



Projections of Operating Costs for Toll Facilities

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Projections of Operating Costs for Toll Facilities

Outline

1. Background Projects
2. Trends and Factors in Toll Operations
3. Toll Facilities as Businesses or Investments
4. Breakdown of Operating Costs
5. Evaluations of Operating Costs
6. Results and Key Points



Projections of Operating Costs for Toll Facilities

1. Background Projects

Two Projects Emphasized Operations Costs

- **Indiana Toll Road Concession Offering,**
 - Several investing groups bid to purchase 75-year concession,
 - Required an evaluation and estimation of toll operating costs over the concession period,
- **Miami-Dade Expressway (MDX) Authority's Open Road Tolling (ORT) Master Plan,**
 - High-level program design to convert system from cash-and-ETC toll operations to ETC and Video Only,
 - Required evaluation and projection of changes in toll operating costs.



Projections of Operating Costs for Toll Facilities

1. Background Projects

Indiana Toll Road (ITR) Concession Offering

- PBS&J was Toll / ITS advisor for Macquarie - Cintra,
- Assessed capital requirements for plaza and system
- Estimated capital costs,
- Developed breakdown of operating costs,
- Estimated operating costs for the 75-year concession period.





Projections of Operating Costs for Toll Facilities

1. Background Projects

MDX ORT Master Plan

- PBS&J was lead consultant to develop this policy-level plan,
- Identified projects needed to remove plazas and change system to all-electronic and video tolls,
- Used for board approval of necessary project changes.
- Required understanding of operational cost impacts.





Projections of Operating Costs for Toll Facilities

2. Trends and Factors in Toll Operations

ITR and MDX Reflected Two Major Industry Trends:

1. The Entry of Equity Financing:

- To meet the challenges of continued highway project cost increases:
 - If project costs are too large for available public funding and/or debt financing (e.g. IH 635),
 - When toll projects required too much debt and required assistance (e.g. Denver NW Parkway),
- Major statewide programs (Indiana's "Major Moves") required huge capital infusion.

2. The Exit of Cash Toll Collection:

- Electronic (and video) toll collection is growing at existing toll operations,
- New Facilities are built mostly, or solely, for electronic and video toll collection.



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2. Trends and Factors in Toll Operations

The Entry of Equity Financing

- “Debt” brings fixed contractual obligations:
 - To service the debt, and
 - Meet bond covenant conditions, such as maintenance, tolling, and financing.
- “Equity” investment conveys some level of facility control.
 - Earnings are not fixed - equity investors take more risk.
 - Equity investors target internal rates of return (IRR) at a premium over government debt.
 - Equity investors expect some flexibility or level of certainty or complete control over toll rates (enables forecasting).
 - Equity investors expect some or complete control of facility management,
- Proposing Investors must be able to project and control operating costs:
 - To project net revenues for the facility in question,
 - To increase the probability of meeting target net revenues.
 - Large capex costs are infrequent, but operating costs are forever...



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2. Trends and Factors in Toll Operations

The Entry of Equity Financing is Controversial

- Concession Agreements are controversial because of these control features:
 - Indiana – Legislative deal had to address toll rates for local citizens, and had other provisions.
 - Texas – All things related to House Bill HB1892.
 - The terms and conditions of Concession Agreements are critical.
- Toll facilities' need to provide smooth operations and a high level of service is not controversial. Operations cost projections must assume “everything” will be required to completely address good business practices, as well as meeting all concession agreement requirements:
 - Indiana concession agreement required installation of electronic tolling.



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2. Trends and Factors in Toll Operations

The Exit of Cash Toll Collection:

- ETC Popularity
 - Now with Indiana and Ohio development, all major US toll facilities will have ETC.
- Cash collection is increasingly expensive and impractical.
- MDX needed to close system to prevent free movements, but had no room for a lot of ramp cash toll plazas,
- Cash facilities minimized at: ISTHA, OOCEA, WSDOT, TCA, OTA, HCTRA, TTA, etc.
- Cash is gone from: 407 ETR, SR 91, Westpark Tollway, Santiago concessions, new Florida Turnpike ramps, existing and proposed managed lanes.





