June 15, 2007

Mr. Gary Stobb, P.E.
Director of Planning/Operations
Harris County Toll Road Authority
330 Meadowfern, Suite 200
Houston, TX 77067

Re: **Westpark Tollway Value Pricing Analysis**

Dear Mr. Stobb:

As part of its overall comprehensive toll rate study for the Harris County Toll Road Authority (HCTRA), WSA was requested to evaluate the potential for value pricing on the Westpark Tollway. This new Tollway is already experiencing significant levels of congestion within its first two years of operation. Several factors have brought about this deterioration in level of service, including:

- High levels of economic growth in the corridor;
- Secondary impacts of construction activities on the parallel IH-10 Freeway; and
- A relatively low toll rate compared to the supply and demand conditions described in more detail below.

Continuing growth in the corridor, and the continuation of a temporary diversion of traffic from IH-10, are likely to ensure congestion will continue on the Westpark corridor for some time, at least until construction of the managed lanes on IH-10 is completed. WSA has been asked to evaluate the potential for variable tolls on Westpark, with the goal of establishing rates which would potentially reduce congestion during morning and afternoon peak periods. Westpark is a fully electronic tolling facility and peak pricing is therefore easier to implement.

2006 WEEKDAY TRAFFIC PROFILE

WSA developed a detailed observed traffic profile for the facility based on transactions data collected at the toll locations and additional traffic counts commissioned by WSA at all non-tolled ramp locations. This data was collected and developed for a typical weekday in November 2006, and has subsequently been adjusted for monthly variations.

Figure 1 shows peak hour traffic volumes, both morning and afternoon, on the HCTRA portion of the Westpark Tollway. A.M. peak period volumes are shown in green, and generally reflect the period 7:00 – 8:00 A.M. P.M. volumes are shown in orange, and generally reflect the period from 5:00 – 6:00 P.M.

The peak load point on the system is located just west of Beltway 8, at the location of Mainline Toll Zone #1. The morning eastbound peak hour volume at this location was found to be 4,115, above the theoretical free-flow capacity of the two-lane eastbound Westpark Tollway. The afternoon peak volume at the same location in the westbound direction was found to be 4,145, also over capacity. Volumes just east of Beltway 8 were found to be slightly lower, reaching 3,905 in the morning peak hour eastbound and 3,100 in the afternoon peak westbound (note that while 5:00 – 6:00 P.M. was the highest hour at the peak load point, the highest hour just east of Beltway 8 was actually from 4:00 – 5:00 P.M., with about 3,600 vehicles).

