

# **Toll Express Lanes for the Research Triangle region**

**Including discussion of possible  
applications on I-40**

**Presentation for discussion at  
Capital Area MPO TAC meeting**

**Wednesday, January 16, 2013**

# Toll Express Lanes: Introduction



# Managed Lanes

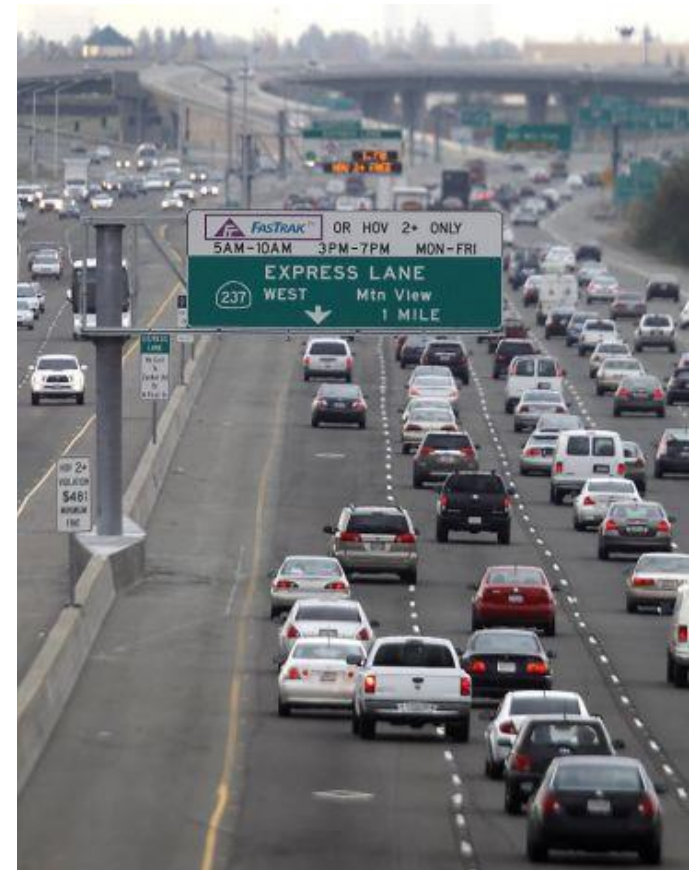
- **Managed lane** – freeway lane with restricted entry
  - Number of people – HOV-2, HOV-3
  - Toll rate – fixed, variable
  - Distance traveled – limited access/egress
  - Vehicle class – truck restrictions
- **Express lane (a/k/a ValuExpress lane, Express Toll Lane)**
  - Requires electronic payment of variable or fixed toll for entry

**Virtually every market we compete with has or is implementing managed lanes on key freeways**

# Examples of Managed Lanes in the U.S.



I-85 in Atlanta



Hwy 237 in San Francisco

# “495 Express Lanes” in Northern Virginia



# Examples of managed lanes in the US

## Open to traffic today

- 91 Express Lanes - Los Angeles, CA HOT
- I-15 Express Lanes - Salt Lake City, UT HOT
- I-95 Express Lanes - Miami, FL Modified HOT
- I-270 Express Lanes - Rockville, MD Thru; one lane peak HOV
- I-85 Express Lanes - Atlanta, GA HOT
- I-680, Hwy 237 Express Lanes - San Jose, CA HOT
- I-10 Managed Lanes - Houston, TX Toll; peak HOT
- I-15 Express Lanes - San Diego, CA HOT
- I-25 Express Lanes - Denver, CO HOT; segments HOV
- I-5 and I-90 Express Lanes - Seattle, WA Thru; segments HOV
- I-110 Express Lanes - Los Angeles, CA HOT
- I-495 Express Lanes - N. Virginia HOT

# Examples of managed lanes in the US

## Under construction

- I-10 Express Lanes - Los Angeles, CA **HOT, Open 2013**
- I-95 Express Lanes - Baltimore, MD **Toll, Open 2014**

## Proposed

- I-15 Express Lanes - Salt Lake City, UT **HOT**
- Loop 1 Express Lanes – Austin, TX **Toll, constr. 2013**
- I-4 Express Toll Lanes – Orlando, FL **Toll, constr. prop. for 2014**
- Express Toll Lanes – El Paso, TX **Toll**

