2).
 - All alternatives except C.1 and G.2 decrease traffic on **Alexander Rd between the Canal and Route 1**. Reductions range from 5% (Alt. A.1, G. and G.1) to 19% (Alt. F.1).
 - All alternatives except the C and G-series decrease traffic on **Lower Harrison St** between Route 1 and the Canal more than 95%.

Objective 6: Change in traffic volume on key routes (cont)

- *West of D&R Canal:*
 - All alternatives decrease traffic on **Washington Road between Faculty Rd and Nassau St.** Reductions range from 4% (Alt G & G.1) to 26% (Alt. F).
 - All alternatives except C and C.1 increase traffic on **Upper Harrison St** between Faculty Road and Nassau St. Increases range from 14% (Alt. G, G.1 & G.2) to 37% (Alt. F & F.1).
 - All alternatives except G and G.1 decrease traffic on **Nassau St between Washington Rd and Harrison St.** Reductions range from 7% (Alt. C) to 20% (Alt. D.1). Alternatives G and G.1 increase traffic 5%.
 - All alternatives decrease traffic on **Faculty Rd between Washington Rd and Harrison St.** Reductions range from 5% (Alt. C & C.1) and 46% (Alt. D).

Objective 6: Change in traffic volume on key routes (cont)

- *Vicinity of NEC rail line:*

- All alternatives decrease traffic on **Alexander Rd east of the NEC rail line**. Reductions range from 3% (Alt. G.2) to 31% (Alt. B.2 and F.1).
- All alternatives except B and the G series decrease traffic on **Wallace Rd**. Reductions range from 11% (Alt. F.1) to 43% (Alt. C.1).
- All alternatives except G and G.1 decrease traffic on **North Post Rd**. Reductions range from 2% (Alt. G.2) to 24% (Alt. B.1).
- All alternatives except B increase traffic on **Alexander Road between Vaughn Dr and Roszel Rd**. Increases range from less than 10% (Alt. F and F.1) to 28%.
- All alternatives except B and G.2 increase traffic on **Bear Brook Road**. Increases range from 2% (Alt. C.1) to 19% (Alt. A.1).

Objective 7: Discourages heavy truck through movement on local east-west streets

- In all alternatives, heavy trucks represent less than 5% of total 2-way traffic using east-west roads in the Penns Neck area.
- Compared to the No-build, the overall change in heavy trucks using east-west roads is less than 0.4%
- All alternatives except the C and G-series, enhance the function of Harrison St as an east-west corridor. As a result, traffic on Harrison St increases. As traffic on Harrison St increases, the share of heavy trucks using Harrison St increases slightly and decreases slightly on Alexander Rd and Washington Rd.

Objective 8: Includes Commute Options Package

- All alternatives except the No-build assume concurrent implementation of a package of complementary TDM strategies, transit service enhancements, and pedestrian and bicycle improvements.

Objective 9: Reduces Route 1 curb cuts and uses collector/distributor roads, as appropriate

- All alternatives except the No-build at least partially meet this objective:
 - **Yes** – A.1, A.2, A.3, A.4, D-series, E, and F.1
 - **Some** – A, B-series, C-series, F, and G-series
 - **No** – No-build



Objective 10: Addresses the needs of emergency response personnel

- All alternatives except the No-build and G.2 at least partially meet this objective:
 - **Yes** – A-series, D-series, and E
 - **Some** – B-series, C-series, F-series, G, and G.1
 - **No** – No-build and G.2



***PRELIMINARY FINDINGS &
OBSERVATIONS***

***Summarized by:
Major Component of the Alternatives***

Unrestricted flow of traffic on Route 1

- A key element of a successful alternative is providing unrestricted traffic flow on Route 1 (e.g., signals removed) **AND** maintaining at least one grade-separated interchange north of Alexander Rd for east-west access in the Penns Neck area.
- Those alternatives that include a Route 1 in-a-cut at Washington Road **AND** a grade-separated interchange at Harrison Street are superior to those which include only a grade-separated interchange in the vicinity of Harrison Street.

Unrestricted flow of traffic on Route 1 (cont)

- All alternatives that include unrestricted traffic flow on Route 1, Route 1 in-a-cut and/or a grade-separated interchange in the vicinity of Harrison Street reduce VHT, VHT under congested conditions, VMT under congested conditions, north-south travel time and east-west travel time.
- All alternatives that include unrestricted flow of traffic on Route 1 provide travel time savings to key parallel routes (e.g., Nassau St, Faculty Rd, etc.)

East-side connector road


- Those alternatives that include an east-side connector road linked directly to Route 1 and Harrison St via a grade-separated interchange enhance the function of Harrison St as an attractive east-west travel corridor. As a result:
 - traffic on Washington Rd decreases;
 - traffic on Faculty Rd between Washington Rd and Harrison St decreases;
 - traffic on Upper Harrison St increases;
 - heavy truck traffic using Harrison St increases slightly as a percent of total traffic; and
 - heavy truck traffic using Alexander Rd and Washington Rd decreases slightly as a percent of total traffic.

West-side connector road (between Alexander Rd and Washington Rd)

- Canal Pointe Blvd combined with a west-side connector road from Alexander Rd to Washington Rd appears to provide a parallel roadway that serves local traffic in competition with Route 1.
- Those alternatives that include this connection (Alts. B.2 and C), increase traffic on Canal Pointe Blvd.

Vaughn Drive connector road

- The Vaughn Drive connector road appears to provide an effective alternative for traffic using local roadways in Princeton Junction to access Carnegie Center and other developments located east of Route 1.
- When combined with the east-side connector road and other local improvements assumed in the No-build roadway network, the Vaughn Drive connector road provides a competitive north-south roadway system that attracts a higher volume of traffic.
- Those alternatives that include a Vaughn Drive connector road generally decrease traffic on Alexander Rd east of the NEC rail line, Wallace Rd, and North Post Road **AND** generally increase traffic on Bear Brook Rd and Alexander Rd between Vaughn Dr and Roszel Rd.

The background of the slide is a faded, light-colored photograph of a street scene. On the left, there is a railroad crossing sign with two circular lights. In the foreground, the rear of a white bus is visible on the left, and a white sedan is on the right. In the background, there are trees and a building with a prominent steeple or tower. The overall scene is slightly out of focus and has a soft, hazy appearance.

QUESTIONS & DISCUSSION