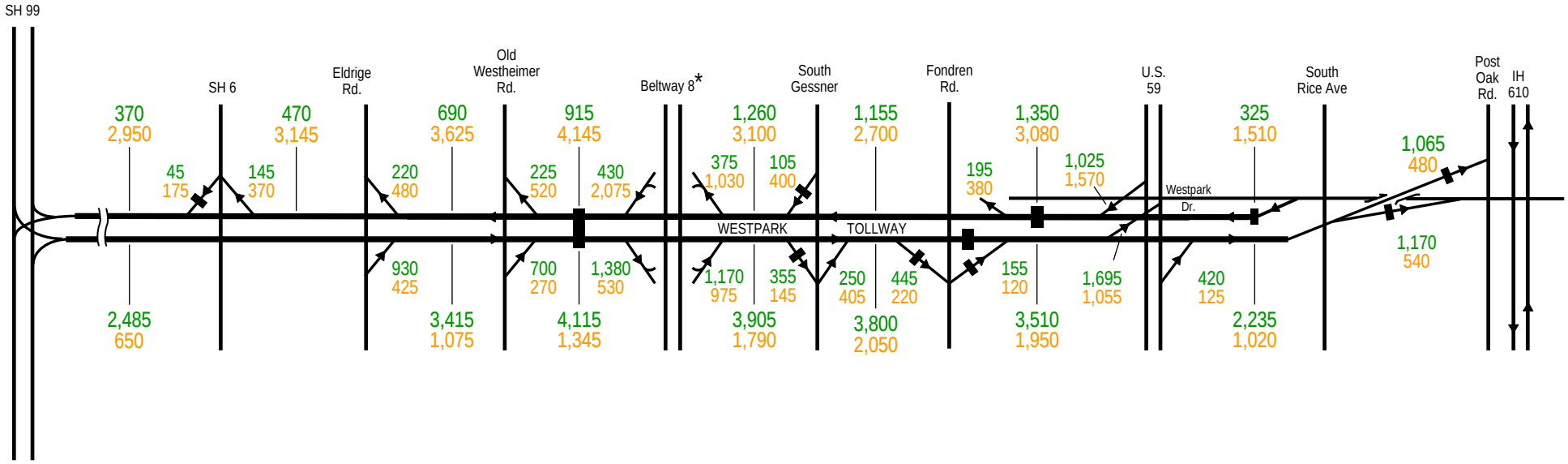
WSA also performed extensive analyses of observed travel speeds along Westpark, using GPS technology and driving in traffic flow in both the eastbound direction in the morning peak and westbound direction in the afternoon peak. Measured speeds for a typical eastbound A.M. run is shown in the upper portion of Figure 2 while observed speeds in the westbound direction, P.M. peak, is shown in the lower portion. Speeds observed in the westbound direction in the morning and the eastbound direction in the afternoon were at free-flow conditions.

Figure 2 clearly shows the pattern of congestion which is routinely experienced on the Westpark Tollway. First looking at the eastbound direction, speeds average between 10 and 25 MPH for the first five-miles of the trip between Westheimer Place and Beltway 8. This reflects the "bottleneck effect" of the peak load point at Toll Zone 1. The roadway is overloaded at this location, which results in a residual backup for several miles to the west.

Speeds improve going through the immediate Beltway 8 interchange, since a significant portion of the traffic exits at Beltway 8. However, speeds deteriorated on the east side of Beltway 8 as well, on the day in question. Volumes east of Beltway 8 are not as high as the peak load point, but are consistently close to the maximum capacity. While this is contributing to the slower observed speeds, the eastbound backup east of Beltway 8 may also be attributable to downstream constraints such as traffic merging onto a congested U.S. 59, etc.

In the westbound direction, slow-moving traffic extends from a point just east of U.S. 59 to a point just beyond Beltway 8. Again, the bottleneck location in the eastbound direction is at Mainline Toll Zone 1, with the residual backup extending for about four miles to the east. Once the bottleneck is cleared, operating speeds gradually improve to 60 MPH or more for the remainder of the westbound trip.

Not to Scale



- Mainline Toll Plaza
- Ramp Toll Plaza

000 - A.M. (7:00 – 8:00 A.M.)

000 - P.M. (5:00 – 6:00 P.M.)

- Direction of Traffic

* Volumes represent all traffic entering or exiting Westpark toll road from Beltway 8. The direction to or from Beltway 8 is not indicated.

