



Louisville-Southern Indiana Ohio River Bridges Project Preliminary Traffic and Revenue Study

Kentucky Model Users Group
June 12, 2008



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ASSOCIATES

The Project

- **Louisville-Southern Indiana Ohio River Bridges (LSIORB) Project**
 - Purpose: Address long-term cross-river transportation needs in the Louisville Metropolitan Area
 - Feature: Provision of two new Ohio River bridges (I-65 Downtown and East-End bridges), connected approaches, and reconstruction of the Kennedy Interchange
 - Cost: \$3.9 billion (in nominal dollars)
- **This Study**
 - Level: “Preliminary” Traffic and Revenue Study
 - Purpose: Provide preliminary traffic and revenue forecasts assuming tolling of several alternatives for the LSIORB Project

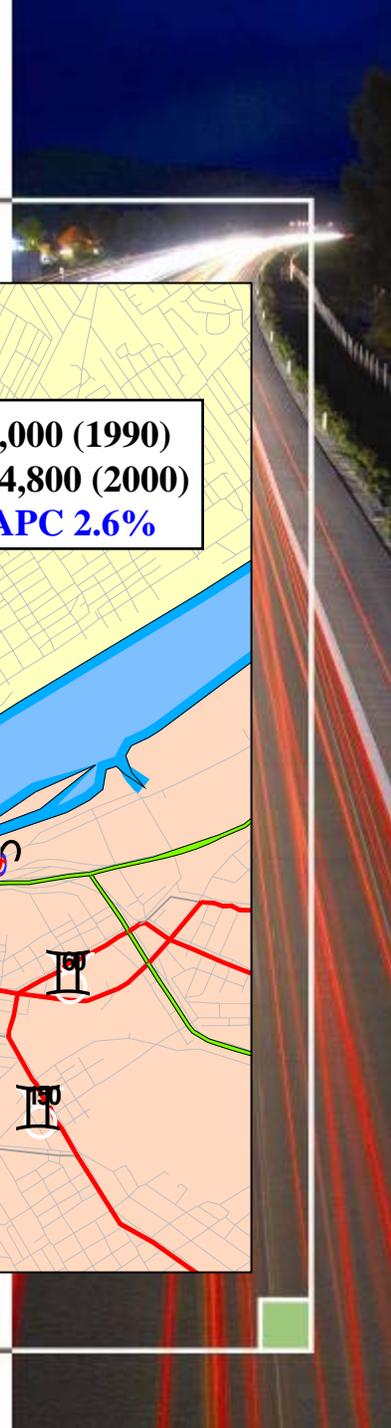
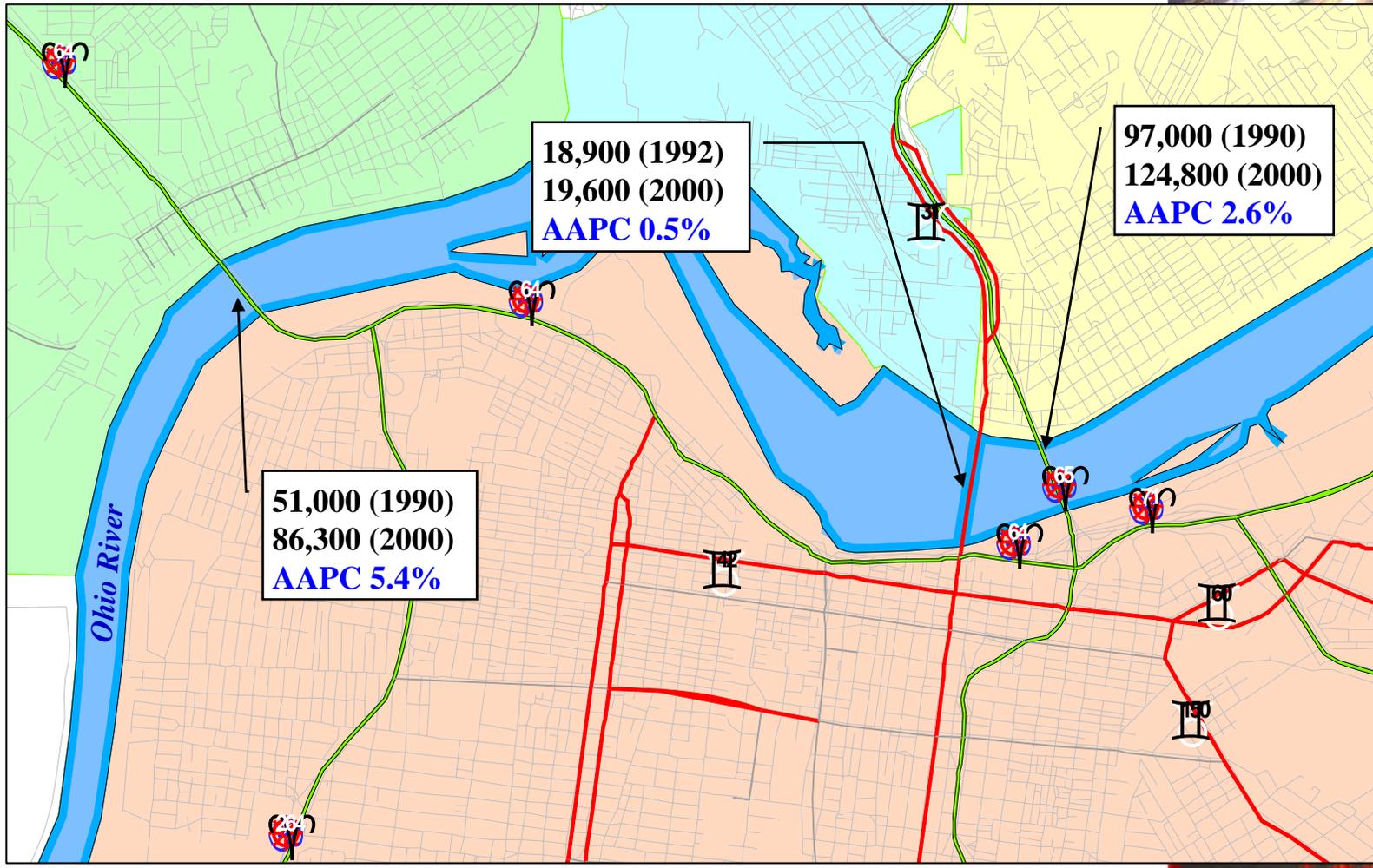


