

Sample Tolling Scenario for Iowa
US 20 in Western Iowa

1. Costs to build and operate a U.S. 20 toll facility in Western Iowa:

A. Construction Costs

Estimates (\$ in millions) for toll plaza and road construction

Facility Type	Toll Plaza Costs*	Cost of Five Toll facilities (one every 25 miles)	Road Construction Cost	Total Road Construction and Toll Plaza Construction Costs
Four-lane roadway	\$ 12	\$ 60	\$ 520	\$ 580

* Average cost to construct one toll plaza (costs can range from \$5 to \$15 million per plaza). Source: Wilbur Smith Associates; inflated to 2010 dollars

B. Toll Plaza Operating Costs

Toll Plaza Operating Costs based on:

1. 3,500 average annual daily traffic (AADT)
2. 40% of all vehicles travel through all 5 toll plazas, and 60% travel through 2-3 toll plazas
3. 4.5 million toll plaza transactions (a transaction is one vehicle going through one toll booth) per year
4. 18 cents per transaction includes only the cost to operate a toll plaza; in 2010 dollars (18 cents equals 15 cents in 2005 dollars inflated by 3.5 % per year)
5. 34 cents includes toll plaza operation costs plus costs to administer tolling operations (includes pre-pass customer service, general administration, information technology, and financial administration); in 2010 dollars. (34 cents equals 29 cents in 2005 dollars inflated by 3.5 % per year). Source: Oklahoma Turnpike Authority annual report and Wilbur Smith Associates.

Annual Toll Plaza Operating Costs

Toll plaza operations only	\$0.18 per transaction	\$805,000
Toll plaza operations plus toll administration costs	\$0.34 per transaction	\$1,520,000

2. \$580 million bond issue (\$520 million for roadway construction and \$60 million for toll plaza construction):

Annual Payment in millions

	10 years	15 years	20 years	25 years	30 years
3.5 %	\$69.7	\$50.4	\$40.8	\$35.2	\$29.8
4.0 %	\$71.5	\$52.2	\$42.7	\$37.1	\$33.5
4.5 %	\$73.3	\$54.0	\$44.6	\$39.1	\$35.6
5.0 %	\$75.1	\$55.9	\$46.5	\$41.2	\$37.7

Total Paid over Bond Life in millions

	10 years	15 years	20 years	25 years	30 years
3.5 %	\$697	\$755	\$816	\$880	\$894
4.0 %	\$715	\$782	\$854	\$928	\$1,006
4.5 %	\$733	\$810	\$892	\$978	\$1,068
5.0 %	\$751	\$838	\$931	\$1,029	\$1,132

Interest Paid over Bond Life in millions

	10 years	15 years	20 years	25 years	30 years
3.5 %	\$117	\$175	\$236	\$300	\$314
4.0 %	\$135	\$202	\$274	\$348	\$426
4.5 %	\$153	\$230	\$312	\$398	\$488
5.0 %	\$171	\$258	\$351	\$449	\$552

Assumptions:

- Principal amount = \$580 million (\$520 million for roadway construction and \$60 million for toll plaza construction—in 2010 dollars)
- Interest rate = 3.5 % to 5.0 %
- Term = 10 to 30 years
- Does not include any origination fees to sell the bonds.

Source:

- Kansas issued \$250 million in 2004 maturing in the years 2018 through 2023 at interest rates varying from 4.5 % to 5.5 %.
- Nevada issued bonds with terms of 15 to 20 years.
- Missouri issued \$900 million in bonding with a 20-year commitment.
- Wilbur Smith indicated typical lengths of 30 to 40 years.
- Tax free municipal bonds are currently selling at a rate of 3.75 % for 10 years and 4.0 % to 4.25 % for a 30-year bond. (Charles Schwab Company).

