STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

MICHAEL F. EASLEY
GOVERNOR

1578 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1578

DAVID W. JOYNER
EXECUTIVE DIRECTOR

BOARD OF DIRECTORS MEETING MINUTES

Thursday, November 20, 2008
Board Room, NCTA Offices

Members present:	Lyndo Tippett, Chairman
	Anthony Fox
	Perry Safran
	Bob Spencer
	Robb Teer
	Bill Lackey
	Lanny Wilson
Members absent:	Sang Hamilton
	David Redwine
Also present:	David Joyner, Executive Director

Chairman Lyndo Tippett called the meeting to order at 1:10 pm. He declared that a quorum was present and read the Ethics Act statement.

Perry Safran moved approval of the September 2008 minutes. Lanny Wilson seconded the motion, and the minutes were approved as presented.

GPS Tolling: Andy Lelewski gave a presentation on GPS tolling. Mr. Lelewski discussed how it works and its benefits. He also addressed concerns relating to the use of GPS tolling. He cited examples of satellite tolling systems used in Germany and a GPS test study in Seattle, WA. (See attached presentation.) David Joyner pointed out that there are many other similar technologies. He also discussed the Alliance for Toll Interoperability and the future of tolling.

The committee reports were as follows:

Executive Committee: Secretary Tippett reported that the Executive Committee met on November 6, 2008, and is bringing the 2009 Board and Executive Committee schedules to the Board for approval. Robb Teer moved to approve the 2009 North Carolina Turnpike Authority Board and Executive Committee meeting schedules as presented. Lanny Wilson seconded the motion, and it was approved unanimously.

Operations and Personnel Committee: Robb Teer reported that Jim Eden and Andy Lelewski discussed the status of the Toll Collection System, Intelligent Transportation System and Tag/Reader RFPs. The Toll Collection System RFP is progressing on

schedule. Andy Lelewski gave a presentation on roadside sensors. Mr. Eden gave a recap of industry activities over the past month. The video shootout received recognition in *Traffic Technology International* with a 3-page spread recapping the events.

Action items: Mr. Teer made the following motion: We recommend that the Operations and Personnel Committee review David Joyner's job performance as Executive Director of the NCTA and make a report to the Board in December. Bob Spencer seconded the motion, and it was approved unanimously.

Plans and Programs Committee: Robb Teer reported that the Plans and Programs Committee heard an update on the TriEx and Steve Dewitt discussed the bid extensions. Grady Rankin gave a presentation on Tolling the Charlotte Loop and Jennifer Harris gave project updates.

Action items: Mr. Teer made the following motion: We recommend that the Board adopt the Resolution of the North Carolina Turnpike Authority Board of Directors recognizing the contributions of the Research Triangle Foundation to the Triangle Expressway project as presented. Bob Spencer seconded the motion, and it was approved unanimously. The resolution will be presented to the Research Triangle Foundation on Tuesday, November 25, 2008.

Finance Committee: Robert Spencer reported that the Finance Committee discussed the TIFIA Loan approval and the Local Government Commission's approval. Carol Rein presented an update on the credit markets.

Action items: Mr. Spencer made the following motions for the Finance Committee:

- We recommend that the Board approve the October 10, 2008, budget adjustments of $5,289,600 from the previously approved APW and reducing the total from $39,927,200 to $34,637,600. Perry Safran seconded the motion, and it was approved unanimously.

- We recommend that the Board approve the bond order authorizing the issuance by the NCTA of Triangle Expressway System Revenue Bonds, Series 2008, not to exceed $700,000,000 in value, and authorizing the execution and delivery of certain documents in connection therewith. Robb Teer seconded the motion, and it was approved unanimously.

- We recommend that the Board approve Bond Order authorizing the incurrence by the NCTA of a loan in an initial principal amount not to exceed $450,000,000 from the USDOT and authorizing the execution and delivery of certain documents in connection therewith. Bill Lackey seconded the motion, and it was approved unanimously.

- We recommend that the Board approve the resolution authorizing the expenditure of funds in payment to the USDOT for a capital reserve subsidy for TIFIA Loan. Perry Safran seconded the motion, and it was approved unanimously.

- We recommend that the Board formally adopt the Investment Policy as stated in GS 159-30. Robb Teer seconded the motion, and it was approved unanimously.