Screenline Historical Traffic

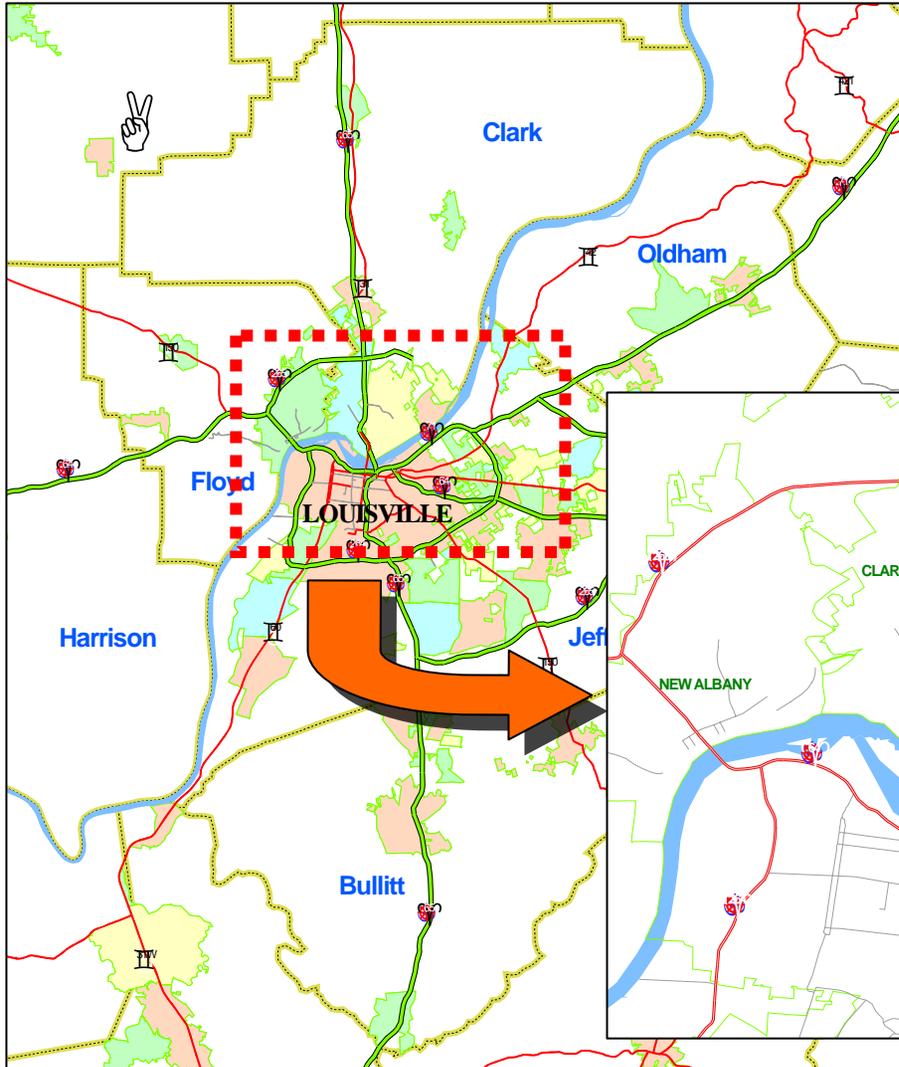
ECONOMISTS

PLANNERS

ENGINEERS

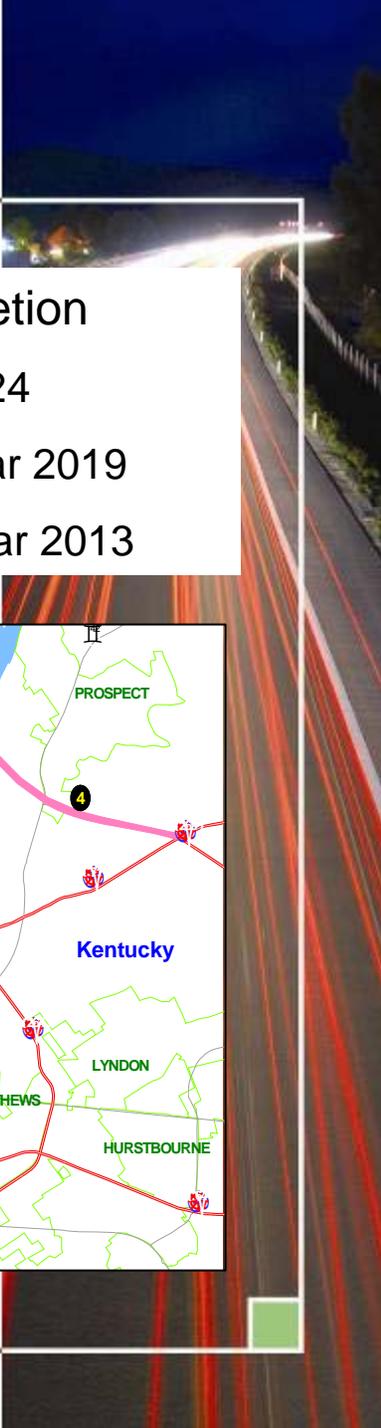
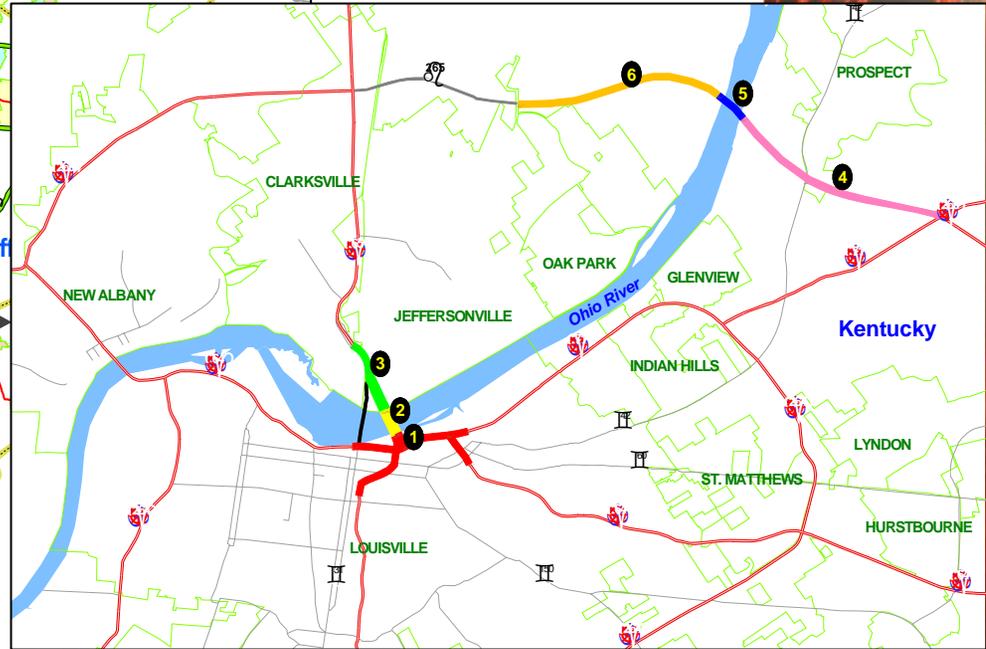