# Toll Express Lanes: compare w/ HOV, HOT





# Limitations of HOV lanes, and by extension HOT lanes

## Limitations of HOV

- HOV-2 is free; a trip is not “more free” with a 3<sup>rd</sup> person or vanpool
- HOV-2 is often parent + child, but they are not “carpooling”
- Free HOV-2 eliminates incentive to redirect less time urgent trips with infants/children to off-peak travel
- HOVs are either 2 or 3 persons and hard to vary demand curve
- HOVs do not provide revenue
- True occupancy enforcement is essentially impossible – less than 20% success in recent study
- Infants in rear-facing carseats count as a separate individual

# Overall benefits of Express Lanes

## **Express Lanes provide options when on-time travel is essential**

- Create a reliable, on-demand option to avoid congestion
- Pricing encourages carpooling and vanpooling without requiring it
- Create an express route for buses without building separate busways or relying entirely on BOSS operation
- Provide revenue which can accelerate construction

“Express Lanes” are the personal travel equivalent of USPS “Express Mail” – paying for faster, more reliable travel for ourselves

# Benefits of toll Express Lanes vs. HOV element of HOT

## Benefits of toll Express Lanes

- Variable pricing of all vehicles maximizes operational flexibility
- Simpler – no “flex switch” to operate for drivers between HOV, toll
- Far easier to enforce: one price per vehicle class
- Encourages carpooling above 2-person threshold (unlike HOT)
  - users can always informally split the toll more ways
- True high-occupancy vehicles (e.g., Triangle Transit vanpools) can receive special sticker tags if desired
- Maximizes number of users paying, which minimizes individual tolls

# Advantages of buffer-separated express lanes

## Benefits of buffer-separated vs. barrier separated lanes

- Very similar footprint to normal freeway cross section (only 4' wider)
- Substantially lower costs
- Little if any additional right-of-way required
- Unlike longitudinal barriers, buffer allows access in emergency
- Provides flexibility – does not commit region to single costly footprint

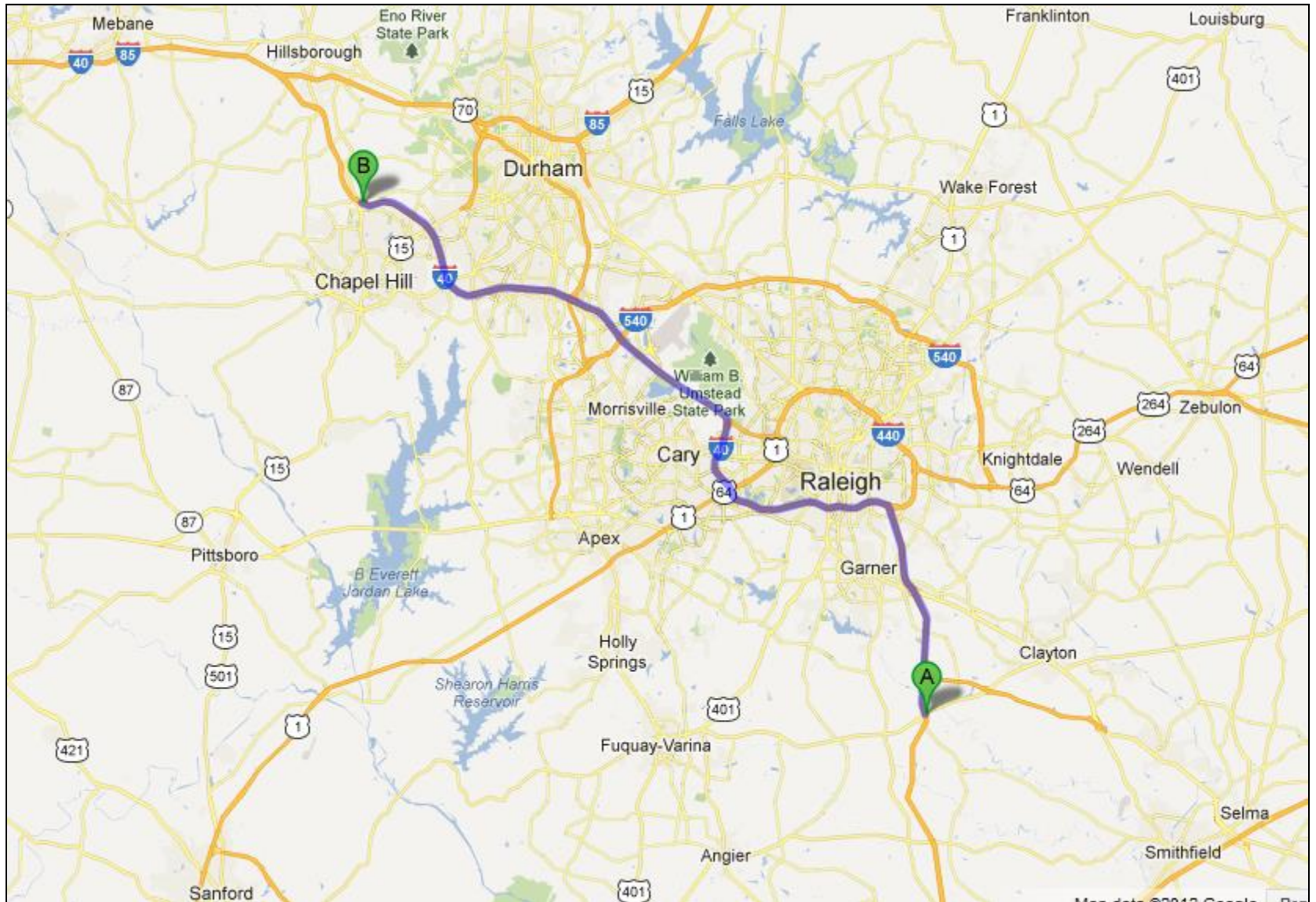
## Benefits of buffer-separated vs. striped double-lines only

