Revised Ridership for Uptown Bus Lane Shows Ups, and Downs

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press release

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The Metropolitan Transit Authority of Harris County (METRO) is the region's largest public transit provider, offering safe, reliable and affordable transportation services about 370,000 times per day. Besides operating more than 1,200 buses on a New Bus Network, METRORail's expanded system includes the Red Line (Main Street and Northline), Green Line (East End) and Purple Line (Southeast). METRO's services also include: STAR Vanpool, METROLift, HOV lanes, HOT lanes, Bikes-on-Buses/Trains program, Park & Ride, and road improvement projects. Learn more about METRO services at ridemetro.org where you will also find information about our T.R.I.P. app, Next Bus Arrival texting

METRO Forecast of Uptown Dedicated Bus Lane Shows Revised Ridership Numbers

A just-completed METRO ridership forecast for the Uptown Dedicated Bus Lane Project Mixed Flow option shows ridership in the year 2018 to be about 12,050 boardings per day, approximately 15 percent lower than the 14,100 boardings forecast when the project was first developed in 2013.

A second set of projections were developed should an elevated busway be constructed for the Uptown Management District. That calculation is roughly 20% fewer riders projected for the year 2018. Another set of figures, based on the year 2020, was requested by METRO recognizing that Elevated Bus Lanes will not be operational by 2018. In that year 14,850 daily boardings are projected.

Short Term Ridership Forecasts (Daily Boardings)

2018 Mixed Flow		2018 Elevated Busway		2020 Elevated Busway
Previous work (2013 analysis)	Current work (2015 analysis)	Previous work (2013 analysis)	Current work (2015 analysis)	Current work (2015 analysis)
14,100	12,050	18,400	14,600	14,850
15 % reduction		20 % reduction		

METRO Board Chairman Gilbert Garcia, who requested the second study, said, " It's interesting to note while the ridership projections in the early years are lower in this new study the 2035 numbers for the mixed flow lane jump to about 18 percent higher than projected in the original 2013 study. Whether it's the early years or later, the numbers overall justify the need for improved transit along this corridor."

For the Elevated Busway option, the revised ridership forecast for 2035 is 30,900 boardings per day which is about 19 percent higher than the previous forecasts of 25,800 boardings per day developed in 2013.

and the new digital, interactive rider tool METRO 360 [take a seat].

Long Term Ridership Forecasts (Daily Boardings)

2035 Mixed Flow		2035 Elevated Busway	
Previous work (2013 analysis)	Current work (2015 analysis)	Previous work (2013 analysis)	Current work (2015 analysis)
19,800	23,400	25,800	30,900
18% increase		19% increase	

The updated ridership forecast for the Uptown Dedicated Bus Lane Project uses revised assumptions developed by METRO in July 2015. The assumptions reflect changes occurring between the 2013 to 2015 timeframe and are more consistent with current operating and budget principles.

The original assumptions used in the 2013 analysis were based on Uptown's project description and operating scenario. There have also been significant changes in both population and employment in the region as captured by the Houston-Galveston Area Council (H-GAC) in their demographic forecast. H-GAC is the Metropolitan Planning Organization (MPO) for the Houston-Galveston region and manages the regional demographic forecasts. The new ridership forecast integrates the regionally adopted H-GAC demographic forecast.

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To: Ujari Mohite

From: Vijay Mahal and Vincent Sanders

Subject: Revised Ridership Forecasts for the Uptown DBL project

Date: August 17, 2015

INTRODUCTION/SUMMARY:

This memorandum presents updated ridership forecasts for the Uptown Dedicated Bus Lane (DBL) project. These forecasts are based on a set of new assumptions METRO developed in June/July 2015 timeframe. The original assumptions used in the 2013 analysis were based on Uptown's project description and operating scenario. These latest assumptions better reflect the revised operating scenario that occurred as part of project development between the 2013 to 2015 timeframe and are in line with current operating and budget principles.. There have also been significant changes in both population and employment in the region as captured by the Houston-Galveston Area Council (H-GAC) in their demographic forecast. H-GAC is the Metropolitan Planning Organization (MPO) for the Houston-Galveston region and manages the regional demographic forecasts. The new ridership forecast integrates the regionally adopted H-GAC demographic forecast. The Federal Transit Administration requires METRO to use the most up to date demographic and employment inputs developed by H-GAC.

Generally, the revised assumptions include a slightly reduced level of service on the BRT, increased transfer times and constrained parking at both Northwest and Bellaire/Uptown transit centers, one less station (Fairdale eliminated) and longer travel times on the DBL service.