The Project



Scheduled completion

- Section 1: Year 2024
- Sections 2 & 3: Year 2019
- Sections 4 to 6: Year 2013



Study Overview

- Traffic and Socioeconomic Data Collection
 - Traffic Characteristics (Historical Trends, Hourly Profile, Vehicle Composition)
 - Speed Runs
 - Regional Demographics and Economic Characteristics (Population and Household Trends, Income and Employment Profile)
- Propose Toll Collection System and Toll Scenarios
 - Open Road Tolling / Video Tolling
 - Toll Alternatives
 - Toll Rate Assumption



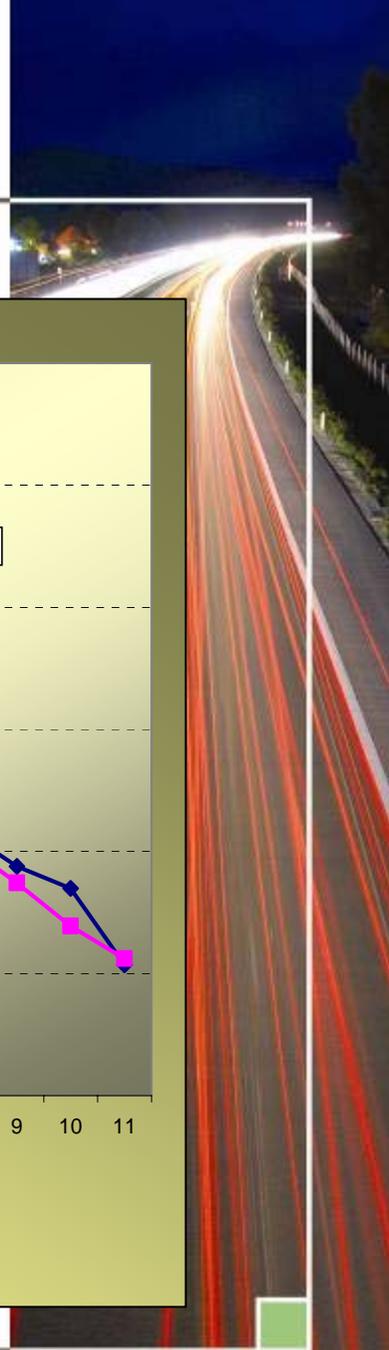
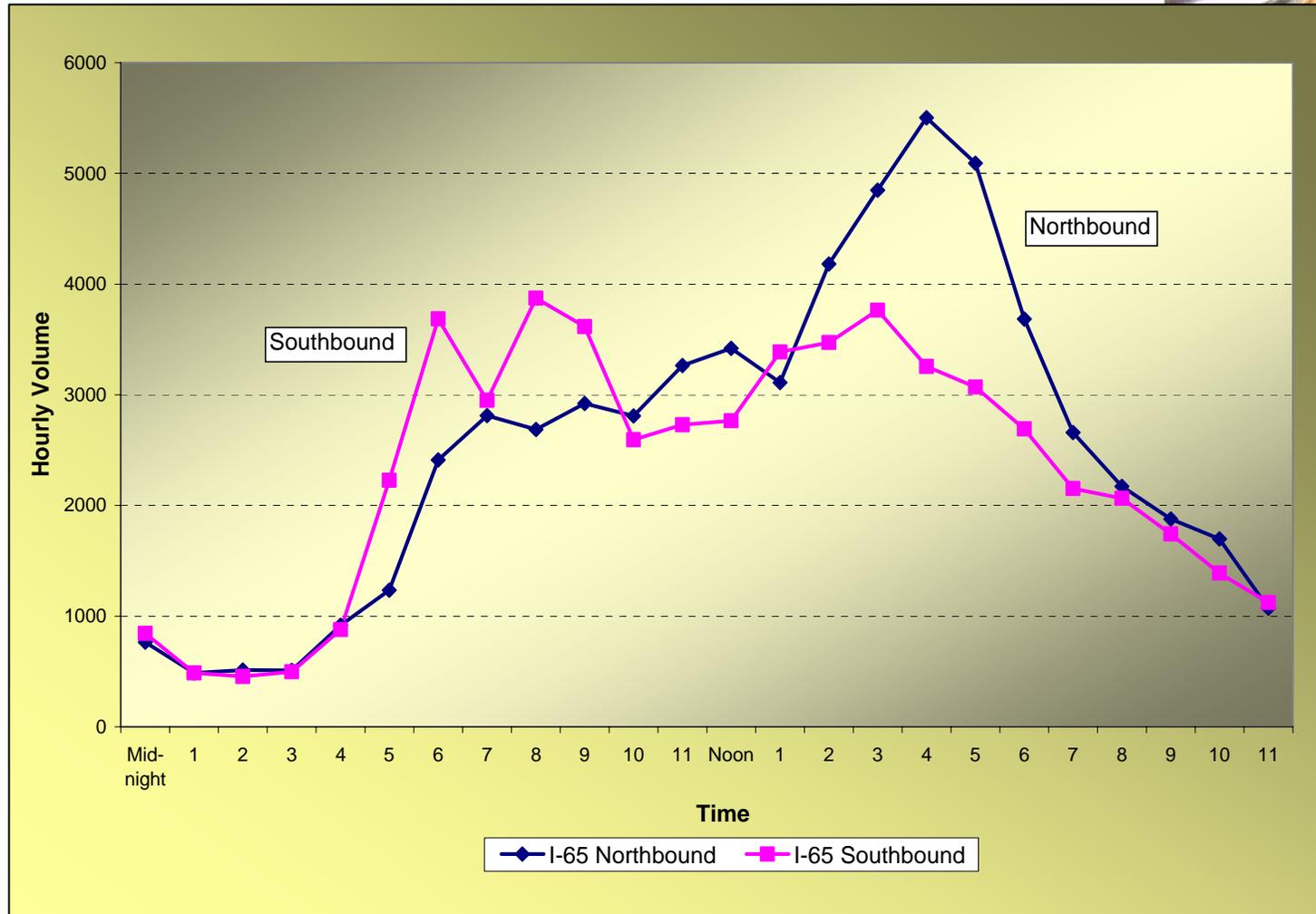
Study Overview

- Traffic and Revenue Analysis
 - Toll Diversion Model Development
 - Base Year Model Validation
 - Trip-End Growth Analysis
 - Toll Rate Sensitivity Analysis
 - Comparative Toll Analysis
 - Future Year Traffic and Toll Transaction Forecast
 - Toll Gross Revenue Forecast
 - Toll System Operations and Maintenance Costs
 - Toll Net Revenue Forecast