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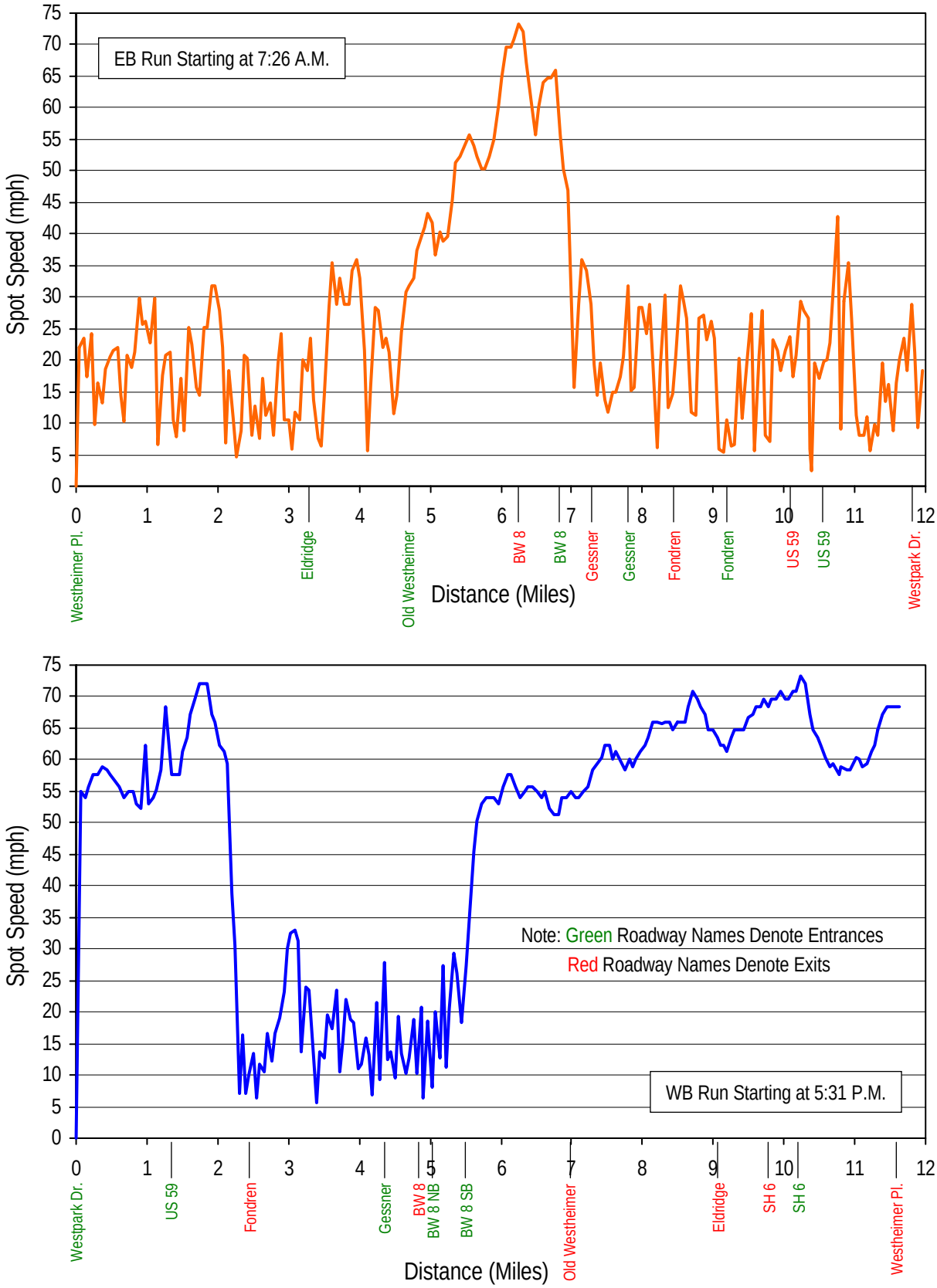
FALL 2006 TYPICAL WEEKDAY PEAK HOUR VOLUMES

FIGURE 1



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WESTPARK TOLLWAY TYPICAL PEAK HOUR TRAVEL SPEEDS

FIGURE 2

Figure 3 shows hourly traffic variations on Westpark at the two peak load points immediately west and east of Sam Houston Tollway. The figure also shows a target volume of 3,600 vehicles per hour. If this volume is exceeded, traffic speed will normally degrade below 50 MPH.

It should be recognized that speeds could actually degrade at volumes lower than 3,600, in cases where weaving or merging impedes smooth flow or, in particular, where backups may result from exiting traffic to other congested facilities such as U.S. 59.

The significant peaking characteristics at the Sam Houston Tollway are clearly shown in Figure 3. The curves shown in red reflect eastbound hourly demands while the curves shown in blue reflect westbound.