The model results indicate the revised ridership projection for the Mixed Flow option in the forecast year 2018 is 12,050 boardings per day, which is about 15 percent lower than the previous forecasts of 14,100 boardings per day developed in 2013. For the Elevated Busway option, the revised ridership forecast for 2018 is 14,600 boardings per day which is about 20 percent lower than the previous forecasts of 18,400 boardings per day developed in 2013. METRO recognizes that, based on the current schedule from the Texas Department of Transportation (TxDOT), the Elevated Bus Lanes will not be operational in 2018. The 2018 ridership for Elevated Busway option was included to provide a comparison with the 2013 analysis, which used 2018 as the opening year. In order to address the issue of the scheduled operation of the Elevated Bus lanes,, an additional 2020 model run was undertaken to forecast ridership closer to the anticipated opening of the Elevated Bus lanes in 2020. The ridership projection for the Elevated Busway option in 2020 is 14,850 boardings per day.

For the forecast year 2035, the model results indicate the revised ridership projection for the Mixed Flow option would be 23,400 boardings per day which is about 18 percent higher than the previous forecasts of 19,800 boardings per day developed in 2013. For the Elevated Busway option, the revised ridership forecast for 2035 is 30,900 boardings per day which is about 19

percent higher than the previous forecasts of 25,800 boardings per day developed in 2013. The main reasons for these differences are discussed below.

CHANGES IN MODEL INPUT ASSUMPTIONS

Table 1 presents a summary of assumptions used in the 2013 ridership analysis versus 2015 analysis. The major differences are highlighted below.

- The headways on the DBL service in the 2015 analysis are 6 min peak and 12 min off-peak. The 2013 analysis included a 5 minute headway all day, as proposed by Uptown. This more realisticly represents operating characteristics of LRT in Houston.
- The 2015 model uses the New Bus Network in the background whereas the 2013 model used the existing transit network at the time
- The round trip travel times on the DBL in the 2015 analysis are 12 minutes longer for the Mixed Flow option and 4 minutes longer for the Elevated Busway option compared to the 2013 analysis. This is based on new traffic and travel analysis that was unavailable during the initial model run.
- In the 2015 analysis, parking capacity is constrained to 500 spaces at NWTC and 100 spaces at the Bellaire-Uptown Transit Center (BUTC). The 2013 analysis did not include parking constraints. The original BUTC proposed by Uptown included 700 parking spaces. Constraining parking provides a better indication of the associated ridership impact.
- The Fairdale station was eliminated in the current analysis while it was included in the 2013 analysis.
- Other major assumptions that are different include using updated demographics from H-GAC and increased walking time for transfers between local and DBL buses.

Table 1: 2013 Versus 2015 Modeling Assumptions

Assumptions	2013 Analysis	2015 Analysis
Employment & Population		
Study area population-2018	31,865	31,536
Study area employment-2018	87,829	107,011
Study area population-2035	33,443	43,981
Study area employment-2035	90,285	118,954
BRT headway		
Peak	5 min	6 min
Off-peak	5 min	12 min
BRT round trip travel time		
Mixed flow	42 min	54 min
Elevated busway	28 min	32 min
Average speed for Post Oak bus lanes (Peak)	14 MPH	12 MPH
Average speed for Post Oak bus lanes (Off peak)	14MPH	12 MPH
Average speed for elevated busway (Peak)	45 MPH	40 MPH
Average speed for elevated busway (Off peak)	45 MPH	40 MPH
Maximum acceleration/deceleration rate	2.7 ft/sec^2	2.7 ft/sec^2
Transfer time @NWTC	1 min	2 min
Transfer time @BUTC	2 min	3 min
Free fare transfers from Commuter buses & local	Yes	Yes
Dwell time	20 sec	20 sec (to be included in the red band (signalization) at each station)
Fares	$1.25	$1.25
Capacity constraint on BRT	No	No
Used scaled down LRT bias	Yes	Yes
Underlying Bus network in 2018	Old bus system (before 8/16/15)	New Bus Network (after 8/16/15)
Underlying Transit network in 2035	2035 RTP (includes Ph III rail Expansion)	2035 RTP (includes Ph III rail Expansion)
Parking demand at BUTC	Not restricted	Restrict to 100 spaces
Parking demand at NWTC	Not restricted	Restrict to 500 spaces
Number of stations	9	8
P&R Assumptions	Please see the following page	Please see the following page

Park and Ride bus assumptions under old bus system (2013 analysis)