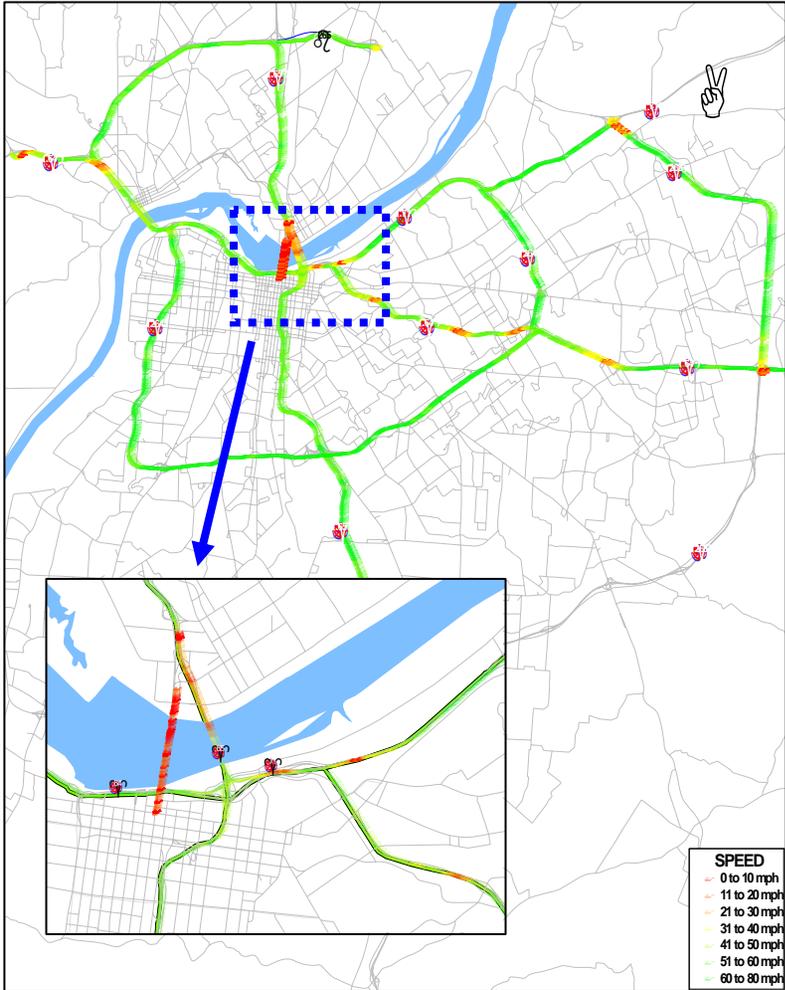


Hourly Traffic Variation

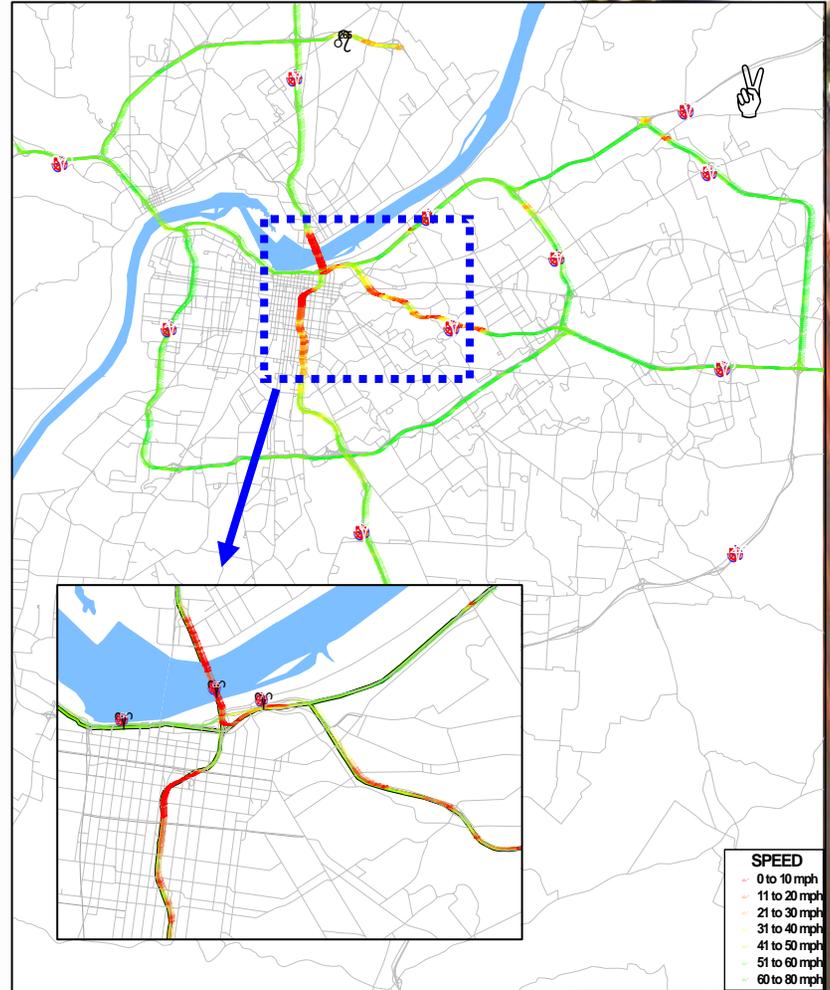
- I-65 Bridge



Speed Runs



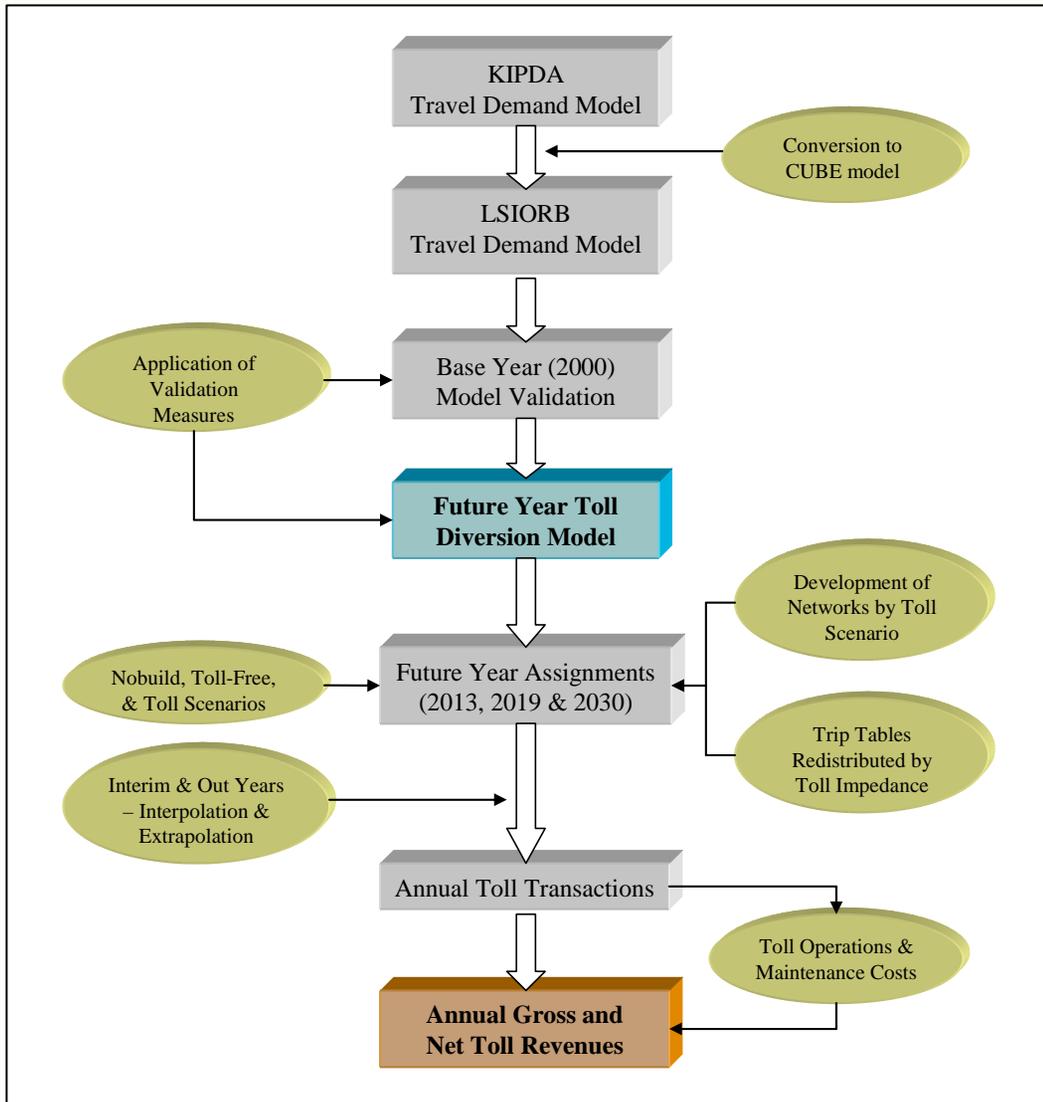
A.M. Peak Period



P.M. Peak Period