It is clear that traffic exceeds the desired 3,600 vehicles per hour for a full three-hour period in both the morning, inbound, and evening outbound, directions, at least at the location west of Sam Houston Tollway. Peak periods are therefore defined as:

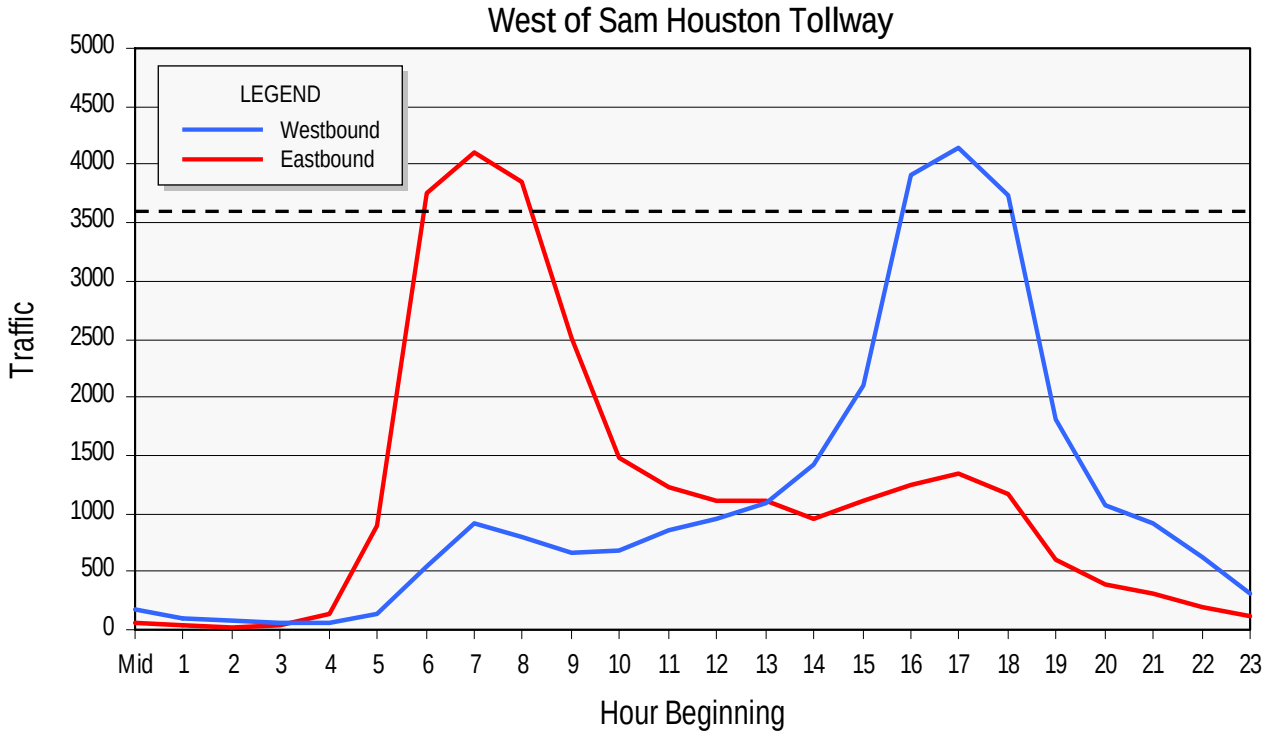
- Morning Peak Eastbound: 6:00 – 9:00 A.M.; and
- Evening Peak Westbound: 4:00 – 7:00 P.M.

