

Toll Considerations for US 27 to I-75 Connector Scoping Study



June 12, 2008





Project Purpose

The purpose of this study is to determine the need and explore methods to improve safety, connectivity, and regional access within Jessamine, Fayette, and/or Madison counties between US 27 and I-75.

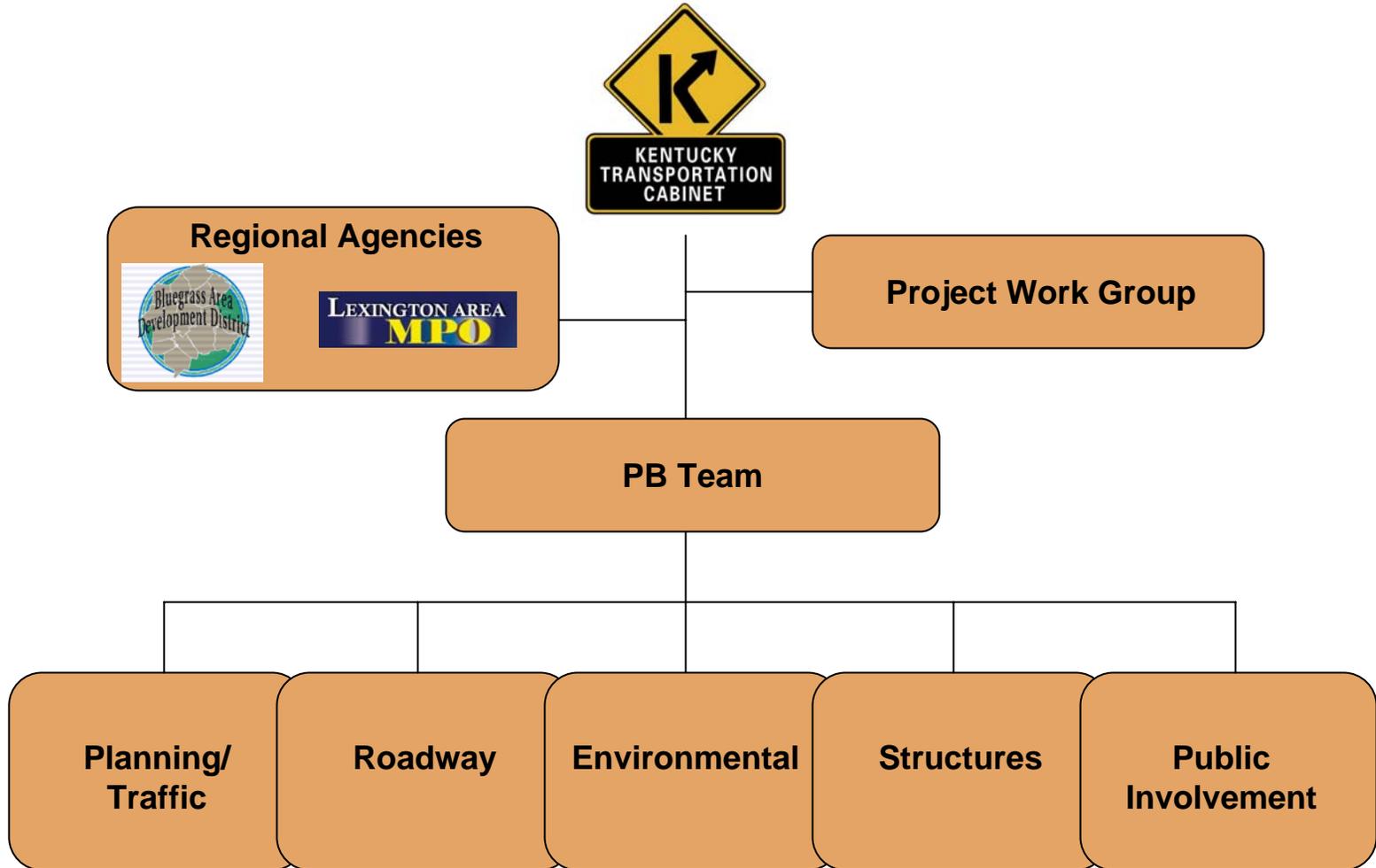


Project Need

- Study Needs Include:
 - Connectivity
 - Vehicle Safety
 - Traffic Congestion
 - Travel Time Reliability
 - Economic Development
 - Improved Access for Truck Traffic
 - Homeland Security

