



NORTH CAROLINA

Turnpike Authority

Toll System Options,
Recommendations
& Next Steps

November 14, 2006

Goals of Presentation

- Discuss tolling options & issues
- Present alternative tolling strategies –
outline benefits and challenges
- Discuss next steps in process

Three Tolling Options

1. Cash Based

Toll collector or Automatic Payment Machines

2. Transponder Based

E-ZPass or SunPass-type system

3. Video Tolling

License plate-based tolling

Most agencies use combinations

Comparison of Systems

	<u>Cash</u>	<u>Transponder</u>	<u>Video Toll</u>
Lane staff	Optional	No	No
Lane Systems	Staff <u>OR</u> toll collection equipment	Antenna / reader-based	Camera-based systems
Back Office Systems	Cash handling, Violations Processing	Customer Service, Violations Processing	Customer Service, Violations Processing
Other	Staff Supervision, Audit System	Automated license plate review, Audit System	Automated license plate review, Audit System

Cash Based Tolling Advantages

- Potentially lowest violation rate
- Limited customer education required
- No accounts or sign-up
- In-person customer service
(if collector present)

Cash Based Tolling Disadvantages

- More congested
- More right-of-way
- More environmental and safety impacts
- Higher construction & staffing costs
- Negative public perception
- Cash handling more difficult to manage

Transponder Based Tolling

Electronic Toll Collection (ETC)



Electronic Toll Collection (ETC)



Transponder Based Tolling Advantages

- Proven technology
- High accuracy
- Open road tolling (ORT)
- Reduced cost of collection
- Allows variable pricing (future flexibility)
- Widely accepted & popular with users
- Many success stories

Transponder Based Tolling Disadvantages

- Customer must take action to get transponder
- Upfront cost of transponders
- Need marketing & sales function
- Potentially higher violation rate
- Need violations enforcement & processing

Video Tolling

- Differs from Transponder based because it relies 100% on VES camera system/license plate matching for payment
- Requires accounts be set up based on license plates not transponders
- Occasional users can call in and set up payment/account within ~ 72 hours of using roadway
- Post-payment options possible



**VEHICLES USE TOLL ROAD WITH/
WITHOUT TRANSPONDERS**

**PLATES OF VEHICLES WITHOUT VALID
TRANSPONDERS ARE CAPTURED**

**IN LANE
VES**



OCR

Image Review

PAYMENTS WITHIN 5 DAYS?



NEW ACCOUNT

JVJ-7347		
JOHN GALT		
LOCATION	TOLL	DATE/TIME
Main Street	\$1.25	11/7/2006 06:00:00
Main Street	\$1.25	11/5/2006 06:00:00

NO

EXISTING ACCOUNT



Video Toll Billing

DMV FILES



NO

PAYMENTS?



COURT

YES



BANK



Video Tolling Advantages

- Using proven technology in different way
- Accommodates occasional users
- Allows for variable pricing
- Doesn't require a transponder
- Highway speed possible

Video Tolling Disadvantages

- “New” technology for tolling purposes
- Less accurate than transponders
- No back up system
- Less proven technology for rating agencies
- Depends heavily on DMV record data
- Interstate reciprocity is a potential issue
- Requires high level of marketing, customer awareness and customer action.