3. Assessment of revenues and costs for a toll road carrying 5,000 AADT (with and without roadway construction costs being considered)

Annual Toll Revenues (\$0.06 per mile):

Tolls from traffic traveling the entire length (40%)-----	\$4,380,000
Tolls from traffic using only part of the length (60%) -----	<u>\$1,971,000</u>
Total revenues-----	\$6,351,000

Annual Toll Operational Costs:

Toll plaza operational costs-----	\$1,150,000
Toll administration costs-----	\$1,022,000
Toll plaza capital costs*-----	<u>\$4,600,000</u>
Total toll plaza costs-----	\$6,772,000

* \$60 million for toll plaza construction financed with bonds for 20 years at 4.5 %

Net “profit or loss” before considering road costs:
Toll revenues minus toll costs----- (\$421,000)

Road construction costs:

Four-lane roadway annual bond repayments*-----	\$40,000,000
* \$520 million for roadway construction financed with bonds for 20 years at 4.5 %	

Road maintenance costs:

Annual maintenance costs for a typical 100-mile four-lane primary road are \$2,000,000 (equals \$20,000 per mile).

Net “profit or loss” after considering road construction and maintenance costs:
Toll revenues minus toll and road costs ----- (\$42,421,000)

AADT required to cover costs to retire bonds for construction, maintenance, operations and administration: ----- 57,300
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6. Examples of privatized highways in other states—typical AADT:

- Indiana Turnpike (which is I-80 and I-94)—151 miles with AADT ranging from 20,500 to 25,800
- Kansas Turnpike—232 miles with AADT averaging 16,040 (ranging from 3,200 to 17,200).
- Oklahoma—5 of 10 total turnpikes are listed below:

Four-lane facilities

1. Indian Nation Turnpike (non-interstate; opened in 1966)—105 miles with AADT of 6,000.
2. Will Rogers Turnpike—88 miles with AADT of 3,400
3. H.E. Bailey Turnpike—61 miles with AADT of 26,600
4. Cimarron Turnpike (non-interstate; opened in 1975)—68 miles with AADT of 4,400

Two-lane facilities

1. Chickasaw Turnpike (non-interstate; opened in 1991)—27 miles with AADT of 4,500

Operating Statistics for Oklahoma, Kansas, and Iowa Turnpikes (in 2005 dollars)

	Indian Nation Turnpike	Cimarron Turnpike	Chickasaw Turnpike	All 10 Oklahoma Turnpikes	Kansas Turnpike	Iowa Example Turnpike
Miles	105	68	27	605	232	100
Toll Receipts	\$11,570,000	\$8,649,000	\$472,000	\$191,194,000	\$11,000,000	\$5,293,000
VMT	191,655,000	147,830,000	12,786,000	2,915,521,000	1,386,949,000	105,000,000
Transactions	6,017,000	6,792,000	764,000	131,085,000	32,591,000	6,300,000
Revenue per mile	\$0.06	\$0.06	\$0.04	\$0.07	\$0.05	\$0.05**
Revenue per transaction	\$1.92	\$1.27	\$0.61	\$1.46	\$2.25	\$0.84
Cost per transactions*	Not available	Not available	Not available	\$0.12	Not available	\$0.15**

* This includes only the cost to operate a toll plaza. Other costs to administer tolling operations (includes pre-pass customer service, general administration, information technology, and financial administration), Highway Patrol, roadway and toll plaza maintenance are not included.

** These costs were inflated by 3.5 % per year to arrive at 2010 dollars, which are shown in previous calculations.

- Texas:
 1. Texas 121—85 miles, first phase opened in late 2006; no AADT data available yet
 2. Austin I-35 Bypass (State Highway 130)—16 miles open, 33 miles will open in late 2007; no AADT data available yet
 3. President George Bush Turnpike (in Dallas)—31 miles with AADT of 70,000