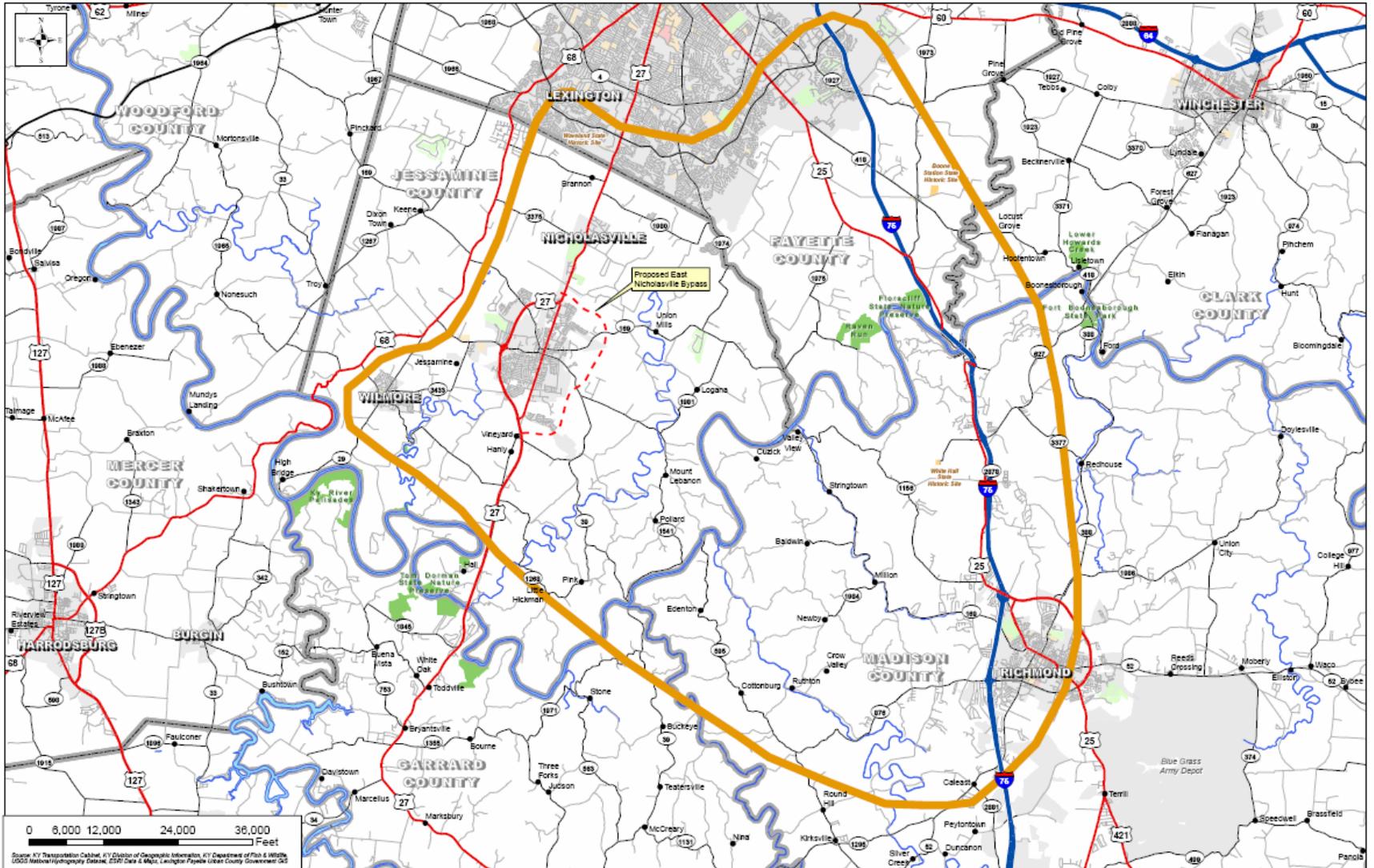


US 27 to I-75 Corridor Scoping Study Team Organization





Study Area



Source: KY Transportation Cabinet, KY Division of Geographic Information, KY Department of Fish & Wildlife, USGS National Hydrography Dataset, ESRI Data & Maps, Lexington: Fayette-Union County Government GIS