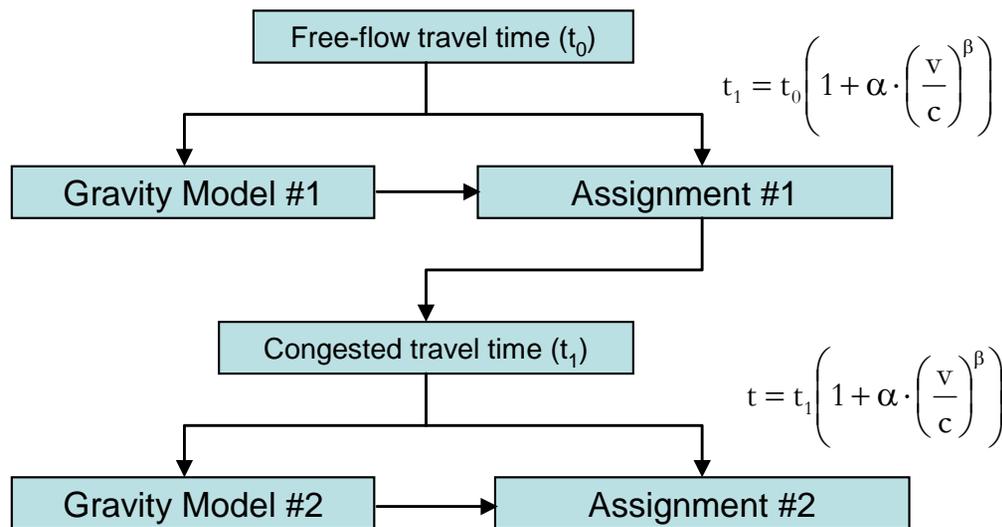


T & R Forecasting Procedure



KIPDA Travel Demand Model

- KIPDA MPO Bi-State 5-County Model (TransCAD)
 - 807 TAZs; 48 external stations
 - “Inter-State” and “Intra-State” trips assigned via MMA
 - Feedback loop