- We recommend that the Board approve the Nossaman Gunther Knox & Elliot contract increase in the amount of $100,000 in order to cover the anticipated 2008 over budget amount. Anthony Fox seconded the motion, and the motion was approved unanimously.

Executive Director's Report: David Joyner reported that the NCTA will be presenting the annual report at the JLTOC meeting in December and that NCTA Board members are invited to attend. He also welcomed two new employees, Monique Henderson and Jessica Burke. Mr. Joyner congratulated Reid Simons on welcoming baby Lucas.

Public Input Session:
Paul Imrie, representing the Gaston Southeast Connector Coalition, asked that the NCTA look at different routes than the proposed Southern route. He discussed concerns regarding the environmental impacts of the route as well as its close proximity to the Daniel Stowe Botanical Gardens. He also discussed safety issues with the nearby Allen Steam Station. He said that more information was available at the Gaston Southeast Connector Coalition website at www.gastonsecc.com. Mr. Henry also submitted a 900-signature petition to the NCTA.

Paul Brant, representing the Northeast Citizens Advisory Council, discussed the Triangle Expressway comprehensive Traffic & Revenue Study and said that the cost per mile that is being proposed is too high and will cause public resentment as well as discourage travel on the Triangle Expressway. Mr. Brant also wanted to express his opposition of tolls on 540. He stated that he does understand the need for additional roads but believes that if we keep the fees low there will be a better public embrace of the project.

There being no further business before the Board, Secretary Tippett adjourned the meeting at 2:06 pm.

Minutes prepared by Jillian Bliss

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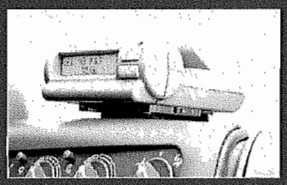
GPS Tolling



November 20, 2008

Tolling for a New Generation of Customers

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Agenda

1. What is GPS tolling?
2. How does it work?
3. Benefits / Concerns
4. Examples from Germany and Seattle

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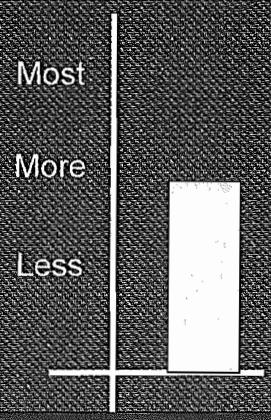
What is GPS Tolling?

Cash Plaza

Required Infrastructure



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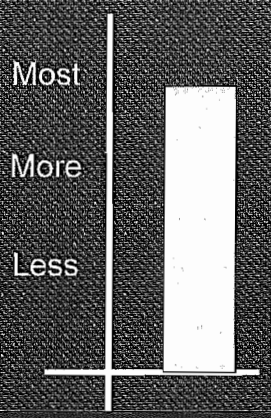
What is GPS Tolling?

Cash / ETC Plaza

Required Infrastructure



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What is GPS Tolling?

Cash / ETC Open Road Plaza

Required Infrastructure

Most

More

Less

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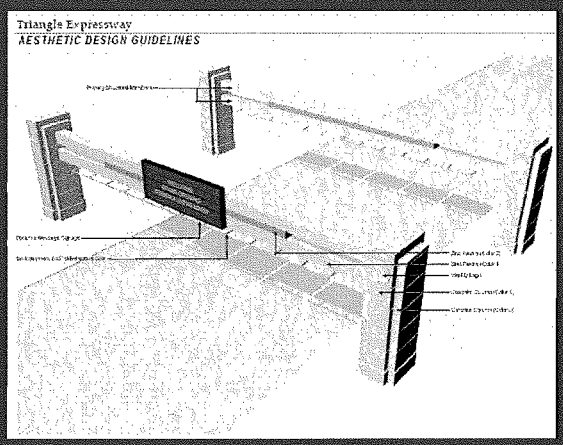
What is GPS Tolling?