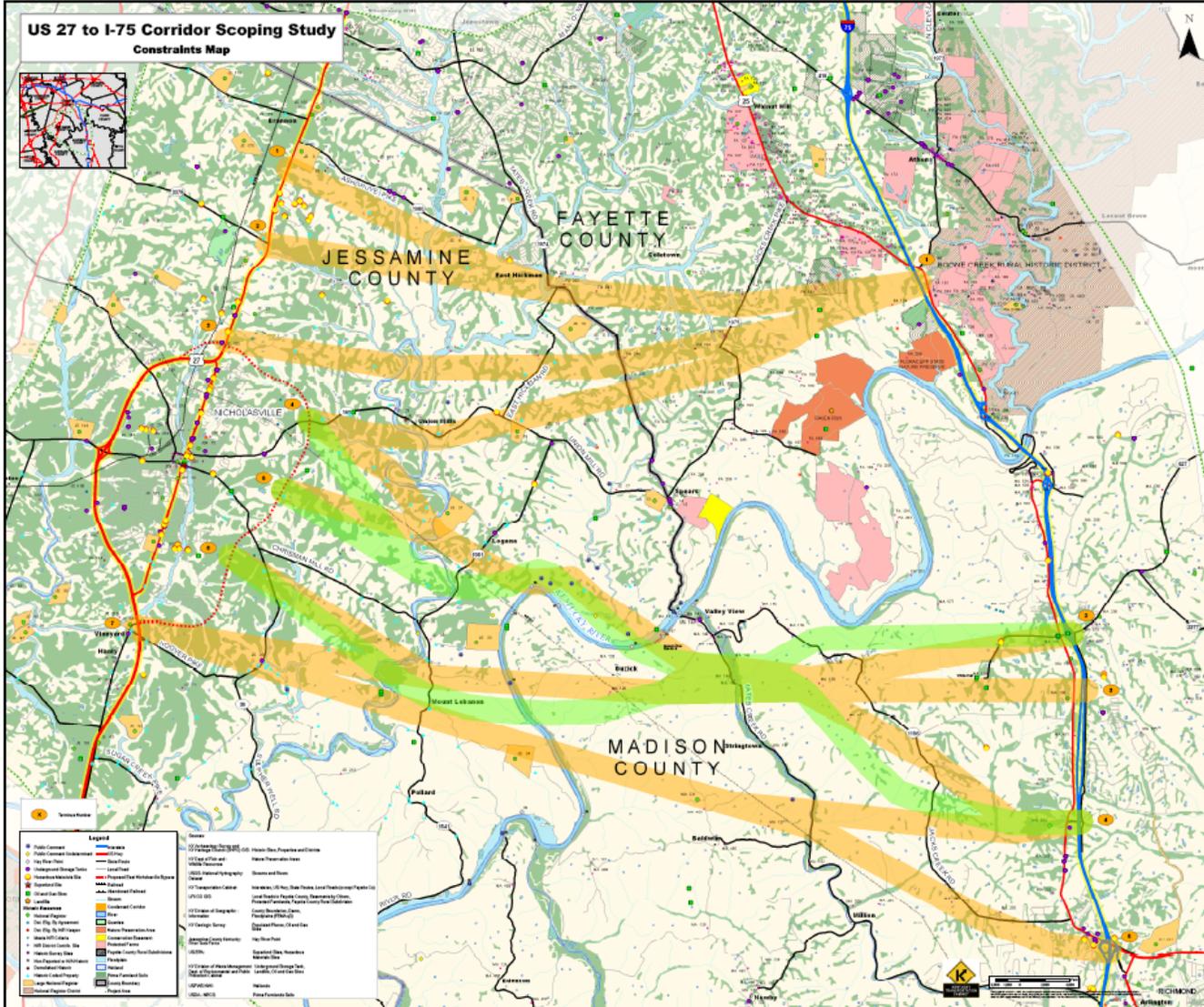


Study Characteristics

- Planning Level Study (not design)
- Looking at Possible Connection from US 27 to I-75
 - No Plans for Other Parts of a Roadway East or West
- End Result may be a Corridor (1,000 – 2,000 ft wide)
 - Not an Alignment
 - Examining a No Build Option
- Alternative Funding Methods are Being Examined
 - Tolls
 - Project Privatization
- No other Project Development Funds Available at this Time