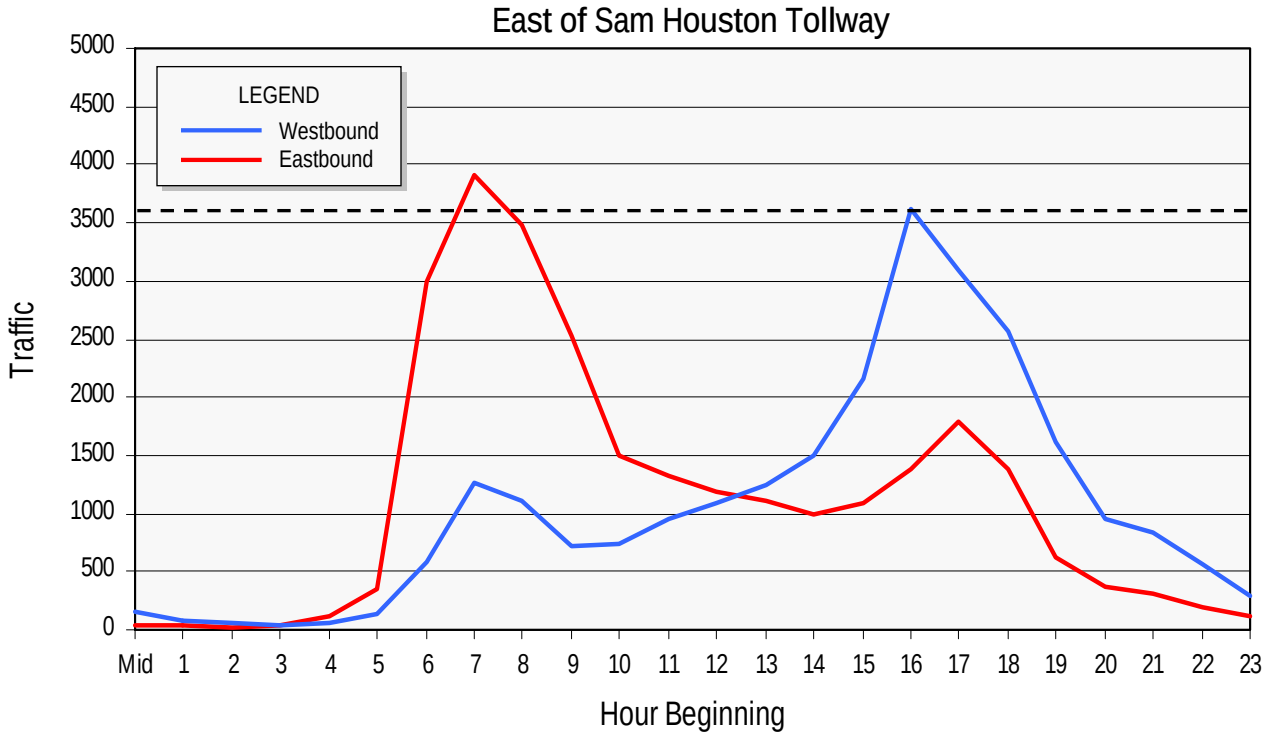
It is also evident that the traffic profile is such that congestion pricing would need to be implemented for the full three hour peak period; it would not be possible to implement a successful toll charge for a single peak hour since this would likely shift peak traffic to the shoulder hours which are also above the targeted 3,600 traffic level. Furthermore, because peak traffic is currently heavily constrained, we expect that the underlying demand is actually somewhat higher than that observed. This "latent" demand is a significant consideration when developing a toll rate recommendation that is intended to reduce congestion.

CONGESTION PRICING SENSITIVITY ESTIMATES

WSA tested a range of rates to determine the rate at which traffic demand at peak load points would drop below the targeted threshold. Figure 4 summarizes the estimated traffic impacts at the two peak congestion points as toll rates at each of the two mainline toll zones would hypothetically be increased from the current $1.00 up to a maximum rate of $3.00. As discussed above, there is a level of uncertainty about the unconstrained total demand. For one thing, traffic was measured at 2006 levels; traffic growth on the Westpark Tollway continues to be relatively high, and may increase as much as 10 percent for the period of 2007-08. There is also potential "latent" demand, which is currently not able to be satisfied on Westpark Tollway because of high congestion levels.