Corridor/Type	Route	Description	Direction	Headway		Comments
				Peak	Off-Peak	
Northwest	214	Northwest Station	Inbound	5	N/A	No Change
			Outbound	5	N/A	Stops at NWTC
	216	W. Little York/Pinemont	Inbound	12	N/A	Stops at NWTC
			Outbound	12	N/A	Stops at NWTC
	217	Cypress	Inbound	10	N/A	Stops at NWTC
			Outbound	10	N/A	Stops at NWTC
	286	W. Little York	To Galleria	15	N/A	Stops at NWTC
			From Galleria	15	N/A	Stops at NWTC
Katy	221a	Kingsland	Inbound	5	N/A	Stops at NWTC
			Outbound	5	N/A	Stops at NWTC
	221b	Kingsland	Inbound	20	N/A	Stops at NWTC; Pk Hdwy
			Outbound	20	N/A	Improved Peak Headway
	222	Grand Parkway	Inbound	5	N/A	Stops at NWTC
			Outbound	5	N/A	Stops at NWTC
	228	Addicks	Inbound	6	N/A	Stops at NWTC
			Outbound	6	N/A	Stops at NWTC
	229	Kingsland/Addicks	Inbound	N/A	45	No Change
			Outbound	N/A	45	No Change
	298a	Addicks/NWTC	To TMC	20	N/A	Stops at NWTC
			From TMC	20	N/A	Stops at NWTC
	298b	Addicks/NWTC	To TMC	20	N/A	No Change
			From TMC	20	N/A	No Change
	274	Westchase/Gessner	Inbound	15	N/A	Stops at BUTC
Southwest	262a	Westwood	Inbound	10	N/A	Stops at BUTC
			Outbound	10	N/A	Stops at BUTC
	262b	Westwood	Inbound	30	N/A	No Change
			Outbound	30	N/A	No Change
	265a	West Bellfort	Inbound	5	N/A	Stops at BUTC
			Outbound	5	N/A	Stops at BUTC
	265b	West Bellfort	Inbound	5	N/A	Stops at BUTC
			Outbound	5	N/A	Stops at BUTC
	269	Westwood/West Bellfort	Inbound	N/A	5	No Change
			Outbound	N/A	5	No Change
	292	West Bellfort/Westwood/TMC	To TMC	15	N/A	No Change
			From TMC	15	N/A	No Change

Park and Ride bus assumptions (2015 – New Bus Network (NBN))- 2015 analysis

(Revised based on NBN and revised proposed service plan and P&R stopping pattern)

Corridor/Type	Route	Description	Direction	Current Headway	Proposed Headway	Comments
Northwest	214	Northwest Station	Inbound	7	7	Every trip stops at NWTC
			Outbound	8	8	Every trip stops at NWTC
	216	W. Little York	Inbound	17	17	Every trip stops at NWTC
			Outbound	16	16	Every trip stops at NWTC
	217	Cypress	Inbound	6	6	Every trip stops at NWTC
			Outbound	10	10	Every trip stops at NWTC
	219	Northwest Station (Midday)	Inbound	60	60	Every trip stops at NWTC (Midday Service)
			Outbound	60	60	Every trip stops at NWTC (Midday Service)
Katy	222	Grand Parkway	Inbound	11	22	Every other trip stops at NWTC
			Outbound	14	28	Every other trip stops at NWTC
	228	Addicks	Inbound	9	18	Every other trip stops at NWTC
			Outbound	10	20	Every other trip stops at NWTC
	229	Kingsland/Addicks	Inbound	34	34	Every trip stops at NWTC
			Outbound	60	60	Every trip stops at NWTC
	298	Addicks/NWTC	To TMC	9	9	Every trip stops at NWTC
			From TMC	10	10	Every trip stops at NWTC
Southwest	262	Westwood	Inbound	13	26	Every other trip stops at BUTC
			Outbound	13	26	Every other trip stops at BUTC
	265	West Bellfort	Inbound	5	15	Every third trip stops at BUTC
			Outbound	8	24	Every third trip stops at BUTC
	269	Westwood/West Bellfort (Evening)	Inbound	60	60	Every trip stops at NWTC - Its only two trips in the evening
			Outbound	60	60	Every trip stops at NWTC - Its only two trips in the evening
	292	West Bellfort/Westwood/TMC	To TMC	16	16	Every trip stops at BUTC
			From TMC	19	19	Every trip stops at BUTC
Westpark	151	Westpark Express	Eastbound	8	8	Every trip stops at BUTC
			Westbound	8	8	Every trip stops at BUTC

RIDERSHIP RESULTS

The revised ridership forecasts are presented in **Table 2** for the original forecast year 2018 and the revised forecast year on 2020. For the purpose of comparison, the ridership results from the 2013 analysis are also shown in the table. The table also includes the results for the year 2020 for the Elevated Busway option to forecast ridership closer to the anticipated operations of

Elevated Bus Lanes project. As indicated in the table, the revised ridership projection for the Mixed Flow option in the forecast year 2018 is 12,050 boardings per day. This includes work and non-work trips and covers trips made during peak and off-peak hours. The revised estimate is about 15 percent lower than the previous forecasts of 14,100 developed in 2013. For the Elevated Busway option, the revised ridership forecast for 2018 is 14,600 boardings per day which is about 20 percent lower than the previous forecasts of 18,400 boardings per day developed in 2013. As previously explained, we also estimated ridership for the Elevated Busway option for the year 2020. Our results show the 2020 demand would be about 14,850 boardings per day.