Alternative Corridors



Alternative Corridors	Description	
	From	To
0	No-Build	
4-2	Eastern Nicholasville Bypass / KY 169 intersection	I-75 / KY 627 intersection
4-4	Eastern Nicholasville Bypass / KY 169 intersection	I-75 near Northridge Way
5-2	Eastern Nicholasville Bypass between KY 169 and KY 39	I-75 / KY 627 intersection
5-4	Eastern Nicholasville Bypass between KY 169 and KY 39	I-75 near Northridge Way
6-2	Eastern Nicholasville Bypass just south of KY 39	I-75 / KY 627 intersection
6-4	Eastern Nicholasville Bypass just south of KY 39	I-75 near Northridge Way



Model Options

Criteria	Kentucky Statewide Model	Lexington Area MPO Model	Comments
Includes 3-County Study Area	X	-	Lexington Model does not include Madison County
Contains Detailed Information for Part or Entire Study Area	-	X	Lexington Model provides more detailed SE data for TAZs in Fayette / Jessamine County
Model is Calibrated for Part or Entire Study Area	-	X	Lexington Model is calibrated for Fayette / Jessamine County whereas KYSTM is calibrated less for urbanized
Has Potential for Sub-Area Model	X	-	TransCAD has built-in utilities to conduct sub-area analysis
May Have Potential to be Expanded Based on Other Models	-	X	Lexington's Two-County Model could be expanded based on KYSTM or Madison County Model
Has a Freight (Truck) Component	X	-	KYSTM has Truck Model built on TRANSEARCH data; Lexington recently has conducted Freight Research
Has an Adaptable User Interface	-	-	Both models have a strict GISDK code; model may have to be developed 'outside' the code.

- As shown, both the Kentucky Statewide Model and the Lexington Area MPO Travel Demand Model have advantages and disadvantages with respect to their use on the US 27 to I-75 Scoping Study.
- From previous modeling experiences, sub-area models have proven to be a legitimate and logical option for creating a new model for a specified study area.
- On the other hand, expanding an existing model may prove challenging with respect to zonal development, network development, and the collection of similar data as in the existing model.
- Both a sub-area model and an expanded model will present challenges with respect to calibration.



Role of KYSTM

- In order to determine the need for a connector, the amount of traffic that would potentially use it needs to be quantified.
- The KYSTM was used to:
 - Determine how many vehicles would use a new connector;
 - Determine truck percentages on a new connector;
 - Compare connector volumes among the various alternatives; and
 - Determine impacts on competing roadways.



KYSTM Calibration Analysis

- Summary:
 - ADT assignments from KYSTM were within 1.2% of ADT counts in the 3 county study area
 - US 27 between Nicholasville Bypass and Lexington – assignments are high
 - Man O' War Blvd between US 25 and I-75 – assignments are low
 - Downtown Nicholasville – assignments are low
 - Local roads adjacent to I-75 – assignments are low



Revised Corridor Traffic Volumes

- Level 2 Analysis:
 - Percent change in traffic volumes along US 27, Man O' War Blvd. and I-75 were compared for the 18 corridors with the no-build alternative.
 - Some sections of US 27, Man O' War Blvd., and I-75 experience increases in traffic volumes as a result of a new connector while others realized a decrease in overall traffic volumes.
 - The increases and decreases on these roadways was determined to not be a differentiating factor for the remaining 6 build alternatives
 - Corridor volumes from the statewide model were grown at a rate of 1% per year to get a relative comparison among corridors.



Revised Corridor Traffic Volumes (cont.)