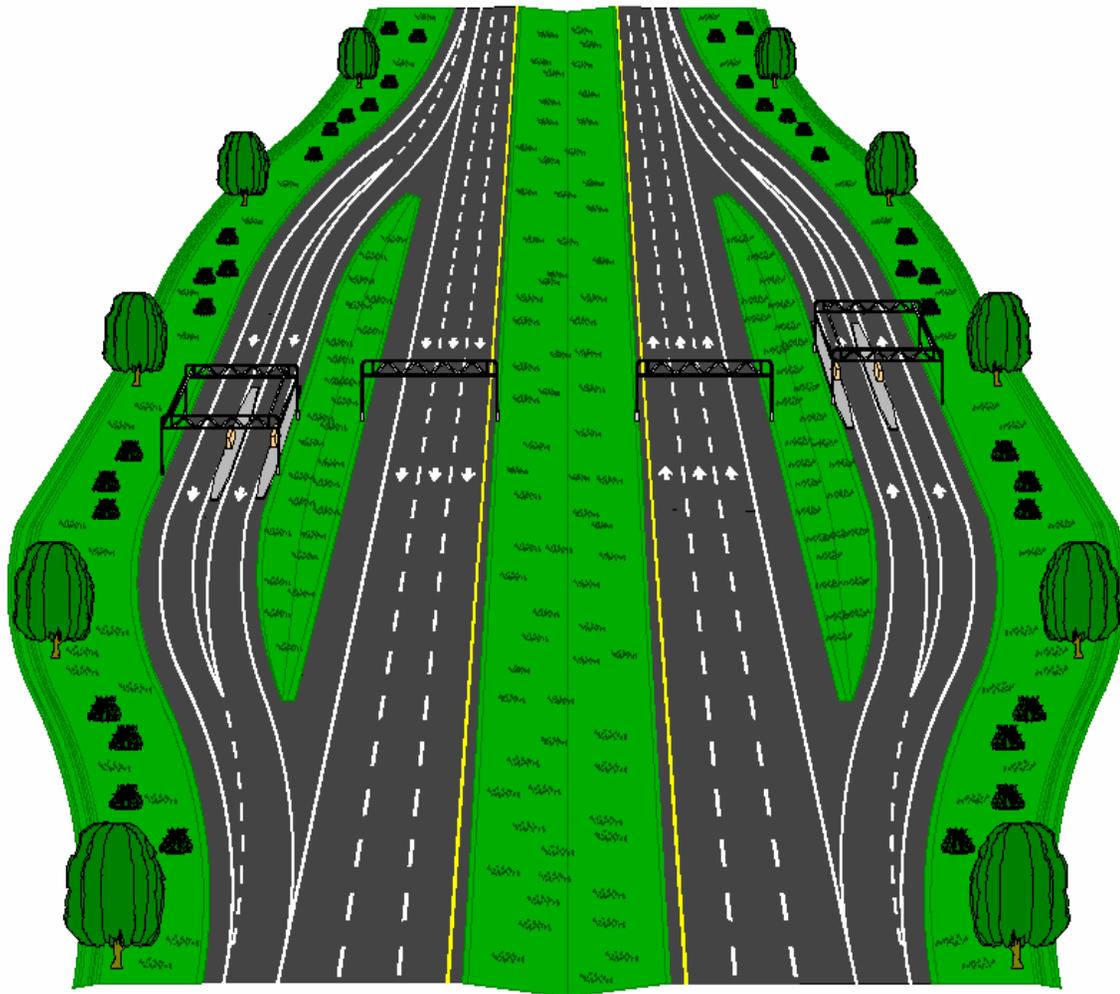
Key Issues NCTA Must Consider:

- Need consistent system throughout state
- Right-of-way is limited in some areas
- Must keep traffic moving ALWAYS
- System should work for all customers
- Multiple payment options encourage usage
- System must be cost effective
- System must be acceptable to rating agencies

Recommended Strategy

Four Pronged Approach:

- Transponders as primary toll collection system
- All locations include unstaffed cash lane initially
- Video tolling can be used for occasional users
- Video cameras used for violation enforcement



**SIX LANE DIVIDED TOLL FACILITY
TRIANGLE TURNPIKE CONCEPT**

NOT TO SCALE

HNTB HNTB NORTH CAROLINA, P. C.
363 E. 802 POWER DRIVE, RALEIGH, NC 27601
Project No. 14-040 - General Line 020000





Major Toll Systems Operations Elements



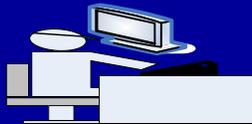
System Maintenance



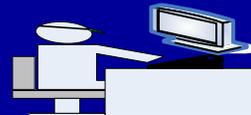
Reporting

Audits
Reconciliation
Banking...

Financial Operations



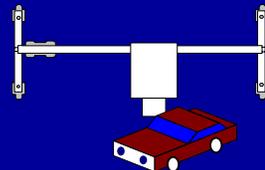
**Customer Service, Sales
And Marketing**



Violations Processing



**Central Computer
System**



**Lane Level
Operations**

Key Decisions and Next Steps

- Finalize Concept of Operations Winter '06-'07
- Select system integrator Winter '06 - Fall '07
- Start marketing firm interviews Winter '06 - Spring '07

Key Decisions and Next Steps

- Draft enforcement legislation Spring '07
- Select transponder provider Fall '07



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Questions ?