- Improves toll enforcement and minimizes weaving
- Provides separation to minimize friction due to different speeds
- Creates opportunity for new left exits that would otherwise have insufficient exit spacing

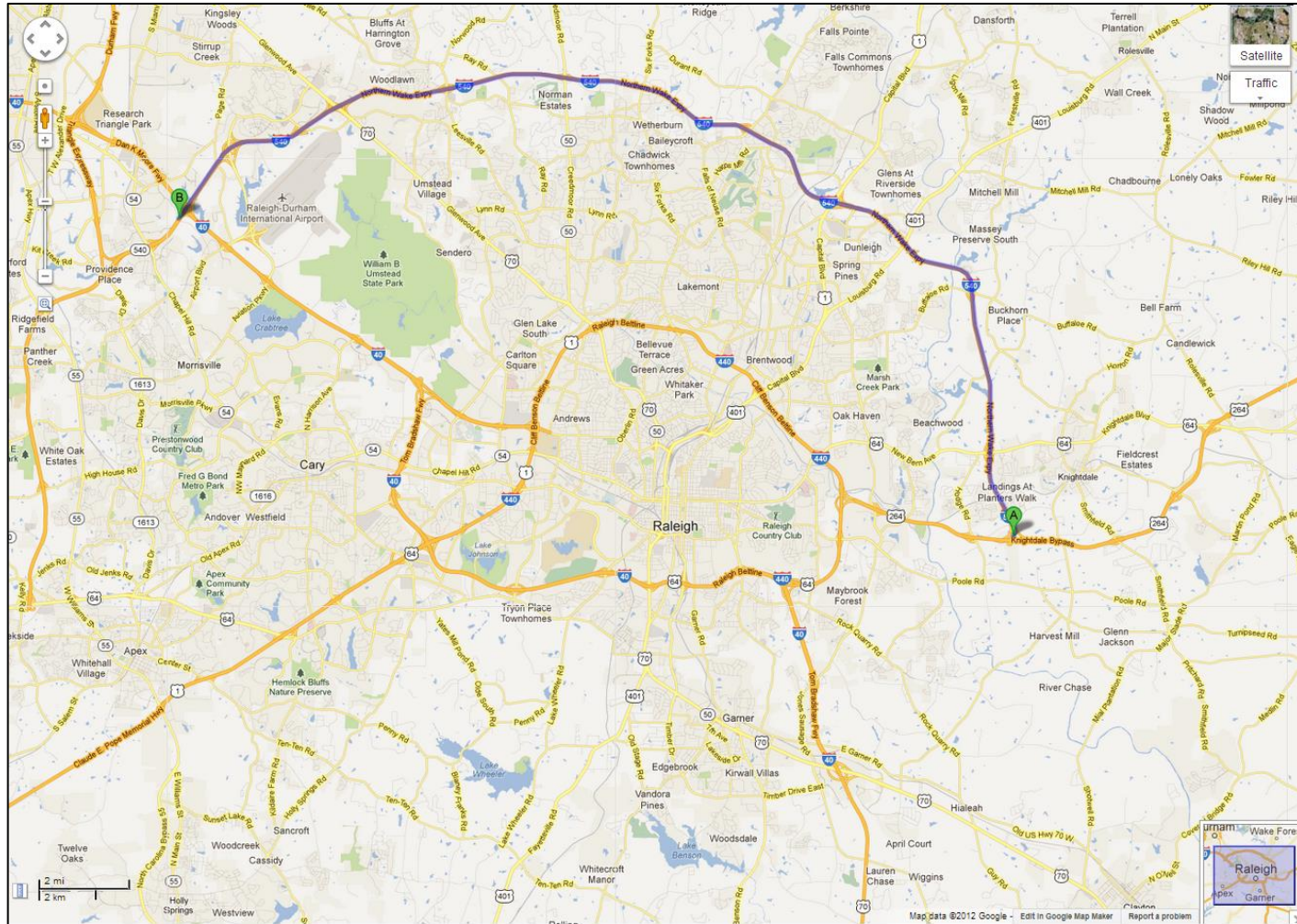
# Toll Express Lanes: possibilities in our area



