Assessing the Environmental Justice Impacts of Toll Road Projects

Introduction
Inadequate and uncertain transportation funding in recent years have resulted in a renewed emphasis on using investments that can be recovered by toll charges to finance new roads and modernize existing ones. This has raised questions about environmental justice (EJ) and how it pertains to tolling. Environmental Justice (EJ) is “fundamentally about fairness toward the disadvantaged and often addresses the exclusion of racial and ethnic minorities from decision-making” (Cairns, Greig, and Wachs, 2003). The goal of EJ is to ensure that EJ communities are not disproportionately impacted by transportation investments.

Research Objectives
- Extend work on TxDOT Research Project 0-5208 by:
  - Reviewing available tools and analysis techniques in an evaluation of state-of-the-practice applications in measuring EJ impacts associated with toll road projects
  - Recommending a suitable approach to assess impacts of toll roads on EJ communities

TxDOT Project 0-5208 identified a weakness in Step 4 (highlighted) of the EJ Evaluation Methodology (EJEM). Therefore, the study focused on evaluating the available tools and analysis techniques to determine EJ impacts associated with toll road projects.

Study Methodology
- Stakeholder (e.g., FHWA, EPA, and TxDOT’s Environmental Affairs Division) interviews were conducted to develop a common understanding of how important concepts and terms will be defined and approached.
- Determine state-of-the-practice with regards to how DOTs, MPOs, and RMAs have:
  - Defined a toll road system
  - Identified EJ impacts related to toll roads
  - Measured identified impacts
  - Addressed challenges in measuring impacts
  - Effectively communicated and worked with impacted EJ communities

Results
Stakeholder interview questions included:
- What constitutes a tolled facility?
- What constitutes a toll road system?
- What constitutes a disproportionate impact?
- What constitutes appropriate indicators/performace measures when calculating EJ impacts?
- What defines the project area?
- What are the alternatives being measured?
- At what point does a toll increase require a separate EJ analysis?

Eight state case studies revealed that the focus has typically been on public outreach, along with the use of GIS, the FHWA Noise Model, and - in a few cases - the travel demand model, to determine EJ impacts associated with toll road projects.

Travel Demand Model

Limitations of TDM for EJ analysis exist in terms of the following:
1. Data source (Census data) is often outdated.
2. Geographic unit of analysis used is too aggregate.
3. There is a lack of consensus as to what constitutes appropriate performance measures.

Three approaches for including tolls in TDM modeling:
- In the modal split step:
  - Toll road characterized by mode choice variables (e.g., travel time, cost, etc.)
- In the trip assignment step:
  - Toll rate converted to represent time penalty
  - Consider congestion on non-tolled alternatives
  - Sub-step in trip assignment or post processor:
    - Calculate number of trips on best available non-tolled road and calculate number of trips on toll facility
    - Consider travel time, distance, toll cost, and occasionally other factors

All of these approaches omit reliability and an accurate VOT measure for EJ individuals.

Conclusions
Since concerns associated with toll roads are often unique to the communities that are impacted, it is recommended that effective and meaningful public outreach be used by transportation agencies to assess and mitigate the potential impacts of concern imposed by toll roads and toll road systems. This conclusion was reached given the results of the literature and legal reviews, as well as the stakeholder and state-of-the-practice interviews conducted, which revealed the absence of substantial resources to develop and implement sophisticated modeling tools.