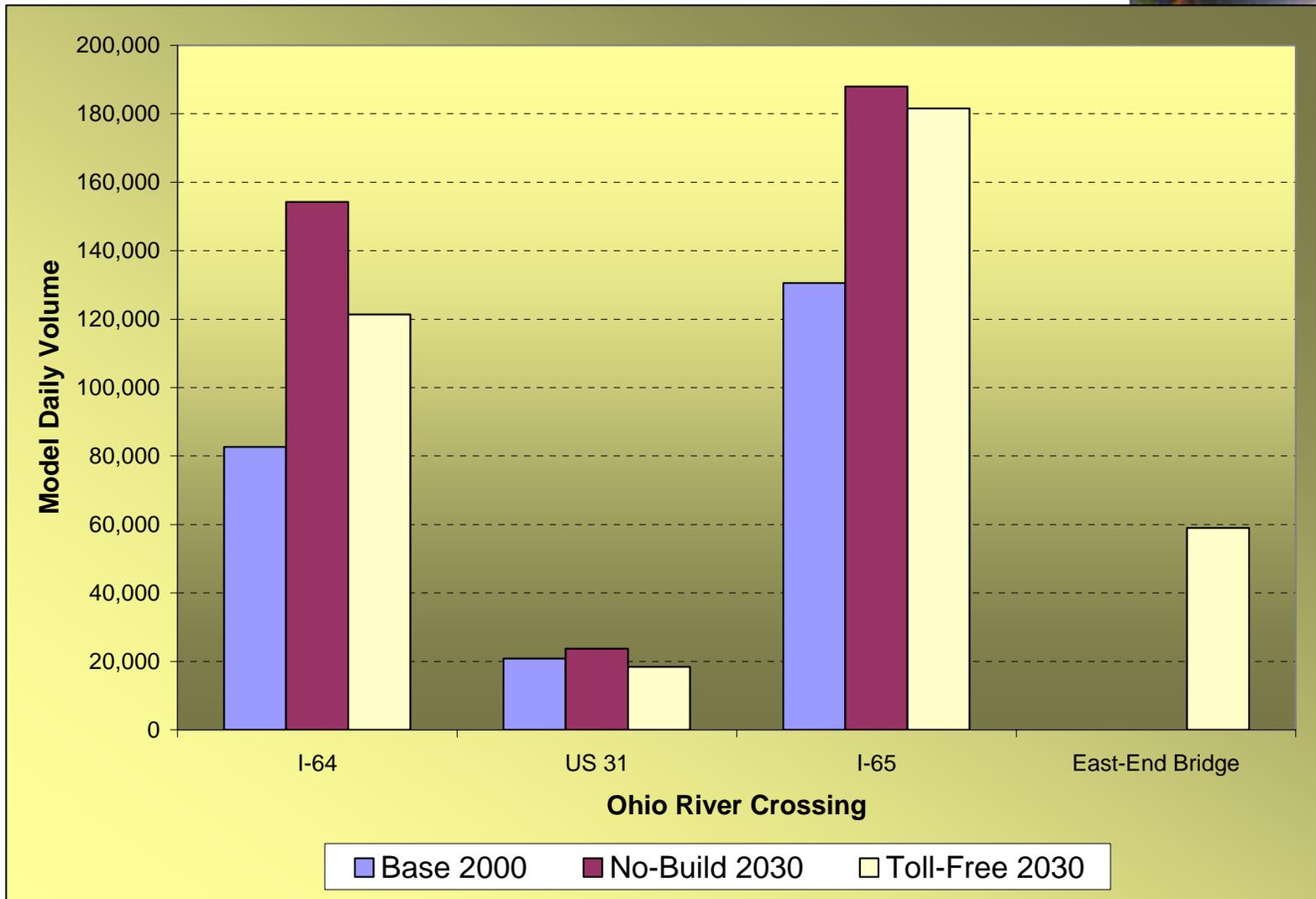


Model Validation

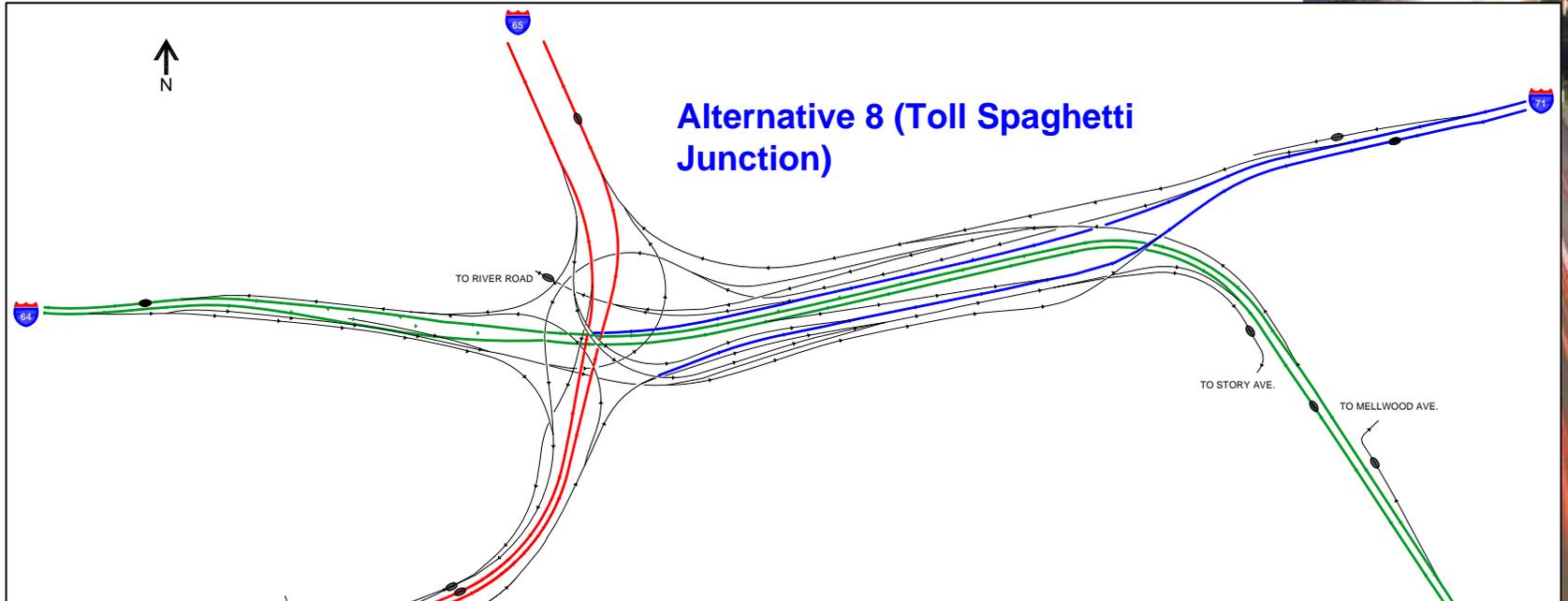
- Error indicators
 - Mean loading and percentage errors
 - Percent root mean square errors
 - Mean absolute value errors
 - VMT percentage errors
- Validation Results
 - Systemwide: -1.0% Loading; 22% RMSE
 - Screenline (Ohio River Crossings): 1.5% Loading; 6.1% RMSE
 - VMT error: 1.7%
 - Speed validation on screenline: -2.6%



Toll-Free Screenline Traffic



Toll Alternatives



Toll Alternative	Facility				
	I-64 Bridge	US 31 Bridge	I-65 Bridge	East-End Bridge	Kennedy Interchange
Alternative 1	◆	◆	◆	◆	
Alternative 2		◆	◆	◆	
Alternative 3	◆		◆	◆	
Alternative 4		◆	◆		
Alternative 5			◆	◆	
Alternative 6			◆		
Alternative 7				◆	
Alternative 8					◆