# Potential I-40 Express Lanes Corridor



# Potential I-540 Express Lanes Corridor



# RTA 2012-13 Highway Transportation Priorities

## Top RTA priorities for new or expanded freeways

- Triangle Connector to I-85
- Toll 540 Triangle Expressway completion
- US 70 Freeway conversion
- Aviation freeway
- **I-40 widening to 6+ lanes between I-85 and I-95**
- **I-40 Express Lanes/interchanges – staged construction regionwide**
- I-95 statewide improvements



# RTA General Policies on Express Lanes

## RTA general policies on toll roads that apply to Express Lanes

- Tolls collected on corridor remain on corridor or contiguous toll route
  - Maintain user fee relationship
  - Preserve support for tolls as an option
- Encourage consideration of, but do not require, public-private partnerships

## APPLICABLE STATUTES

- All toll revenue would remain on the project itself or on a contiguous toll facility by statute.
- If tolls were to cover some/all project costs, any realized savings would be allocated by the equity formula by statute

# RTA General Policies on Express Lanes

## RTA policies specific to Express Lanes

- First priority is to create 3 general purpose freeway lanes per direction
- Pursue\* toll Express Lanes for 4th or more through lane when widening
- Toll only, not HOV or HOT
- Buffer-separated not barrier to reduce costs, maximize future flexibility
- Consider, but do not require, separate exits for Express Lanes

# RTA General Policies on Express Lanes

\* **NOTE: Pursue toll express lanes means:**

- Consider opening a new lane (after the 3<sup>rd</sup>) as express lane – ready to collect tolls on day one
- However, tolls only needed when congestion occurs, with no minimum amount or hours required, as long as federal free-flow performance standards continue to be met
- Tolls could be low or zero day after day if congestion is low
- Variable pricing to manage supply, demand and maintain free-flow



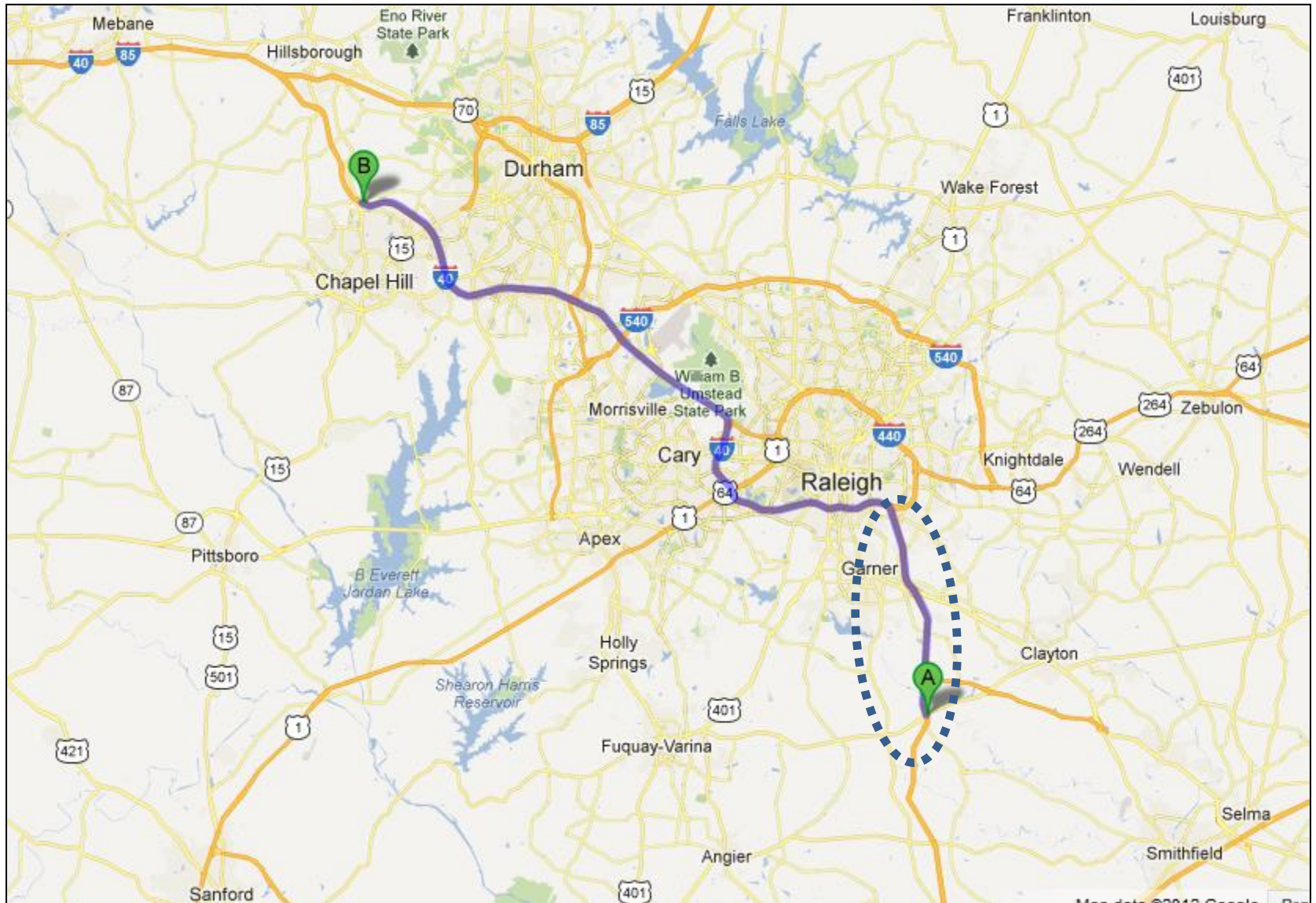
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# Potential I-40 Express Lanes Corridor ?



