Assessment of System Connectivity in Northern New Jersey

AMPO Annual Conference
Session: Performance (Part 1)

October 18, 2017
Savannah, GA
Presentation Outline

- Introduction:
  - North Jersey Transportation Planning Authority
  - NJTPA Congestion Management Process
- Study Goals
- Analysis Steps (I to IV)
- Examples of Study Results
- Next Steps
North Jersey Transportation Planning Authority
The Metropolitan Planning Organization for Northern New Jersey

STANDING COMMITTEES
Planning & Economic Development
Project Prioritization
Freight Initiative
Regional Transportation Advisory
MPO Products & Processes

- **Policy**
- **Analysis**
- **Monitoring**
- **Action**

**Congestion Management Process**

**FY2018 UPWP**
Unified Planning Work Program

**Volume I**
Central Staff Activities

**TIP**
Transportation Improvement Program

**DRAFT**

**PLAN 2045**
Connecting North Jersey

**NETPA Regional Transportation Plan**
NJTPA CMP

Regional Needs Analysis

The Context
1) Place Types
2) Perspectives

Strategy Evaluation

• LOCAL
• ORIGIN-DESTINATION
• NETWORK
Use of CMP Products In NJTPA Activities

**Embed/Apply the Products directly**

- Regional Plans
- Local Concept Development Study
- Freight Concept Development Study
- Project Prioritization Criteria

**Refer to the Products**

- Subregional Studies Program
- Planning for Emerging Centers
- Street Smart Campaign
Study Goals

• Evaluate how effectively the region’s transportation system serves the movement of people and goods from origins to destinations:
  – How transportation facilities function together.
  – How readily travelers are able to reach destinations.
  – Suggest improvements in specific locations.

• Update the NJTPA’s Congestion Management Process (CMP) and Regional Transportation Plan.

• Inform NJTPA supported studies.
Analysis
Step I

- Identify 24 key regional destinations.
- Criteria:
  - Trip purposes
  - Place Types
  - Relevant planning study areas
Analysis

Step II

- 1-3 origins for each destination
- 60 origin-destination pairs
- Primary selection factors
### Analysis Step III

Regional performance measures: Focus Areas

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Transit Support</th>
<th>Route Directness</th>
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<td>• Time lost or gained at origin or destination “budgeting” for uncertain arrival times.</td>
<td>• It is practical and competitive to use public transportation.</td>
<td>• Manageable time spent on transfers and distance to key connections.</td>
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<tr>
<td>• Security of knowing that it is possible to get there from here.</td>
<td>• Transit can be integrated with other modes readily.</td>
<td>• Efficient use of vehicle miles and in vehicle travel time.</td>
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<td>• Transit can support diverse user segments, trip purposes and needs.</td>
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<tr>
<td>Performance Categories</td>
<td>Performance Measures</td>
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| Auto Reliability & Consistency of Conditions | • Auto Travel Time: Peak & Off-Peak (Ratio & Difference)  
• Reliability Ratio: Buffer Time Index  
• Bottleneck Congestion Locations  
• Volume of Vehicles: Peak & Off-Peak | How consistent are auto trip travel times along specific routes. |
| Transit Reliability (Access to Consistent Services) | • Transit travel time: Peak & Off-Peak (Ratio & Difference)  
• Headways: Peak & Off-Peak (Ratio & Difference) | How consistent are transit trip travel times along specific routes. |
| Transit Feasibility (Modal Redundancy) | • Transit to Auto Travel Time: Peak & Off-Peak (Ratio)  
• Transit minus Auto Travel Time: Peak & Off-Peak (Difference)  
• Transit Transfer: Peak & Off-Peak | How different are auto vs. transit travel times between same origin and destination |
| Freight | Truck Intensity: Daily and Peak | How consistent are travel times for goods movement along specific routes. |
| Auto Route Redundancy | • Driving route has viable alternatives  
• Location of emergency evacuation routes  
• Traffic diversion routes | Availability of travel route alternatives |
| Route Directness | • Location of partial interchanges | Differences in travel time/distance for opposite directions along a specific route |
Performance Measures Analysis Identified Needs for each O-D pair

- Peak to off-peak auto travel time ratio: 1.4 (regional average: 1.2)
- Peak transit/auto travel time ratio: 2.4 (regional average: 1.8)
- Unpredictable road segments and bottlenecks along I-80 in Morris County
- Unpredictable road segments and bottlenecks at interchange of Rt.24, Rt.124 and JFK Parkway at Short Hills Mall
- Unpredictable road segments and bottlenecks at interchanges of I-287 and Rt. 10 and I-287 and Rt.24

The selected needs listed above affect parts of this route. All needs are depicted in the map.
Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are in Union County. Rockaway Township in Morris County is a suburban community with watershed and natural lands, office parks and the Rockaway Townsquare regional mall. Roadways connecting these locations include I-80, NJ Route 24 and I-78 with transit travel requiring connections between the Lakeland 46 and NJ TRANSIT 114 buses.

