Applying the Texas Statewide Analysis Model:

Cross-border Commercial Vehicle Model
For El Paso, TX

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Study Area

El Paso, Texas
and
Ciudad Juarez, Chihuahua, Mexico
El Paso Border Improvement Project

- Support El Paso MPO Planning Efforts
- Create Border Crossing Forecast Tool
  - Support micro-simulation
  - Evaluate capacity improvements at border crossings
  - Evaluate transportation improvements within the MPO
  - Evaluate additional border crossings
- Support Economic Growth
  - Time savings = $ savings

El Paso - Juarez Metro Area

- 2.2 Million People
  - Largest Population Center on any US
- One of the Largest Concentration of Maquiladoras in Mexico
- ¾ of a Million Trucks Crossing Each Year
  - 25% increase since 1994
- Congestion Impacts on the City of El Paso
  - Air Quality
  - Travel Delay
Available Tools

El Paso MPO Travel Demand Model

Juarez/El Paso Passenger (Auto) Travel Demand Model

Texas Statewide Analysis Model (SAM)

Shortcomings of Available Tools

- MPO Model
  - Lacks Commercial Vehicle Component
- Border Crossing Model
  - Lacks MPO Model Integration
- SAM
  - Lacks Detailed Zone Structure and Network
Solution

- Extract El Paso Truck Flows from SAM
- Disaggregate SAM Truck O-D Flows
- Develop El Paso O-D Truck Matrices
- Calibrate Truck Border Crossing Trip Patterns
- Integrate into MPO’s Regional Model

Extract El Paso Truck Flows from SAM
Disaggregate SAM Truck O-D Flows

Used O-D survey data, vehicle classification counts, and employment to disaggregate:

External Truck Trips
External-Internal Truck Trips

SAM - MPO Zonal Equivalence:
El Paso MPO - 660
Statewide Model - 93

Commercial Vehicle Border Crossings

2005 Daily truck crossings
• Santa Teresa - 100
• BOTA - 1,100
• Zaragoza - 1,100

Santa Teresa
BOTA
Zaragoza
Cross-border Truck Trip Generation

El Paso Transfer Centers
- Total employment

Juarez Maquilladoras
- Industrial employment

Control Totals
- Observed counts on bridges

Current truck/rail freight mode shares held constant

Modeling Process (1)

- Estimate Juarez maquilladora productions and El Paso transfer center attractions
- Perform gravity model distribution with cross-border model
- Yields truck trips at bridges
- Adjust and iterate until results match counts
- Replace MPO model external truck trips with above O-D values
- Replace SAM model US-Mexico trips with El Paso-US O-D values
Modeling Process (2)

- Yields detailed MPO truck model with
  - Juarez – El Paso truck trips crossing border
  - El Paso – US truck trips to ultimate destination
  - US External – External thru truck trips
  - El Paso local truck trips

Use New Model to test:
- El Paso Roadway improvements
- New border crossings
- Border crossing processing improvements

Summary

- Started with
  - Statewide SAM Model
  - Regional MPO Model
  - Cross-Border Auto Model
- Disaggregated SAM to MPO level
- Split Mexico – US truck trips into
  - Juarez – El Paso
  - El Paso to rest of US
- Calibrated truck patterns based on
  - Truck O-D survey
  - Border truck counts
- Updated MPO triptables with new truck O-D
- Re-adjusted MPO model based on counts
- Yielded more accurate cross-Border model
Questions?

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