# I-40 Express Lanes – initial RTA request

## I-40 Wake/Johnston widening (I-5111)

- Planned to widen I-40 from three to four through lanes between I-40 and US 70/US 70 business
- Planned to widen I-40 from two to four through lanes between US 70/US 70 business and NC 42
- This will result in four through general purpose lanes from I-40 and NC 42
- I-5111 is a funded project, but all construction dollars are in developmental program (FY 2018+) or “post-years” / unfunded

## RTA Express Lanes suggestion for this project:

- Consider designating the 4<sup>th</sup> through lane (which does not currently exist) as an Express toll lane
- Toll collection equipment in place from day one, but tolls only needed when congestion occurs, with no minimum amount or hours required

# Implementation costs of Express Lanes for I-5111

## Costs

- Incorporating a 4' buffer into the design will incur additional costs
- Toll collection equipment is also not free
- Incorporating paved buffer and toll technology easier at early stage
- If access only granted at ends of corridor then entry/exit costs may be minimized
- If additional exits were desired (e.g., at existing grade separations, like I-495 in Northern Virginia) then those would incur additional costs



# Current funding and Gap funding for I-5111

## Funding

- I-5111 is essentially a fully-funded project, but all construction dollars are in developmental program or later
- Our working assumption is gap funding will be low (or zero) for I-5111 if the primary added costs are toll technology, signage, and a 4' buffer
- If necessary, region could seek language to affirm that all tolls stay on the corridor or a contiguous route, like we did successfully for 540
- If new exits created, those would likely attract additional revenue

# Summary of Express Lane option for I-5111

## If we were to choose to pursue buffer-separated toll Express Lanes:

- The project would need to incorporate a 4' larger footprint, which will cost somewhat more than the current plan
- The project would need to incorporate tolling infrastructure costs, and a toll revenue assessment
- The project development process would need to include public outreach about potential operation of 4<sup>th</sup> lane as a toll Express Lane
- We would need to clarify that this is only about tolling lanes that do not yet exist, and that the proposed lanes would otherwise be untolled
- The simple buffer-separated cross section will not compromise future implementation of a more complex express lanes footprint
- The potential for creating new express left exits to other bridges exists
- With project essentially funded, applying tolls to project costs should create free cash flow

# Summary of Express Lane option for I-5111

## If we choose to not pursue toll Express Lanes for this segment:

- We will delay the creation of a managed reliable travel time option
- We will not have the ability to consider the use of tolls to accelerate construction of this corridor
- We could lose the opportunity to designate the 4<sup>th</sup> lane for express travel for the foreseeable future, which may preclude the implementation of express travel options
- We will lose the ability to gain valuable experience in creating an express lane in a relatively low-cost fashion ....
  - A 4' buffer separated lane, planned and constructed within an existing project, will greatly simplify implementation ...
  - Success here will provide experience for future express lanes on I-40 or I-540

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