**NEEDS**

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**RECOMMENDATIONS**

- Interchange study at Rt.24, Rt.124 and JFK Parkway at Short Hills Mall
- Interchange study at I-287 and Rt.10 and I-287 and Rt 24
- Study transit-supportive roadway improvements on Rt. 3 and Rt. 46 in Bergen, Passaic and Hudson counties
- Implement RTP project for ITS improvements on I-80 from Route 46 in Denville to Changbridge Road in Pinebrook
- Implement Port Authority study for capacity improvement including Rt. 495 Exclusive Bus Lane
- Add location of CR 61 and CR 655 to county diversion route plan

The strategies listed above address the selected needs. For a complete list refer to the summary sheets.
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**Regional Context**

Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are in Union County. Rockaway Township in Morris County is a suburban community with watershed and natural lands, office parks and the Rockaway Townsquare regional mall. Roadways connecting these locations include I-80, NJ Route 24 and I-78 with transit travel requiring connections between the Lakeland 46 and NJ TRANSIT 114 buses.

**Needs**

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**Suburb to Suburb Travel**

- Scotch Plains/Plainfield: 437,114 people, 115,853 jobs
- Rockaway: 48,884 people, 11,266 jobs

**Multiple Modes of Travel**

- Auto
  - Primary Route: I-78, 80
  - Av. Travel Time: 52.5 mins

- Transit
  - Primary Route: Bus 114x
  - Lakeland Bus 46
  - Av. Travel Time: 159 mins + access to transit time

**Various Trip Purposes**

- Employment
- Shopping/Recreation
- Freight

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**SCOTCH PLAINS/PLAINFIELD AREA TO ROCKAWAY**

Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are in Union County. Rockaway Township in Morris County is a suburban community with a well-developed infrastructure and natural landscapes. The major roads that connect these locations include I-80, N.J. Route 24, and I-78 with transit travel requiring connections between the Lakeland 46 and N.J. TRANSIT 114 buses.

### Recommendations

- Interchange studies at Rt. 24, Rt. 124 and JFK Parkway at Short Hills Mall, at I-287 and Rt. 10 and I-287 and Rt. 24, and at I-287 and I-80.
- Study transit-supportive roadway improvements on Rt. 3 and Rt. 46 in Bergen, Passaic and Hudson counties.
- Add location of CR 611 and CR 655 to county diversion route plan.

#### Needs

- Peak to off-peak auto travel time ratio: 1.4 (regional average 1.2)
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- Unpredictable road segments and bottlenecks along I-80 in Morris County.

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### Various Trip Purposes

- Suburb to Suburb Travel
- Multiple Modes of Travel
- System Connectivity

### Recommendations

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- Interchange study at I-287 and Rt. 10 and I-287 and Rt. 24.
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Analysis Step IV

- Complimentary local performance measures
  - Access to Regional Rail and Bus Transit
  - Access to Freight Priority Highway Corridors
  - Bicycle-Pedestrian Connectivity
Examples of Study Results

Regional Needs and Observations

• Unpredictable travel times and bottleneck congestion
• Auto travel predominantly through Interstate Highways to and from urban areas and predominantly through local roads in the suburban and rural areas.
• Competitive and direct transit travel only to and from NYC and urban areas.
• Access to transit is limited
Examples of Study Results

Recommendations for Future Consideration

- Intersection/Interchange improvements
- Transit supportive roadways
- Increase car share services and shuttles to train stations
- Studies to increase EZ pass express lanes
- ITS/Active Traffic Management
- Support TIP/RTP Project
Next Steps

• Outreach to the counties to
  – Apply the results to the county planning products
  – Prioritize the needs and recommendations

• Detailed analysis of performance measures at the local level

• Further study to better understand the different travel movements and the associated needs and recommendations
Questions?

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NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

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