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2. Trends and Factors in Toll Operations

The Exit of Cash Toll Collection is Possible with Video:

- Video, used for violation enforcement for over 10 years, is now increasingly used for alternate toll accounts: video toll collection, or “tag-less” ETC accounts.
 - 407 ETR - Toronto,
 - PlatePass – Houston for Rental Cars,
 - Florida’s Turnpike – Tampa-Hillsborough Expressway Authority, and
 - SH 121 - Dallas:**

State Highway 121 Toll Rates

Ramp or Plaza Name	Direction/ Tolling Point	Passenger vehicle, motorcycle, pickup truck, SUV		Passenger vehicle pulling a trailer		Unibody truck, bus, motorhome, tractor without trailer		Tractor with one trailer		Tractor with two trailers	
		with Tag	without Tag	with Tag	without Tag	with Tag	without Tag	with Tag	without Tag	with Tag	without Tag
FM 2281/Old Denton Rd	NB Exit & SB Ent	\$0.30	\$0.40	\$0.60	\$0.80	\$0.90	\$1.20	\$1.20	\$1.60	\$1.50	\$2.00
FM 544/Parker Rd	NB Exit & SB Ent	\$0.25	\$0.30	\$0.50	\$0.60	\$0.75	\$0.90	\$1.00	\$1.20	\$1.25	\$1.50
Carrollton Pkwy	NB Exit & SB Ent	\$0.20	\$0.25	\$0.40	\$0.50	\$0.60	\$0.75	\$0.80	\$1.00	\$1.00	\$1.25
MacArthur Blvd	NB Ent & SB Exit	\$0.20	\$0.25	\$0.40	\$0.50	\$0.60	\$0.75	\$0.80	\$1.00	\$1.00	\$1.25
Denton Tap Rd Plaza	Toll Plaza	\$0.45	\$0.60	\$0.90	\$1.20	\$1.35	\$1.80	\$1.80	\$2.40	\$2.25	\$3.00

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Projections of Operating Costs for Toll Facilities

3. Toll Facilities as Businesses or Investments

Not Just Building Roads for Vehicles...

- **Public sector toll facilities are operating businesses:**
 - Same functions as all public roads, plus revenue collection and some autonomy in engineering, finance management, and operations,
 - Under governmental GAAP, self-financing public entities generally report their income, assets and liabilities as Enterprise Funds, to account for business-type activities.
 - These presentations are similar to private company financial statements, and strictly regulated.
 - Consistent reporting facilitates investment activity, with consistent presentation of information for current and potential investors.



Projections of Operating Costs for Toll Facilities

3. Toll Facilities as Businesses or Investments

... But Building Investment Vehicles

- Financial Reporting under GAAP has standard components including:
 - Statement of Net Assets or Balance Sheet,
 - Statement of Revenues, Expenses and Changes in Fund Net Assets or Equity (i.e., an Income Statement),
 - Statement of Cash Flows,
 - Management Discussion and Analysis (MD&A),
 - Notes to the Financial Statement,
- Referred to as Financial Statements, or Comprehensive Audited Financial Reports.
- Info on operating costs is contained in the Income Statement, the MD&A or Notes.





Projections of Operating Costs for Toll Facilities

3. Toll Facilities as Businesses or Investments

Reporting Example:

- Outline of 2006 Audited Financials from HCTRA:
- Audited financials are a great uniform source of overall agency or company performance, but typically do not provide operations details,
- Internal budgeting and reports provide that information, but they are less standard across agencies, and not always available.

**TOLL ROAD ENTERPRISE FUND OF HARRIS COUNTY, TEXAS
BASIC FINANCIAL STATEMENTS
FISCAL YEAR ENDED FEBRUARY 28, 2006**

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Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Now What?

- The audited financials often do not provide much detail in the composition of operations costs.

**TOLL ROAD ENTERPRISE FUND OF HARRIS COUNTY, TEXAS
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS
FOR THE YEAR ENDED FEBRUARY 28, 2006**

OPERATING REVENUE	
Toll revenue	\$ 349,341,225
Lease revenue	1,000,948
Total operating revenue	<u>350,342,173</u>
OPERATING EXPENSES	
Salaries	28,771,452
Materials and supplies	7,265,279
Services and fees	28,748,034
Utilities	2,288,230
Transportation and travel	525,709
Depreciation	51,818,107
Total operating expenses	<u>119,416,811</u>
Operating income	<u>230,925,362</u>
NONOPERATING REVENUES	
Investment income	19,799,582
Total nonoperating revenues	<u>19,799,582</u>
NONOPERATING EXPENSES	
Interest expense	97,189,289
Amortization expense	13,642,903
Loss on disposal of capital assets	5,199
Total nonoperating expenses	<u>110,837,391</u>
Income before contributions and transfers	139,887,553
Contributions	3,129,512
Transfers out	<u>(20,241,030)</u>
Change in net assets	122,776,035
Net assets, beginning of year	150,732,249
	<u>\$ 273,508,284</u>

Excerpt from Financial Statement for the Toll Road Enterprise Fund of Harris County, Texas, as of February, 2006.





Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Operations Costs in Context of the Whole Financial Picture

- **Capital Investing** – Our typical engineering domain –
 - *Build the facility,*
- **Finance** –
 - *Raise funds to build the facility,*
- **Operations** –
 - *Maintain the facility to protect the investment, and*
 - *Collect user fees to meet financing obligations.*

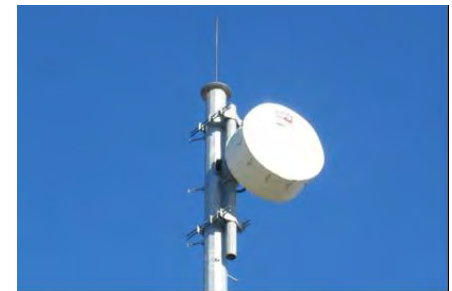


Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Toll Agency Operating Costs Include:

- Administrative Services
- Roadway Operations:
 - Highway and Bridge/Tunnel Maintenance,
 - Traffic and ITS Operations,
 - Police and Emergency Vehicles.
- Revenue Collection Operations:
 - Toll Plaza Operations
 - Back Office Operations
- Other General Categories:
 - IT and Telecom,
 - Labor Benefits
 - Facilities
- Different agencies group these entities differently, but all have them all.





Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Roadway Operations

- Highway maintenance provided by:
 - Traditional agency in-house staff and resources, or
 - Service contracts with various price structures.
- Work / services include:
 - Preventive and corrective maintenance-level repairs of pavement, drainage, slopes, structures, signs and other appurtenances,
 - Road closures and maintenance-of-traffic setups,
- Traffic management / ITS operations costs revolve around traffic management center staffing, and maintenance or life-cycle replacement of roadside devices.
- Police and emergency services normally provided under contractual arrangements
- When looking at comparables, important to consider quality of pro-active maintenance work, which has higher up-front costs.





Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Revenue Collection – Toll Plazas / Roadside Operations

- Plaza and Roadside costs:
 - Labor is by far the biggest component: in booths, and managing plazas,
 - Banking - Armored car services in many locations,
 - Buildings and infrastructure costs in utilities and building maintenance
 - These costs are somewhat “fixed,” that is, will not decrease just because cash-paying traffic volumes drop.





Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Revenue Collection – Back Office Operations:

- ETC major cost categories:
 - Systems,
 - **Back office processing (CSC “storefront,” call center and IVR, mailroom, Web services),**
 - Transponders,
 - Financial / Credit Card costs.
- Additional Video Costs:
 - Reading and verifying license plates,
 - Identifying the correct vehicle owner,
 - Additional mail.
- Leakage
 - Systems missing some vehicles,
 - Systems not correctly tolling some vehicles,
 - Willful violators.





Projections of Operating Costs for Toll Facilities

4. Breakdown of Operating Costs

Other General Categories

- IT and Telecom Categories:
 - IT Hardware,
 - Software,
 - Communications services,
 - IT Maintenance,
 - IT/Telecom costs may be included with the toll system, or with ITS, or reported separately.
- Labor benefits may be reported separately – caution when investigating legacy agency budgets and costs.
- Buildings and fixed facilities maintenance and replacement costs must be included.





Projections of Operating Costs for Toll Facilities

5. Evaluations of Operating Costs

Apples to Apples?

2. Table of Selected 2004 Toll Operations Ratios

	Illinois Tollway	Indiana Toll Road	Ohio Turnpike
Gross Toll Revenue (\$000s)	\$391,586	\$85,039	\$189,701
Operating Costs (\$000s)	\$200,524	\$32,239	\$98,013
Annual Toll Collection and Svcs (\$000s)	\$83,914	\$9,508	\$46,449
Annual Toll Transactions (000)	823,145	54,058	50,160
Toll collection costs / toll revenue	21.4%	11.2%	24.5%
toll collection costs / transaction	\$0.10	\$0.18	\$0.93

- Consider three Midwestern toll agencies' results from 2004:
 - ISTHA – all barrier system, many low-value transactions, large percentage of short, commuter, passenger car trips,
 - ITR – barrier and ticket system, low toll rates, many long-haul commercial vehicle trips.
 - OTC – all ticket system, moderate toll rates, large percentage of long-haul trips.
- Simple calculations of cost / transaction by themselves may not reveal very much except as a reality check for calculations.
- However, ratio analysis or cost / transaction calculations are useful across similar agencies, and to measure performance at one agency over time.