7. Federal requirements to get approval to toll an Interstate:

- With some exceptions tolls cannot be established on existing interstate facilities. Tolls are allowed, however, on:
 - Any interstate routes which have previously been tolled.
 - Any newly constructed interstate segment.
- SAFETEA-LU did provide two program opportunities for tolling of interstates:
 - Express Lanes Demonstration Program—this new demonstration program permits tolling on selected facilities to manage high levels of congestion or finance added Interstate lanes for the purpose of reducing congestion. Fifteen (15) demonstration projects through 2009. Applications are still being accepted.
 - Interstate System Reconstruction and Rehabilitation Pilot Program—allows up to three (3) existing Interstate facilities to be tolled to fund needed reconstruction or rehabilitation that could not otherwise be adequately maintained or functionally improved without the collection of tolls. Applications are still being accepted for one remaining opening.
 - Steps required for these two programs:
 - ✓ Submit an “expression of interest” to FHWA Tolling and Pricing Team in Washington.
 - ✓ The initial tolling agreement, private/public partnership agreement, and NEPA activities must be approved by FHWA.

Factors other states consider when developing a project as a toll facility:

1. Construction Feasibility—From an engineering perspective, is it a project that can be built?
2. Traffic Demand Trends—Will there be enough traffic to support the toll road?
3. Availability of Free Alternate Routes—Are alternative, non-toll routes available?
4. Economic Strength and Diversity—Is the facility needed? Will it carry sufficient traffic to pay the cost to build it?

Sample Tolling Scenario for Three Iowa River Bridges

1. US 275 in Council Bluffs
2. I-74 in Davenport
3. US 20 in Dubuque

1. Costs to Build and Operate Bridge Toll Facilities:

A. Construction Costs

Estimates (\$ in millions) for toll plaza and bridge construction

Bridge Location	Toll Plaza Construction Costs*	Bridge Construction Cost**	Total Bridge Construction and Toll Plaza Construction Costs
US 275	\$ 12	\$ 85	\$ 97
I-74	\$ 12	\$ 1,350	\$ 1,362
US 20	\$ 12	\$ 220	\$ 232

* Average cost to construct one toll plaza (costs can range from \$5 to \$15 million per plaza). Source: Wilbur Smith Associates; inflated to 2010 dollars

** Includes total cost of bridge and associated roadway improvements on both sides of the river.

B. Toll Plaza Operating Costs

Toll Plaza Operating Costs based on:

6. A toll plaza transaction is one vehicle going through one toll booth.
7. 18 cents per transaction includes only the cost to operate a toll plaza; in 2010 dollars (18 cents equals 15 cents in 2005 dollars inflated by 3.5 % per year)
8. 34 cents includes toll plaza operation costs plus costs to administer tolling operations (includes pre-pass customer service, general administration, information technology, and financial administration); in 2010 dollars. (34 cents equals 29 cents in 2005 dollars inflated by 3.5 % per year). Source: Oklahoma Turnpike Authority annual report and Wilbur Smith Associates.

Annual Toll Plaza Operating Costs

		US 275	I-74	US 20
Toll plaza operations only	\$0.18 per transaction	\$558,000	\$4,631,000	\$1,301,000
Toll plaza operations plus toll administration costs	\$0.34 per transaction	\$1,054,000	\$8,747,000	\$2,457,000

2. Annual Toll Plaza and Bridge Construction Costs:

Annual Payment in Millions (based on 4.5% @ 20 years)

Bridge Location	Toll Plaza Construction Cost	Bridge Construction Cost	Annual Payment
US 275	\$ 0.9	\$ 6.5	\$ 7.4
I-74	\$ 0.9	\$ 103.8	\$104.7
US 20	\$ 0.9	\$ 16.9	\$ 17.8

Assumptions:

- Does not include any origination fees to sell the bonds.

Source:

- Kansas issued \$250 million in 2004 maturing in the years 2018 through 2023 at interest rates varying from 4.5 % to 5.5 %.
- Nevada issued bonds with terms of 15 to 20 years.
- Missouri issued \$900 million in bonding with a 20-year commitment.
- Wilbur Smith indicated typical lengths of 30 to 40 years.
- Tax free municipal bonds are currently selling at a rate of 3.75 % for 10 years and 4.0 % to 4.25 % for a 30-year bond. (Charles Schwab Company).