All Electronic Tolling Plaza



Required Infrastructure

Most

More

Less

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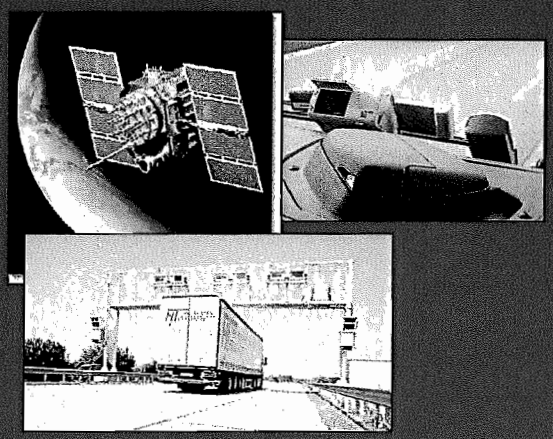
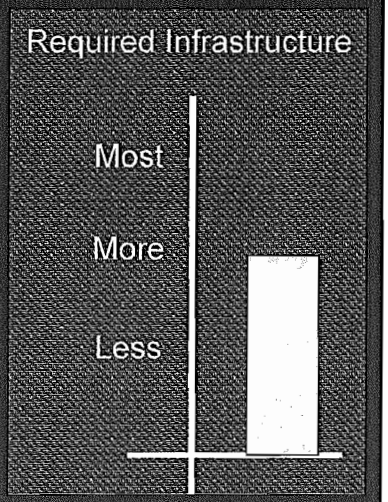
What is GPS Tolling?

GPS Tolling



Required Infrastructure



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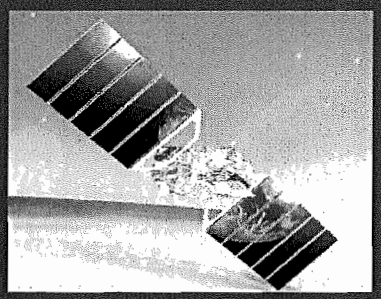
What is GPS Tolling?

Global Positioning System (GPS)



- Developed by the U.S. Department of Defense
- Now used by consumers equipped with a small receiver to estimate location (*x*- and *y*- coordinates) over time.
- Accurate and mature technology

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What is GPS Tolling?

Global System for Mobile Communication (GSM)

- Wireless communication necessary to communicate and locate almost any moving object
- Cellular communications technology is expanding rapidly

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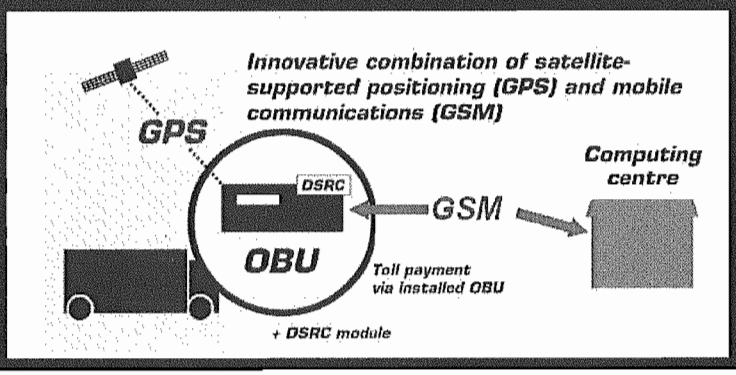
What is GPS Tolling?

Global Positioning System (GPS) + Global System for Mobile Communications (GSM) = Tolling System



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How does it work?

- Customers will be charged on: distance traveled, time of day, and the type of vehicle (i.e. CO^2 emissions)
- Toll data is transferred through GSM or at kiosks
- Will allow for flexible road pricing solutions while not impairing the flow of traffic
- Charging is ensured by monthly invoicing
- Privacy issue concerns
  - Customers can purchase a prepaid card
  - Customers can pre-book their trip on the internet or at kiosks

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Benefits

- Potential solution to Gas Tax concerns
  - Cars now have better gas mileage
  - People are using fuel that is taxed at lower rate (Ethanol)
  - Arrival of electric cars
- Infrastructure is mainly in place
- Protects environment
  - Allows for more fuel efficient cars & trucks to be charged less
- Congestion pricing opportunities

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Concerns

- Culture Change
- Complexity
- Blocking of GPS signal
- Cost of on-board unit
- Privacy issues

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Example – Germany

- First satellite based tolling system – opened 2005
- True free flow system for trucks with no toll gates
- Average toll of $0.31/mile
- Flexible pricing based on time, road type, and exhaust

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Example – Germany

- Two ways to pay
  - On- Board Unit
  - Manual Booking
- On-Board Unit (90%)
  - Users pay the installation costs of the OBU, German government paid costs of actual unit (>450,000)
  - Mounted in-dash
- Manual Booking (10%)
  - Through internet or kiosks
  - Trip is booked with license plate