◆ Tolled

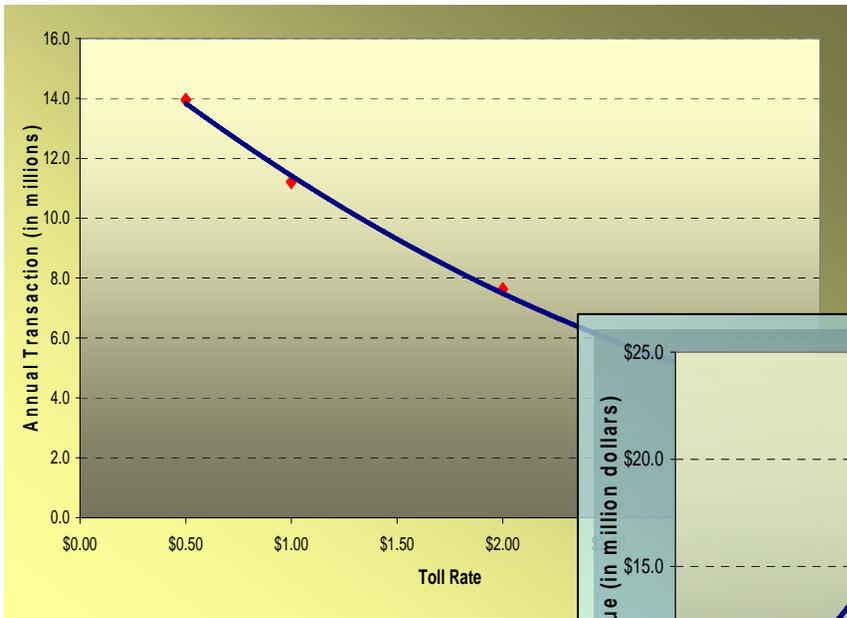
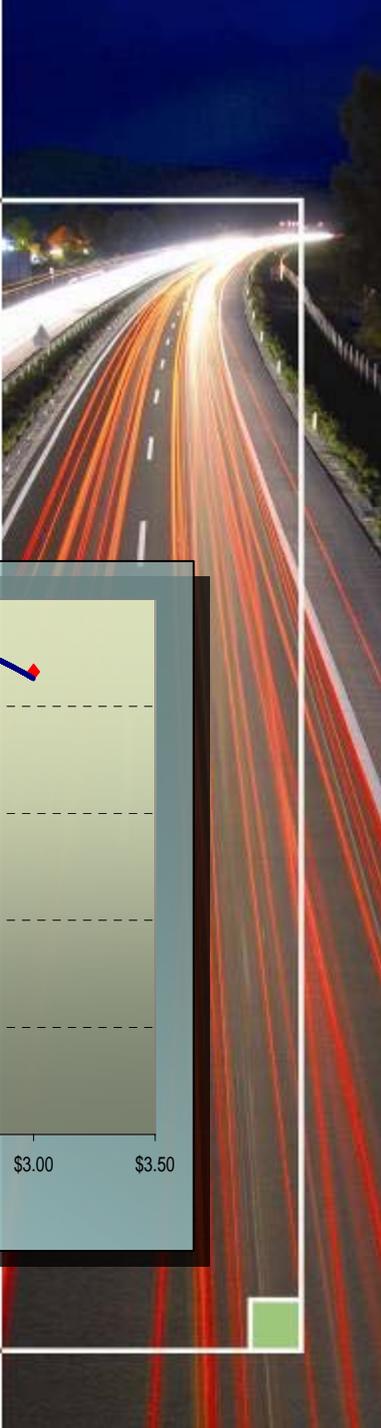


Toll Modeling

- Procedure
 - Toll rate assumption: \$0.50, \$1.00, \$2.00 and \$3.00
 - Two-Step Sequential Process
 - TransCAD: Trips redistributed based on toll impedance on bridge(s)
 - CUBE: Toll assignment with the redistributed trips
 - Toll diversion: based on differential of toll-path impedance and non-toll-path impedance