- Level 3 Analysis:
 - The Kentucky Statewide Model (KYSTM) is not able to forecast the corridor volumes to future years.
 - For this level of detail, using the historical growth rates would yield an unrealistic volume of traffic on a new corridor.
 - A meeting was held with KYTC staff to discuss traffic forecasting and the KYSTM.
 - It was decided that the best way to forecast the corridors was to take a weighted average of:
 - Growth factors in the study area based on a KYTC Central Office spreadsheet of growth rates by traffic count station, and
 - The Lexington MPO travel demand model.



Revised Corridor Traffic Volumes (cont.)

- The study area growth rate was calculated to be 2.2% and the ADT for each corridor was forecasted to the year 2040 using that growth rate.
- LOS was calculated for each corridor for the 4 typical roadway cross sections.



Quick Facts about Toll Roads

- Average toll costs \$0.05 to \$0.13 per mile.
- Tolls are more than doubled for commercial vehicles, depending on the number of axles.
- Tolls are higher for bridges and tunnels.
- Tolls can help cover maintenance and operation costs as well as some initial construction costs.



Quick Facts about Toll Roads (Cont.)

- Tolls provide opportunities for Public-Private Partnerships.
- Tolls help reduce demand.
- Depending on the price of the toll, cars and trucks may choose different routes.



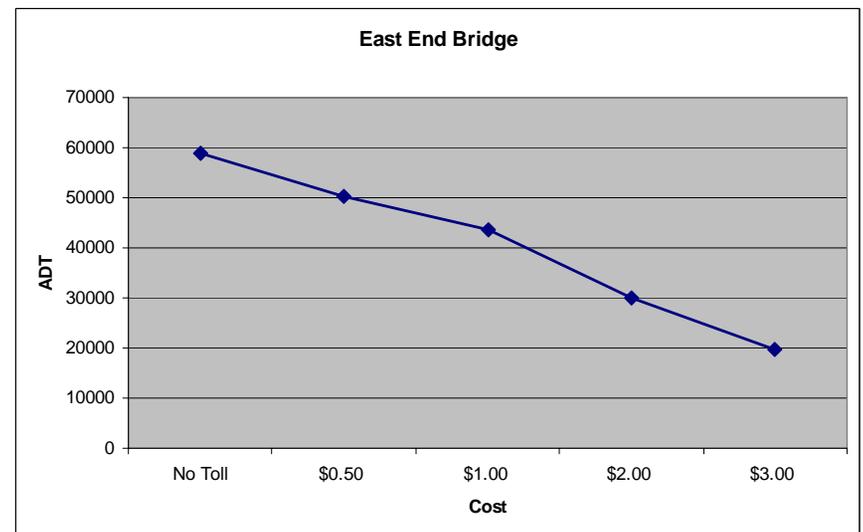
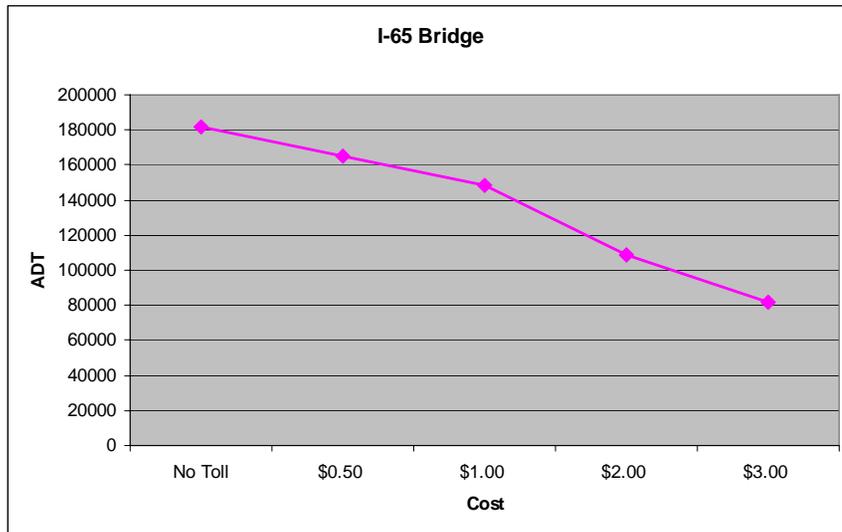
Lessons Learned from Tolling Study for Ohio River Bridges

- Travel time savings is equivalent to \$9.60 per hour for passenger vehicles and \$33.00 per hour for trucks.
- Vehicle operating savings are equal to \$0.16 per mile for passenger cars and \$0.65 per mile for trucks.
- Yearly toll operations cost (not including customer service center operations cost) is \$655,600 for alternatives where only 1 bridge is tolled.



