More Than Mobility
Examining Impacts to Environmental Justice Populations

AMPO Conference, Dallas, Texas
October 26, 2011
Regional Perspective

- Fourth largest metropolitan area in the United States
- Ranked 3rd in population growth between 1990-2000 adding over 1 million persons
  - Current growth trend: Added 1.2 million persons between 2000 and 2010
  - #1 for population growth among U.S metropolitan areas during 2008
- Larger than 38 states in population and 9 in land area
- Represents over 34% of the state’s economy, 12th largest economy in the world
- 6.5 million persons in year 2010 growing to nearly 10 million persons by the year 2035
Considerations for EJ Analysis

• How to identify “EJ” populations
• What level of analysis
• What tools are available to use
• What are the most appropriate performance indicators for the region
Populations to Consider

**Basic EJ Populations**
Mandated by EO 12898

- Minority
  - Black
  - Hispanic
  - Asian
  - American Indian & Native Alaskan
  - Native Hawaiian & Pacific Islander
- Low Income

**Title VI Specified Populations**

- LEP
- Persons with Disabilities
- Over 65
- Female Head of Household
- Zero Car Household
Identifying Populations

Environmental Justice Index

Legend

<table>
<thead>
<tr>
<th>Index by Block Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10.00</td>
</tr>
<tr>
<td>10.01 to 20.00</td>
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<tr>
<td>20.01 to 30.00</td>
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<td>30.01 to 40.00</td>
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<td>50.01 to 60.00</td>
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<td>60.01 to 70.00</td>
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<tr>
<td>70.01 to 80.00</td>
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<tr>
<td>80.01 to 90.00</td>
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<tr>
<td>90.01 to 100.00</td>
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</tbody>
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The Environmental Justice Index (EJI) scores three variables: persons per square mile, percent below poverty, and percent minority. Scores are assigned based on density and a comparison to the regional average; the scores are multiplied to obtain an EJI of 1 to 100. Block groups are displayed based on their EJI score in intervals of 10, from 1 to 100. Data is from 2000 Census.
MPO Identification of Low-Income and Minority Populations

• Survey of MPOs identified no standard practice
• Utilized the Environmental Justice Index (EJI)
• Methodology based on NCHRP Report 532 “Effective Methods for Environmental Justice Assessment”
  ▪ Recommended method for regional transportation analysis
  ▪ Populations used in the basic EJI calculations are only the federally mandated (E.O. 12898) low-income and minority populations
• Index that incorporates density, income, and minority status
• Scores are multiplied for a possible score of 1 to 100
Level of Analysis: Regional

- 17 funded rail recommendations
- Range in length from 2 to 46 miles

- 37 funded roadway recommendations
- Range in length from 1 to 40 miles
Available Tools

• Census Data
• Mapping Technology
• TransCAD
• Qualitative Community Feedback
## Developing Performance Indicators - Universe of Options

<table>
<thead>
<tr>
<th>Mobility</th>
<th>Accessibility</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Average travel time</td>
<td>• Number of jobs accessible</td>
<td>• Solutions based on community needs</td>
</tr>
<tr>
<td>• Average travel speed</td>
<td>• Accessibility to specific types of locations</td>
<td>• Environmental impacts</td>
</tr>
<tr>
<td>• Average level of congestion</td>
<td>• Gap analysis</td>
<td>• Out of pocket user costs</td>
</tr>
<tr>
<td>• Gap analysis</td>
<td></td>
<td>• Data overlays</td>
</tr>
</tbody>
</table>
# Mobility vs. Accessibility

<table>
<thead>
<tr>
<th></th>
<th>Mobility</th>
<th>Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>The potential for movement or the ability to travel from one place to another.</td>
<td>How well the system provides access to locations and opportunities</td>
</tr>
</tbody>
</table>
| **Potential Impacts** | • Road capacity  
• Intelligent transportation systems  
• Improved design | • Time cost  
• Financial cost  
• Modal choices |
| **EJ Analysis Application** | • Equitable travel times  
• Equitable LOS  
• Equitable reliability | • Access to jobs  
• Access to services  
• Access to higher education  
• Cost to use the system  
• Equitable modal choices |
NCTCOG Performance Indicators

Accessibility

- Number of jobs accessible within 30 minutes by automobile
- Number of jobs accessible within 60 minutes by transit
- Average travel time to special generators (universities, hospitals, regional shopping centers)

Mobility

- Average level of congestion
- Average travel time
Analysis: Identify Populations

• Block groups identified as EJ converted to TSZ
• Aggregate and individual populations calculated
Analysis: Calculate Performance Indicators

• Staff developed analysis method and calculations
• TransCAD tool used performance reports to aggregate and calculate results
Analysis: Scenarios

Current Network
- 2012 Roadway and Transit Network
- 2012 Demographics

2035 Build
- 2035 Roadway and Transit Network
- 2035 Demographics

2035 No-Build
- 2012 Roadway and Transit Network
- 2035 Demographics
Analysis: Comparison

- Current vs. Build scenarios are conducted to see the rate at which any disparities are being perpetuated in future plans.
- Build vs. No-Build scenarios establish the effectiveness of the transportation system at increasing accessibility and mobility while controlling for population growth.

**Current Network**
- Current network used to establish baseline of performance indicators.

**2035 Build**
- Current vs. 2035 Build used to determine how recommendations impact mobility and accessibility compared to current conditions.

**2035 No Build**
- 2035 Build vs. 2035 No-Build used to determine how mobility and accessibility would be impacted if recommendations were not built.
Analysis: Mobility Results

Transportation System Scenario

- Aggregate Protected Population
- Non-Protected Population

Minutes to Travel 20 Miles

Percent Change in Congestion from Build Scenario

Current

2035 Build

No Build

2035 No Build

2035 Build
Analysis: Accessibility Results

Number of Jobs Accessible

Transportation System Scenario

Current Network  2035 Build  No Build

Protected Access by Auto
Non-Protected Access by Auto
Protected Access by Transit
Non-Protected Access by Transit

Percent of Population Within 30 Minutes of Special Generators

Protected Population - Hospital
Non-Protected Population - Hospital
Protected Population - University
Non-Protected Population - University
Protected Population - Regional Shopping Center
Non- Protected Population - Regional Shopping Center

Current Build No Build

Protected Population - Hospital
Non-Protected Population - Hospital
Protected Population - University
Non-Protected Population - University
Protected Population - Regional Shopping Center
Non-Protected Population - Regional Shopping Center

Legend:
- Current
- Build
- No Build
Additional Analysis
Results

• No disparate impacts identified
• Mobility and accessibility improve at a great rate for protected populations with 2035 Build scenario
• Congestion worsens at a greater rate for protected populations in the 2035 No-Build scenario
• NCTCOG currently working on analysis strategies for specific project types and supplemental analysis techniques