As such, WSA targeted impacts on the peak load points at three different levels:





HOURLY TRAFFIC VARIATIONS
WESTPARK TOLLWAY

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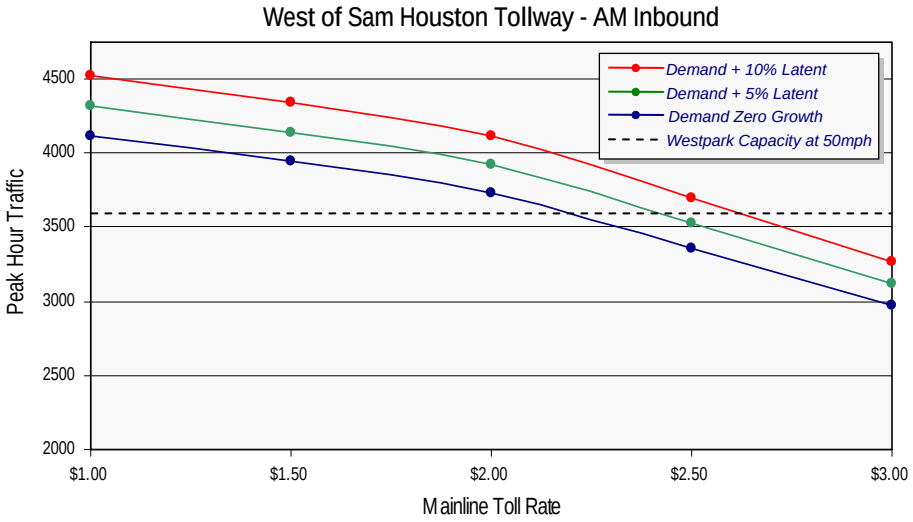
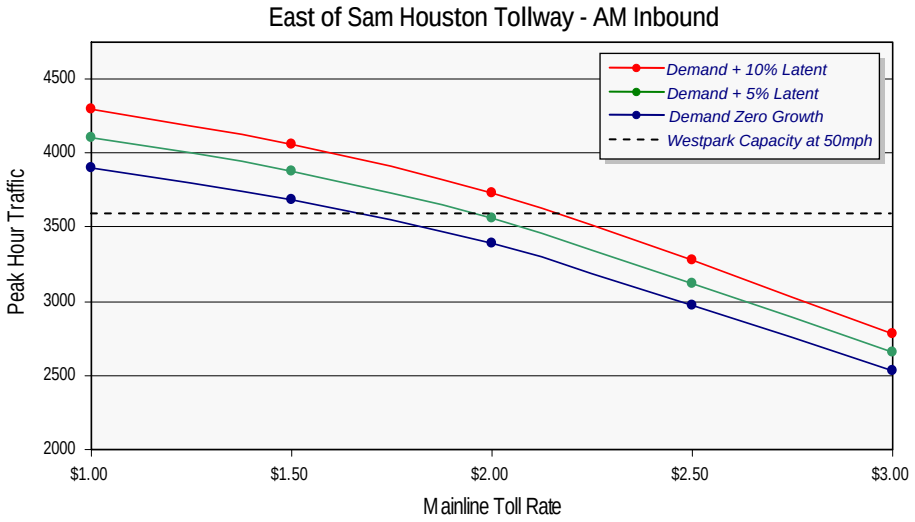
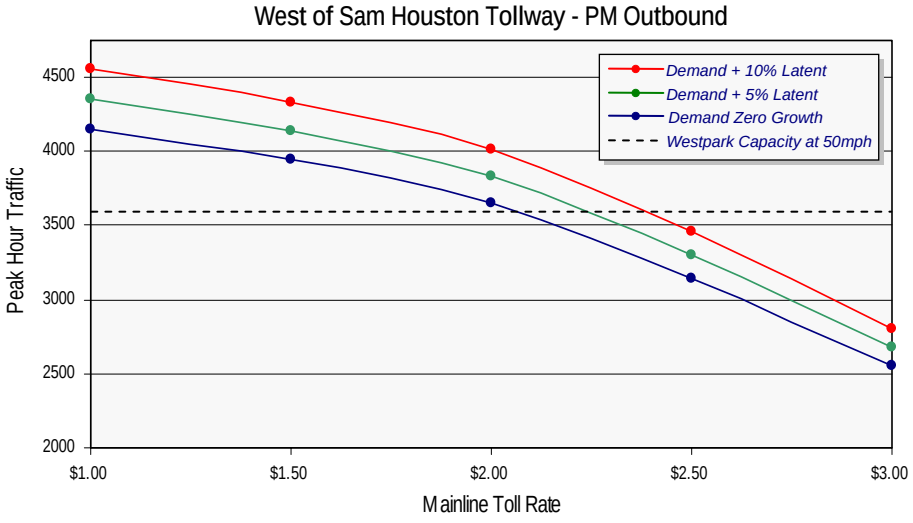
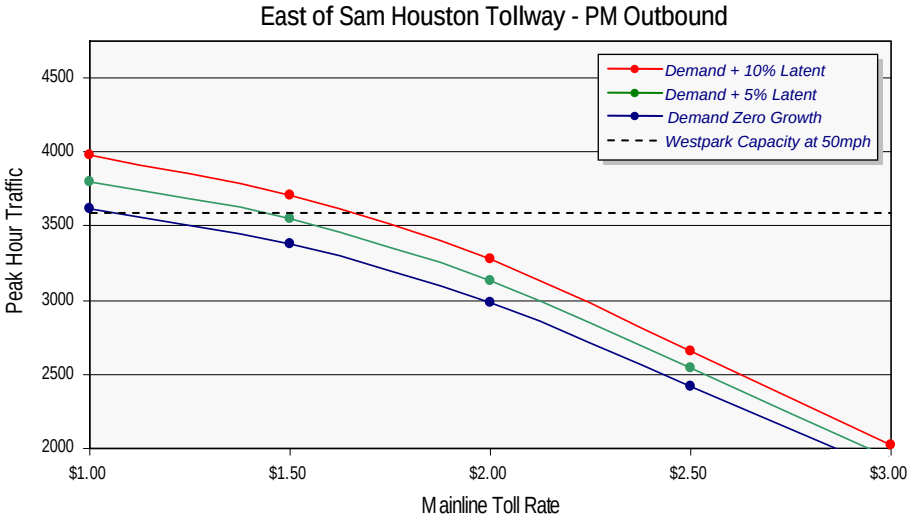
FIGURE 3