Ohio River Bridges ADT Toll Impacts

- 2 alternatives were studied where only one of the four bridges was tolled.
- The figures show the 2030 ADT for the I-65 and East End bridges if there is no toll, a toll of \$0.50, \$1.00, \$2.00 or \$3.00.





Representative Toll Pricing in the US for Entire Roadways

State	Length (mi.)	Road Type	Min Pass Fee	Max Pass Fee	Min Truck Fee	Max Truck Fee
New York	5	Rural Minor Collector	\$9.00			
New York	5.6	Urban Freeway	\$0.32	\$23.05	\$0.67	\$93.85
New York	5.9	Rural Local	\$6.00			
Colorado	6.6	Urban Interstate	\$0.50	\$3.25	\$18.00	\$18.00
South Carolina	7.5	Rural Principal Arterial	\$0.50	\$1.00		
California	10	Urban Freeway	\$1.15	\$9.25	\$1.15	\$9.25
Texas	10.42	Urban Principal Arterial	\$1.00	\$1.25	\$6.25	
Texas	10.58	Urban Principal Arterial	\$1.00	\$1.25	\$6.25	
Texas	11	Urban Freeway	\$2.00		\$12.50	
New York	15	Urban Interstate	\$1.13	\$2.50	\$2.61	\$8.25
Oklahoma	17.3	Rural Minor Arterial	\$1.00		\$1.00	\$2.00
New York	17.9	Rural Interstate	\$0.32	\$23.05	\$0.67	\$93.85
Texas	21.7	Urban Principal Arterial	\$2.00	\$2.50	\$12.50	
Utah	22.5	Rural Principal Arterial	\$2.00		\$8.00	
Ohio	22.5	Rural Interstate	\$1.00		\$1.50	\$3.25
Oklahoma	25	Rural Interstate	\$4.00		\$16.00	

- The selected comparison data was based on existing facilities with similar lengths.
- Data compiled from: Toll Facilities in the United States: Bridges - Roads - Tunnels – Ferries. December 2007. Publication No: FHWA-PL-07-029
- Toll fee is for entire length and may include bridges.
- In many states, the toll is dependent on distance of travel and number of axles.



Representative Toll Pricing in the US for Bridges

State	Length (mi.)	Road Type	Min Pass Fee	Max Pass Fee	Min Truck Fee	Max Truck Fee
Minnesota - North Dakota	0.1	Non-interstate	\$0.63	\$0.75	\$0.63	\$0.75
Illinois - Iowa	0.19	Non-interstate	\$0.50		\$0.50	
New York	0.2	Non-interstate	\$2.00	\$4.00	\$2.00	\$12.00
New York - Canada	0.2	Non-interstate	\$3.00		\$3.00	\$55.00
Texas - Mexico	0.2	Non-interstate	\$2.00	\$7.00	\$7.00	\$20.00
Texas - Mexico	0.2	Non-interstate	\$2.50	\$6.00	\$8.00	\$20.00
Texas - Mexico	0.2	Non-interstate	\$1.65			
Texas - Mexico	0.26	Non-interstate	\$2.50		\$7.00	\$19.00
Texas - Mexico	0.3	Non-interstate	\$1.65			
Alabama	0.39	Non-interstate	\$1.50		\$3.50	\$5.00
New York	0.4	Non-interstate	\$1.00	\$2.25	\$3.60	\$27.00
Texas - Mexico	0.4	Non-interstate	\$2.50			
Illinois - Indiana	0.5	Non-interstate	\$1.00		\$1.50	\$3.00
New York - Canada	0.5	Non-interstate	\$3.00		\$3.00	\$55.00
Texas - Mexico	0.5	Non-interstate	\$1.65			
Alabama	0.59	Non-interstate	\$1.25		\$2.50	\$3.25
Illinois - Iowa	0.6	Non-interstate	\$1.00		\$4.00	\$10.00
New York	0.6	Non-interstate	\$0.30	\$1.00	\$2.50	\$9.00
Alabama	0.62	Non-interstate	\$1.50		\$3.50	\$5.00
New York	0.7	Non-interstate	\$0.30	\$1.00	\$2.50	\$9.00
New York	0.7	Non-interstate	\$1.75	\$2.25	\$3.60	\$27.00
New York - Canada	0.7	Non-interstate	\$2.70	\$3.00	\$5.40	\$13.00
New York	0.8	Non-interstate	\$1.00	\$2.25	\$3.60	\$27.00
Illinois - Indiana	0.9	Non-interstate	\$0.50		\$0.70	\$1.70
Interstate Bridges	1 to 5		\$0.30	\$6.00	\$1.43	\$108.00
Interstate Bridges	>5		\$0.40	\$4.00	\$1.15	\$53.44