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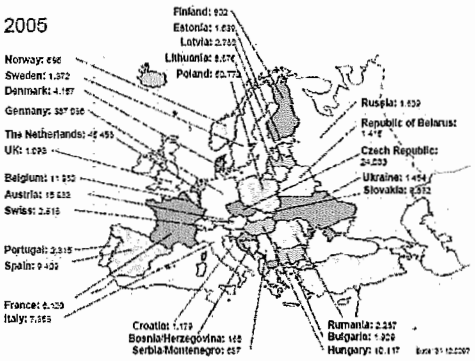
Example – Germany

Main results as of 31 December 2007

- The project opened on January 1st, 2005
- The network
  - 12,538 km tolled motorways
  - 5,391 sections with an average length of 4.65 km
  - 42 km federal roads with an average section length of 0.8 km
- Vehicles concerned
  - ≥ 12 t
  - 35% trucks from abroad
- Revenues: 3,4 billion € have been collected in 2007
- The violation rate is under 2 %



610,000 trucks from 50 countries have an OBU

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Example – Germany

- Enforcement gantries use transponder like technology to verify operating OBU.
- Gantries also capture license plate information for vehicles without OBU.
- Results
  - Accepted by truckers
  - Reduction in empty trips
  - Shift to rail travel

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Example - Seattle

- 18 month detailed analysis of road user choice and behavior under a broad and sustained tolling experiment
  - Tolling on all major roads
  - Tolls based on time of day and type of road
  - True price incentive

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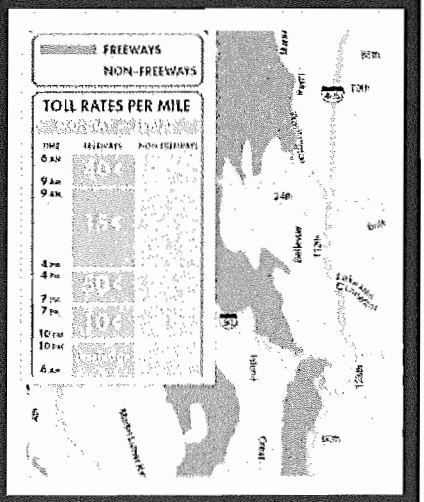
Example - Seattle

- 275+ households, 400+ vehicles
- All vehicles equipped with OBU
- Each household was provided a unique travel endowment based on their baseline behavior
- At the end of the tolling period participants were given any remaining account balance



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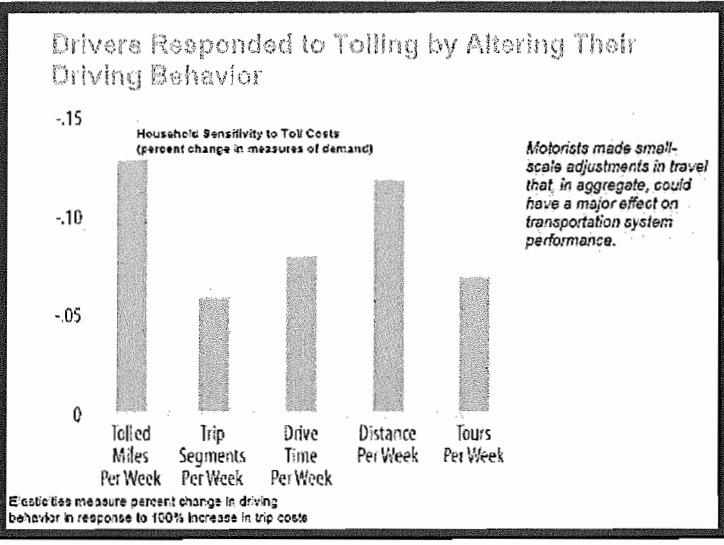
Example – Seattle Study



Motorists made small-scale adjustments in travel that, in aggregate, could have a major effect on transportation system performance.

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Example – Seattle Study

Results from survey:

- Found that there is a dramatic opportunity to significantly reduce traffic congestion and raise revenues for investment.
- The core technology for satellite based (and whole road network) toll systems is mature and reliable.
- A large scale U.S. deployment of GPS based road tolling program will depend on proven systems, a viable business model, and public acceptance of underlying concepts.

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Questions?