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ESTIMATED PEAK HOUR TRAFFIC AT ALTERNATIVE TOLL RATES

FIGURE 4

- Currently measured demand;
- Current demand plus 5 percent; and
- Current demand plus 10 percent.

It would be most prudent to consider the current demand plus 10 percent, to reflect latent demand and growth.

Traffic diversions were estimated using the travel demand model at progressively higher toll rates. In addition, WSA added a small amount of time shift from peak to off-peak hours, although this is expected to be a relatively small proportion of the impact, since pricing would need to be applied for three hours in each peak.

The left portion of Figure 4 shows the demand profile at the single peak load point west of Sam Houston Tollway. The right side shows traffic estimates at different toll rates for the peak load point east of Sam Houston Tollway.

The traffic impacts at each plaza location assumed both of the toll zones would be increased in proportion to the rates shown along each graph. Hence, while volumes would be at or below target thresholds east of Sam Houston Tollway at a rate of $2.00, the target threshold west of Sam Houston Tollway, the current bottleneck location, would have to be increased to at least $2.50.

There is considerable uncertainty in several elements of this analysis, including the specific behavioral responses of motorists, the ability of drivers to shift travel time and the level of latent demand. Based on the WSA analysis, it would appear that increasing rates at each mainline toll zone to at least $2.50 would be required to reduce traffic at all locations on Sam Houston Tollway below the 3,600 target per hour. The curves suggest that if latent demand equals or exceeds 10 percent, a rate as high as $3.00 per mainline toll zone might be needed. However, it is recommended that hourly traffic levels at Mainline Toll Zone 1 be closely monitored. If the impacts of the congestion pricing toll change reduce hourly traffic levels well below 3,600, it may be possible to reduce the amount of peak period surcharge.

RECOMMENDED WESTPARK CONGESTION MANAGEMENT RATE STRUCTURE

As shown in Figure 4, if demand west of the Sam Houston Tollway proves to be 10 percent or more, a mainline toll zone rate as high as $3.00 at each mainline toll location may be required to fully manage demand, at least under morning eastbound conditions. However, at the rate of $2.50 per mainline plaza, demand is only slightly above the targeted threshold in the a.m. eastbound direction, and would be below the targeted threshold at the other peak locations and

during afternoon peaks. As such, while consideration could be given to rates as high as $3.00, WSA recommends the implementation of congestion management tolls at each of the two mainline toll zones in the amount of $2.50 for passenger cars, with proportionately higher rates for trucks. WSA also recommends congestion pricing should be implemented in the major travel direction only (eastbound a.m. peak and westbound p.m. peak).

Current and recommended future toll rates for Westpark Tollway are shown in Table 1. Note that congestion tolls are also suggested for the Fondron eastbound entry ramp, since it is adjacent to the Fondron mainline toll zone. This would be to discourage traffic exiting and re-entering at Fondron to bypass the higher toll at Mainline No. 2.

Table 1
Current and Recommended Toll Rates
Westpark Tollway

		Recommended Tolls					
		Eastbound			Westbound		
Toll Zone	Current Tolls	AM Peak	PM Peak	Off-Peak	AM Peak	PM Peak	Off-Peak
Highway 6 West	$0.35				$0.50	$0.50	$0.50
Mainline No. 1 (Wilcrest)	$1.00	**$2.50**	$1.25	$1.25	$1.25	**$2.50**	$1.25
Gessner Road	$0.25	$0.35	$0.35	$0.35	$0.35	$0.35	$0.35
Fondren East Exit	$0.35	$0.50	$0.50	$0.50			
Fondren East Entry	$0.50	**$1.30**	$0.65	$0.65			
Mainline No. 2 (Fondren)	$1.00	**$2.50**	$1.25	$1.25	$1.25	**$2.50**	$1.25
South Rice West	$0.25				$0.35	$0.35	$0.35
Westpark East	$0.25	$0.35	$0.35	$0.35			
S. Post Oak East	$0.25	$0.35	$0.35	$0.35			

Note:
AM Peak -- 6:00am to 9:00 am
PM Peak -- 4:00 pm to 7:00 pm
Bold indicates congestion pricing rates
All tolls EZ TAG

Table 1 also shows slightly higher rates during off-peak hours at most locations. This reflects recommended general rate adjustments, set forth in a separate letter, which have been recommended for revenue enhancement on the overall HCTRA System. For example, passenger car tolls at mainline toll zones during off-peak hours would be increased from $1.00 to $1.25, as part of a general toll increase. The congestion pricing, therefore, would reflect a doubling of tolls in the major travel direction only during the peak pricing periods. This also applies to multi-axle vehicles (not shown).

Note that toll rates in off-peak hours, and in the minor direction during peak hours, would only be subjected to the general toll increase, and not congestion pricing. Also, off-peak rates should be used all day long on weekends.

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Please do not hesitate to call if you have any questions or if any further information is required. We sincerely appreciate this opportunity to be of continued service to the Harris County Toll Road Authority.

Respectfully submitted,

WILBUR SMITH ASSOCIATES

Edward J. Regan, III
Senior Vice President