- The selected comparison data was based on existing facilities with similar lengths.
- Data compiled from: Toll Facilities in the United States: Bridges - Roads - Tunnels – Ferries. December 2007. Publication No: FHWA-PL-07-029
- In many states, the toll is dependent on vehicle type and number of axles.



Potential Facility Toll Revenue

Corridor	2040 ADT	2040 ADT (Toll Reduction)				2040 Revenue			
		\$0.50	\$1.00	\$2.00	\$3.00	\$0.50	\$1.00	\$2.00	\$3.00
4-2	24,000	21,000	19,000	13,000	9,000	\$9,900,000	\$17,900,000	\$24,400,000	\$25,400,000
4-4	28,000	25,000	22,000	15,000	11,000	\$11,700,000	\$20,700,000	\$28,200,000	\$31,000,000
5-2	23,000	20,000	18,000	13,000	9,000	\$9,400,000	\$16,900,000	\$24,400,000	\$25,400,000
5-4	25,000	22,000	20,000	14,000	10,000	\$10,300,000	\$18,800,000	\$26,300,000	\$28,200,000
6-2	20,000	18,000	16,000	11,000	8,000	\$8,500,000	\$15,000,000	\$20,700,000	\$22,600,000
6-4	21,000	19,000	16,000	12,000	8,000	\$8,900,000	\$15,000,000	\$22,600,000	\$22,600,000

- The ADT reductions due to tolling are based on the Ohio River Bridges Study.
- The revenue shown is based on the upper limit of the ADT volumes.
- The revenue shown is per year for the different tolling prices
- The 2040 revenue dollars includes a 3% inflation factor for the time-value of money based on the CPI Index



Toll Information Conclusions

- Tolling decreases the ADT / amount of traffic that would use the toll road.
- The majority of states surrounding Kentucky have toll roads.
- Based on similar roadways, tolls between \$1 to \$2 may be appropriate.
- Tolling the bridge over the Kentucky River only does not seem to be cost-effective.
- Given the high estimated construction costs, tolls will not pay for the roadway and may not pay for the operation and maintenance costs for this project.
- A more complete toll study will need to be performed at a later date if this is considered for one of the build alternatives.



NCHRP 377 Information

- NCHRP 377 is entitled “Compilation of Public Opinion Data on Tolls and Road Pricing”
- The report:
 - Explores how the public feels about tolls and road pricing;
 - Examines public opinion concerning charging for the use of roads; and
 - Highlights factors associated with the acceptance or rejection of road pricing.



NCHRP 377 Results

- Themes in Public Opinion Results:
 - The public wants to see the value
 - The public wants to react to tangible and specific examples
 - The public cares about the use of the revenues
 - The public learns from the experience
 - The public uses knowledge and information available
 - The public believes in equity but wants fairness
 - The public wants simplicity
 - The public favors tolls over taxes



Next Steps in the Study Process

- Hold 2nd Public Meeting - June 16, 2008
- Hold PWG Meeting Following Public Meeting to Discuss Public Feedback
- Feedback Collected will Include Public Perception of Tolls
- Choose a Preferred Corridor
- Complete Project Documentation



Fayette



Jessamine

Questions?

Madison