Projections of Operating Costs for Toll Facilities

5. Evaluations of Operating Costs

Apples to Apples?

- Useful comparative indicators to consider include:
 - Operations costs (less depreciation) / gross revenue,
 - Customer Service Center back office costs / transaction,
 - Video transaction processing costs (image review, plate identification, violation processes), per video transaction,
 - Roadside toll collection cost / transaction (but be very careful of how fixed costs are allocated).
 - Other ratios or unit costs such as operations cost / vehicle mile can be good comparative indicators of alternate toll concepts.





Projections of Operating Costs for Toll Facilities

6. Results and Key Points

The ITR work we did:



- First reviewed existing conditions, concession agreement requirements, and designed system to meet needs,
- Then developed base line estimate based on our costs for the system and staffing,
- Looked at recent budgets to calibrate costs and verify completeness,
- Looked at other agencies cost / transaction for comparison,
- Looked at percentage of gross revenues for a check.
- Through iterative reviews, added more detail and refined the model.



Projections of Operating Costs for Toll Facilities

6. Results and Key Points

The MDX work we did:

- Took existing costs and response ratios of violation notices,
- Used a variety of traffic, participation scenarios and compliance with the video business rules.
- All the calculations and estimates were traceable back to the assumptions.
- The results for multiple scenarios indicated that with increased fees to cover video processing costs, the all ETC and video operations were very efficient for toll operations.



Projections of Operating Costs for Toll Facilities

6. Results and Key Points

The MDX work we did:

Table 6.2 - Tabulation of Estimated ORT Operating Costs

The results of the case analyses are given below. Cases 2, 3 and 4, with only 75% ETC participation, are more dependent upon video tolling and effective violation enforcement to capture all toll revenues. In all cases, projected activity levels (based on current conditions) indicate that the combination of revenue from SunPass and the MDX Video CSC should meet the WSA revenue projections.

Case	1	2	3	4	5	6
FY	2010	2010	2010 ¹	2011	2015	2020
Routes	All	All	874/878 and 924	All	All	All
Video CSC Ops Costs	\$12,584,246	\$16,535,919	\$7,748,151	\$17,334,546	\$15,625,187	\$19,057,965
ORT System M&O Costs	\$4,296,500	\$4,296,500	\$2,468,000	\$4,468,360	\$5,025,297	\$5,115,259
Total ORT Operations Costs¹	\$16,880,746	\$20,832,419	\$10,216,151	\$21,802,906	\$20,651,484	\$25,173,224
Estimated SunPass Revenue	\$165,565,059	\$153,518,073	\$62,642,607	\$156,588,461	\$180,825,913	\$191,193,030
Estimated MDX VCSC Revenue	\$19,553,030	\$32,829,369	\$13,395,661	\$33,485,728	\$22,266,533	\$24,235,653
Total Estimated Revenue	\$185,118,089	\$186,347,442	\$76,039,268	\$190,074,189	\$203,093,446	\$215,431,883
WSA Estimated ORT Revenue ²	\$180,454,000	\$180,454,000	\$70,964,000	\$183,887,000	\$197,615,000	\$209,812,000

Note 1: This does not include costs for legacy cash collection operations.

Note 2: These are the Traffic and Revenue consultant forecasts for ORT only. FY 2010 results are only for SR 874/ SR 878 and SR 924. Therefore there will also be toll revenue from SRs 112 and 836 to complete the revenue picture for FY 2010, which is not shown here.

Note 3: This column data assumes that ORT will be in operation on SR 874/878 and SR 924 during FY 2010, and incurring maintenance and operations costs. Estimates for ORT costs and revenues are for a full year, which may be conservative.

DTC - March 2008 Final Report



Projections of Operating Costs for Toll Facilities

6. Results and Key Points

- When estimating operating costs, the breakdown of costs must be carefully considered.
- Need your business rules and processes developed,
- Compare analytical results against history with internal data where possible,
- Compare analytical results against peers with audited financials, to check appropriateness of results.



Projections of Operating Costs for Toll Facilities

6. Takeaways and Key Points

Questions?

Thank You