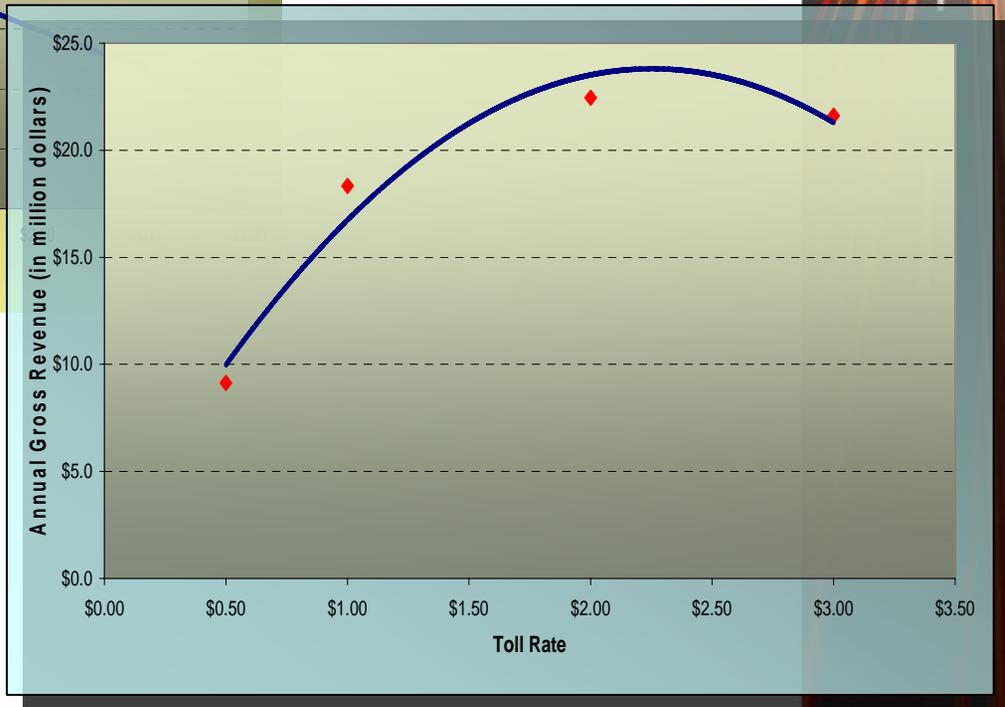


Toll Sensitivity Analysis

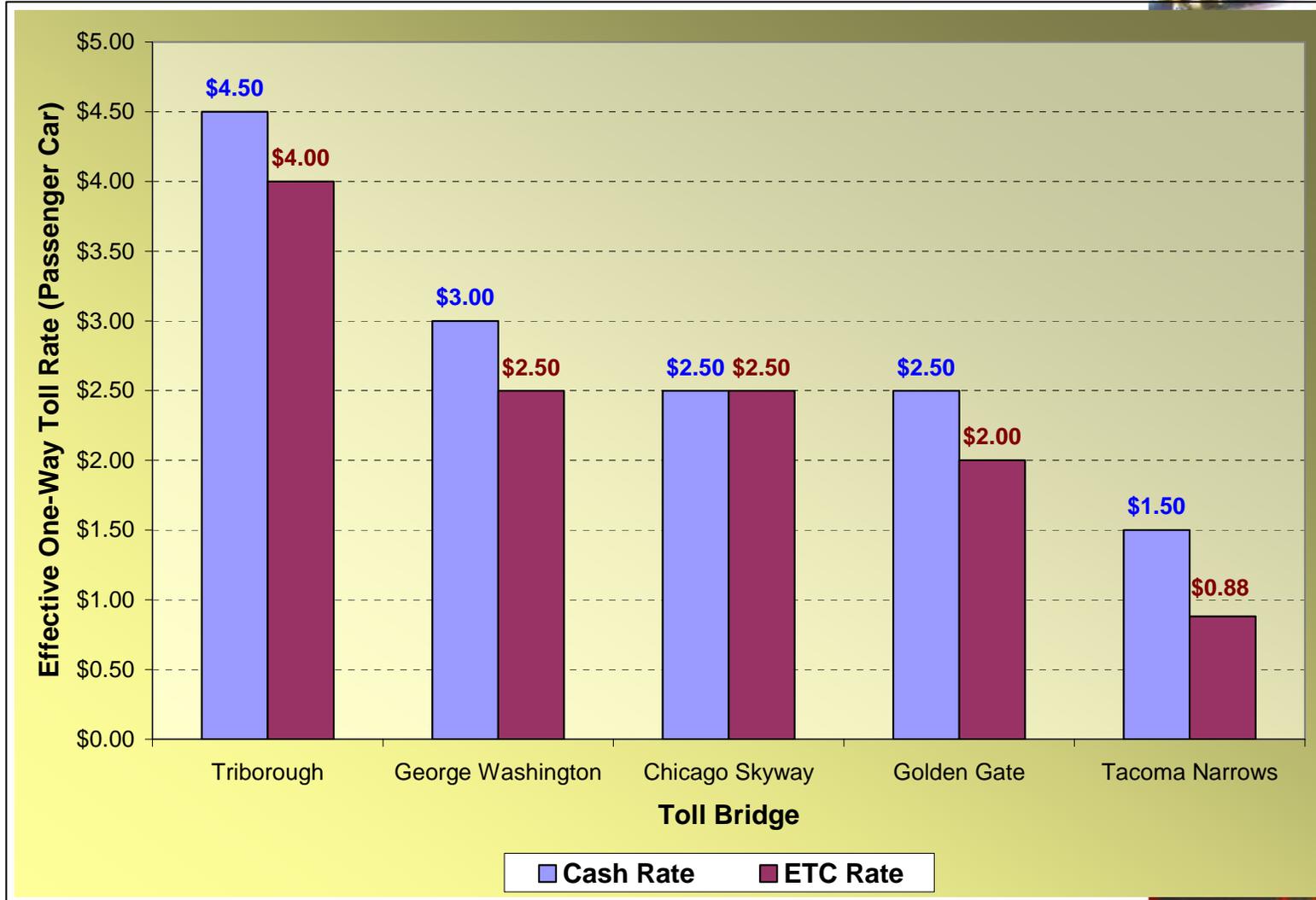


← Annual Toll Transactions

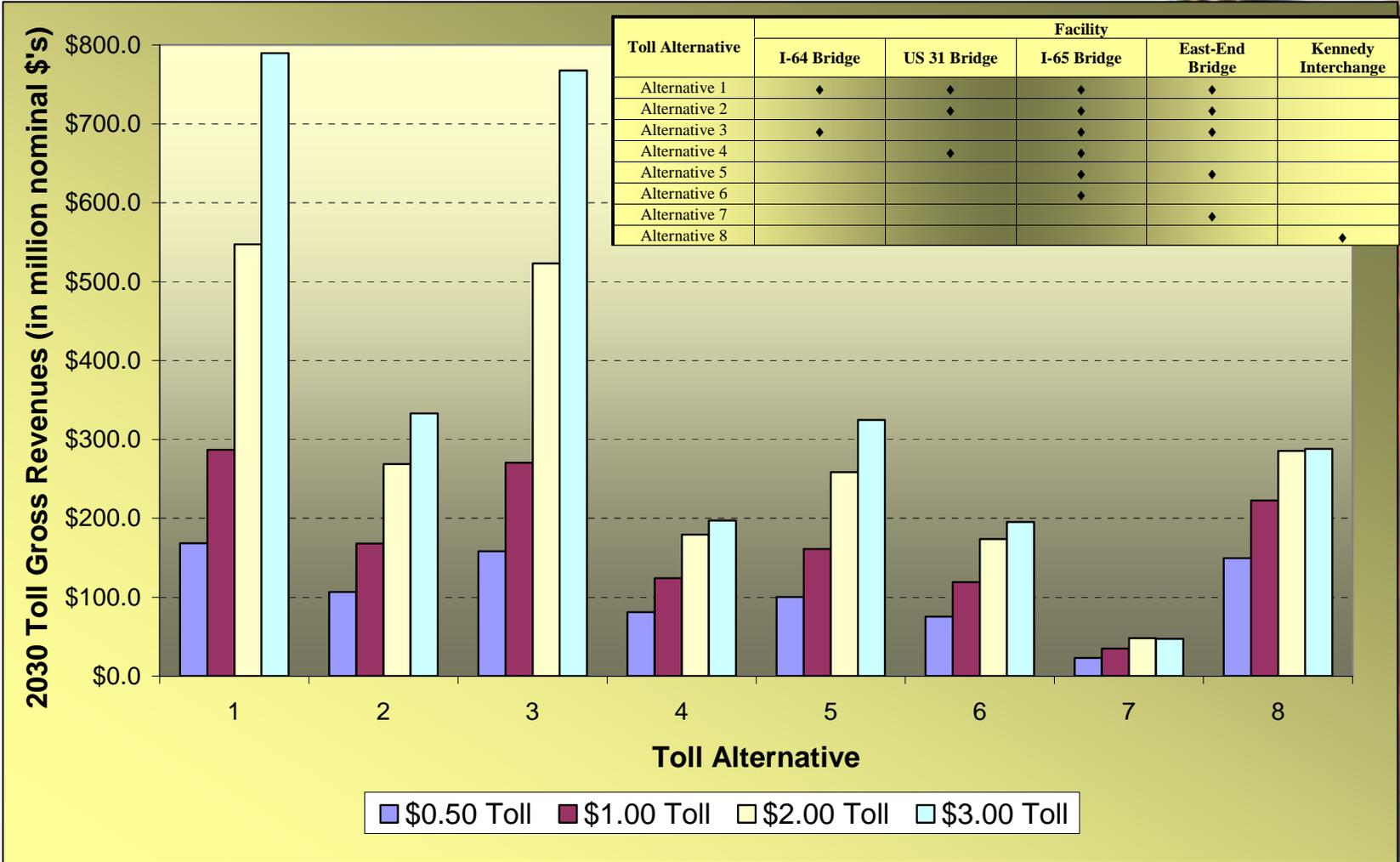
Annual Toll Gross Revenues →



Comparison of Toll Rates



Toll Gross Revenue (2030)



Real-Life Examples

- Internal and External Trips
 - A soccer mom from Jeffersontown travels with her daughter to a game at Woerle Field in Jeffersonville, Indiana, after school ends at 3 PM. Taking the new East-End Bridge will result in a 15 minutes time saving. The net savings after the toll will be about \$0.50.
 - A worker commutes from his home in Clarksville to the Ford Truck plant in Louisville. Using the new East-End Bridge will reduce his travel time by approximately 26 minutes and his travel distance by 4 miles. The net savings after the toll will be about \$2.90.
 - A truck from Scottsburg, Indiana passes through the Louisville area on its way to Cincinnati via I-65 and I-71. Taking the new East-End Bridge will reduce his trip by approximately 5 miles, resulting in a time saving of 31 minutes. The net savings after the toll will be approximately \$14.80.