3. Assessment of Revenues and Costs (with and without bridge construction costs being considered)

		US 275	I-74	US 20
Annual Toll Revenues*		\$ 5,330,000	\$ 42,491,000	\$ 13,718,000
Annual Toll Plaza Costs	Toll Plaza Operation Costs	\$ 558,000	\$ 4,631,000	\$ 1,301,000
	Toll Administration Costs	\$ 496,000	\$ 4,116,000	\$ 1,156,000
	Toll Plaza Capital Costs	\$ 923,000	\$ 923,000	\$ 923,000
	Total Toll Plaza Costs	\$ 1,977,000	\$ 9,670,000	\$ 3,380,000

* Toll Revenue Assumptions:

- 2006 average annual daily traffic:
 US 275—8,500
 I-74-----70,500
 US 20---19,800
- Toll rates:
 Cars, vans, pickups--- \$ 1.50
 Trucks and buses-----\$ 1.75 per axle
 Source for toll rates is Blue Water Bridge in Michigan

Total Revenues Minus Total Costs

Net “profit or loss” <u>not</u> considering bridge construction costs*:	
Toll revenues minus toll costs	
US 275-----	\$ 3,353,000
I-74-----	\$ 32,821,000
US 20-----	\$ 10,338,000

* Does not include bridge maintenance costs

Annual bridge construction costs*:

US 275-----	\$ 6,534,000
I-74-----	\$ 103,783,000
US 20-----	\$ 16,913,000

* Financed with bonds for
20 years at 4.5 %

Net “profit or loss” considering bridge construction costs*:	
US 275-----	(\$ 3,181,000)
I-74-----	(\$ 70,962,000)
US 20-----	(\$ 6,575,000)

* Does not include bridge maintenance costs

AADT required to cover costs to retire bonds for bridge and toll plaza construction plus toll plaza operations and administration costs:	
US 275-----	14,800
I-74-----	218,700
US 20-----	31,300

4. Examples of Toll Bridge Rates in Other States:

Bridge Location	Cars, vans, and pickups	Buses	2-axle truck	3-axle truck	4-axle truck	5-axle truck
International Bridge-Michigan	\$ 2.00	\$ 6.00	\$ 6.00	\$ 9.00	\$ 12.00	\$ 15.00
Blue Water Bridge-Michigan	\$ 1.50	\$ 5.25	\$ 3.50	\$ 5.25	\$ 7.00	\$ 8.75
Ambassador Bridge-Michigan*	\$ 3.75	\$ 7.75	\$ 4.00	\$ 7.50	\$ 11.50	\$ 11.50
Grosse Ile Bridge-Michigan	\$ 1.50	\$ 3.00	\$ 3.00	\$ 4.50	\$ 6.00	\$ 7.50
Delaware River Joint Toll Commission Bridges	\$ 0.75		\$ 5.00	\$ 9.75	\$ 13.00	\$ 16.25
Chicago Skyway Toll Bridge-Illinois	\$ 2.50					\$ 8.40
Lake of the Ozarks Toll Bridge-Missouri	\$ 2.50					

* Minimum tolls for trucks; actual truck tolls are based on \$ 0.0315 per hundred pounds

I-74 Corridor Improvements Funding and Financing Options Study

- Study completed June 2011 to assess funding and financing options for I-74 corridor project.
- Included an assessment of tolling as an option
- I-74 project background
 - Approximately 70,000 vehicles per day (designed for 50,000)
 - IA bound span completed 1935, IL span 1959
 - No shoulders, inadequate ramp and interchange spacing, undesirable horizontal curves
 - High maintenance
- I-74 corridor costs
 - Approx \$1.3B if construction starts in 2016
 - Iowa share is approx ½
- Tolling option
 - 50 cent toll supports bonding capacity of less than \$100 million
 - One dollar toll supports bonding capacity of \$150 million to \$200 million
 - Estimated \$8.8 million capital costs to implement
 - First year operating cost estimated to be \$5.6 million
- Tolling impacts
 - Delay project at least one year – each year of delay adds \$50 million + to project cost
 - Significant traffic diversion to other bridges in area