
Presented to TTAC
July 7, 2010
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I. Improving Clearance Times
The population of the Southside evacuating localities is almost 3 times greater than the population of the Peninsula evacuating localities.
A greater portion of the Southside population lives in low-lying areas, as compared to the Peninsula.

Max. Evacuating Vehicles, Cat. 3, hi tourist

Therefore, the vast majority of evacuating vehicles come from the Southside.
VDOT’s Hurricane Lane Reversal Plan

• The VDOT Plan aids all evacuees by reversing I-64, placing Southside I-64 traffic on the contraflow lanes at 4th View St. in Norfolk and reserving the regular WB I-64 lanes primarily for Peninsula traffic.

• But the Plan closes the MMMBT northbound, reducing the capacity available to the vast majority of evacuees.
Impact of Evacuation Traffic Control

• The Corps of Engineers’ Virginia Hurricane Evacuation Study (VHES), 2008, estimates clearance times for the VDOT Plan using an Abbreviated Transportation Model (ATM) spreadsheet.

• In order to calculate times for each side of I-64, and to test candidate changes to the VDOT plan, TPO staff developed an ATM Mirror spreadsheet.

  – For the same inputs and assumptions, the ATM and ATM Mirror give *exactly* the same results.
The clearance time for the Southside is much longer than that of the Peninsula, and the 36 hour overall clearance time for Hampton Roads is problematic because the storm track error is 100nm at 36 hrs.
Example Center of Track: Ocracoke

Would Virginia decision-makers call for an evacuation of Hampton Roads at 36 hours under this scenario?

Tracking Error at T-minus-36 hours is 115 mi (100 nm).
Alt. #1: Reversing US 58/460

- In order to lower the high clearance time for US 58/460 (36 hours for Cat. 3), VDOT is studying the reversal of this highway.
Clearance Times, Reversing US58/460- Cat. 3, Hi Tourist Occ., Heavy Background Traffic (ATM Mirror)

Reversing US58/460 would reduce the overall clearance time by 13 hours, resulting in a 23 hour clearance time for which storm track error is 65nm.
1. Reversing US 58/460- Funding

• The reversal of US 58/460 is estimated to cost $7m.
• The CTB has allocated only $600k dollars to this project over the next 6 years in its draft FY11-16 SYIP (approved by CTB on June 16).
• The TPO has $5.5m in RSTP reserve, but it was set aside for project cost overruns and for possible reductions in future year allocations thru FY15.
• VDOT just released an additional $3.5m in FY10 RSTP.
• Option: Use $3.5m in FY10 RSTP to fund half the cost of reversal, and request other half of cost from CTB.
Alt. #2: Leaving the MMMBT Open

- Particularly until the construction enabling US58/460 reversal has been built, another method of lowering the 36 hour clearance time is desirable.
Clearance Times **with MMMBT Open** - Cat. 3, Hi Tourist Occupancy, Heavy Background Traffic (ATM Mirror)

Opening the MMMBT increases Peninsula clearance time by 7 hours and reduces Southside clearance time by 7 hours, **reducing overall clearance time by 7 hours**.
VDOT cited evacuation as a “deficiency” in the *Purpose & Need Statement* of the HR Crossing Study, yet the evacuation plan closes half of the crossing capacity which currently exists.

### TABLE 1-1 (Con’t)

**TRANSPORTATION ISSUES, TRENDS, AND DEFICIENCIES**

(Title taken from the 1994 Purpose and Need Statement and Technical Appendix)

<table>
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<th>TRANSPORTATION ISSUE OR MODE</th>
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| Bicycle and Pedestrian Facilities                                | ✷ There are approximately 150 kilometers (93 miles) of bikeways in the study area  
                                                                       ✷ Bicycle facilities are mainly used for recreational travel in the study area | ✷ There are no bicycle or pedestrian linkages between the Southside and Peninsula  
                                                                       ✷ Neither bicycle nor pedestrian facilities provide any regular relief from congestion  |
| Intermodal Transfer Points                                        | ✷ There are 58 transfer points in the study area                         | ✷ Of the 58 transfer points, 25 are port facilities and 20 are park and ride lots  
                                                                       ✷ There are only 13 other transfer points                                  |
| Alternative to Single Occupancy Vehicle (SOV) Facilities          | ✷ 76% of the commuters in Hampton Roads use SOV facilities               | ✷ There are no HOV facilities on the Peninsula  
                                                                       ✷ There are no continuous HOV lanes on the Southside                       |  
                                                                       ✷ There are currently no substantial alternatives to SOVs in the region    |
| Environmental Factors                                             | ✷ The area is currently classified as a marginal non-attainment area for ozone  
                                                                       ✷ Non-point sources, such as highways, are contributors to water pollution primarily through water runoff containing petroleum product residues  | ✷ In order to meet the requirements of the Clean Air Act, the region must implement transportation solutions that help to reduce Vehicle Miles Traveled and emissions  
                                                                       ✷ The Hampton Roads area must develop transportation alternatives that minimize the impact to water quality—particularly the Chesapeake Bay |
| Emergency Services                                                | ✷ Within the last century, there have been three major hurricanes  
                                                                       ✷ Average of two hurricanes a year come close enough to affect Virginia | ✷ There is a need to efficiently evacuate the “at risk” population in the event of an emergency |
Reason Given for Closing the MMMBT

• “The MMMBT is not used for evacuating traffic under the current plan because of concerns that congestion would result at the merge point of I-664 and I-64 on the peninsula.” (1)

• Given that this merge point now has 6 outbound lanes to handle 5 inbound lanes (2 ramp lanes from NB I-664 and 3 thru lanes from WB I-64), it appears that congestion will not occur at this merge point.

II. Responsibilities in VDOT Plan

• In June 14, 2010 letter to VDEM (attached to agenda), York Co. requested the following aid concerning VDOT hurricane traffic control plan:
  1. **Resources** for traffic control “to facilitate movement” and “in the event that traffic signals become inoperable”
  2. **Resources** for traffic control “to assist in routing evacuees to refuges of last resort”
  3. **Resources** for removal of disabled vehicles and relocation of their occupants on US 17 and other primary roadways (Routes 105, 134, 143, 171, 199, 238 and US 60)

• TPO staff found two topics in the plan which could benefit from greater **clarity** concerning responsibility.
HRTO Recommendations-
Responsibilities in VDOT Plan

1. Request VDOT to revise its Plan in order to identify agency responsible for manning inoperable signals. (p. 34)

2. Request VDOT to revise its Plan in order to identify agency responsible for routing evacuees to refuges of last resort.

3. Request VDOT to revise its Plan in order to identify agency responsible for removal of disabled vehicles and relocation of their occupants on primaries. (p. 32)

4. Request VDOT to revise its Plan in order to identify agency responsible “to facilitate the merge” for US 17 @ Route 134 ramp (pg. 35).

5. Request VDOT to revise its Plan to in order to remove interstates from local law enforcement responsibility (pg. 32).
HRTO Recommendations - 
Additional Capacity

1. That US58/460 be reversed, supporting VDOT’s ongoing study of that reversal.

2. In order to construct the improvements necessary to reverse US 58/460, that the TTAC/HRTPO:
   a. allocate the just-released $3.5m in FY10 RSTP to the reversal (thereby funding half of its cost), and
   b. request funding in the next SYIP (e.g. FY12-17) from the CTB for the other half of the cost.

3. That VDOT/VDEM be asked to examine the costs and benefits of leaving the MMMBT open during hurricane evacuation.