As indicated earlier, in the 2015 analysis, a number of model inputs were changed simultaneously. For this reason, it is almost impossible to determine how much reduction in ridership was caused by each input parameter. However, the increase in travel times, decreased DBL service, and constrained parking at the two transit centers most likely caused the majority of the ridership reduction. The results show in general, NWTC, Hollyhurst, Westhiemer, Richmond and BUTC stations would have high passenger activity and this pattern is consistent with the findings from the 2013 ridership analysis.

Table 3 presents the ridership forecasts for the year 2035. As seen, the revised 2035 forecast for the Mixed Flow option is 23,400 boardings per day. This estimate is about 18 percent higher than the previous forecasts of 19,800 developed in 2013.

For the Elevated Busway option, the revised ridership forecast for 2035 is 30,900 boardings per day which is about 19 percent higher than the previous forecasts of 25,800 boardings per day developed in 2013.

The increase in ridership, despite reduced service levels, is mainly attributable to higher population and employment forecast in 2035 than what was assumed in the 2013 analysis. In the Uptown study area, the updated 2035 population and employment are about 31 percent higher than the projections assumed in the 2013 analysis. Another factor that caused the transit ridership in 2035 to increase significantly is the level of estimated highway congestion in 2035. In the 2015 analysis, the 2035 congestion levels are about 15 percent worse than the levels estimated in the 2013 analysis. The source of the updated population and employment forecasts as well as estimated highway congestion is H-GAC.

The projected ridership demand has not been compared with the level of service supplied to check if adequate transit capacity would be available to accommodate the peak demand. This type of Equilibration analysis will need to be conducted to balance the level of service with projected demand.

Table 2: Summary of 2018 and 2020 Ridership Forecasts

STATIONS	Forecast Year: 2018 Mixed Flow option		Forecast Year: 2018 Elevated Busway option		Forecast Year: 2020 Elevated Busway Option
	2013 Analysis	2015 Analysis with revised assumptions	2013 Analysis	2015 Analysis with revised assumptions	2015 Analysis with revised assumptions
NWTC	3,300	1,850	5,250	2,800	2,850
Memorial	500	250	0	0	0
Hollyhurst	800	1,650	1,000	2,050	2,100
Four Oaks	350	450	450	450	450
San Felipe	1,150	900	1,500	900	900
Ambassador Way	500	900	650	900	900
Guilford Court	450	600	550	650	650
Westheimer	1,950	1,900	2,500	2,250	2,300
West Alabama	500	900	600	950	950
Fairdale	250		350	0	0
Richmond	1,750	1,250	2,300	1,700	1,750
Bellaire/Uptown TC (BUTC)	2,600	1,400	3,250	1,950	2,000
Total	**14,100**	**12,050**	**18,400**	**14,600**	**14,850**
Change with respect to 2013 numbers	**-15%**		**-20%**		

Source: HDR Engg 2015

Table 3: Summary of 2035 Ridership Forecasts

STATIONS	Forecast Year: 2035 Mixed Flow option		Forecast Year: 2035 Elevated Busway Option	
	2013 Analysis	2015 Analysis with revised assumptions	2013 Analysis	2015 Analysis with revised assumptions
NWTC	4,600	5,600	7,150	8,450
Memorial	600	600	0	700
Hollyhurst	1,000	2,950	1,250	3,500
Four Oaks	450	400	600	450
San Felipe	1,600	1,300	2,100	1,700
Ambassador Way	700	500	900	550
Guilford Court	650	800	800	900
Westheimer	1,350	2,850	1,750	3,800
West Alabama	1,250	1,200	1,550	1,400
Fairdale	400	0	500	0
Richmond	2,900	1,600	3,800	1,850
Bellaire/Uptown TC (BUTC)	4,300	5,600	5,400	7,600
Total	**19,800**	**23,400**	**25,800**	**30,900**
Change with respect to 2013 numbers	**+18%**		**+19%**	

Source: HDR Engg 2015