GULF COAST RAIL DISTRICT

HOUSTON ★ TEXAS

Conceptual Engineering for Commuter Rail within the Hempstead Corridor

GCRD Board Meeting

September 13, 2011

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Project Funding

Funding for this project was made possible by the U.S. Department of Transportation, Texas Department of Transportation and the Gulf Coast Rail District.

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Study Team

- Klotz Associates, Inc.
- TranSystems Corporation
- Knudson, LP
- Landtech Consultants, Inc.
- Steer Davies & Gleave, Inc.

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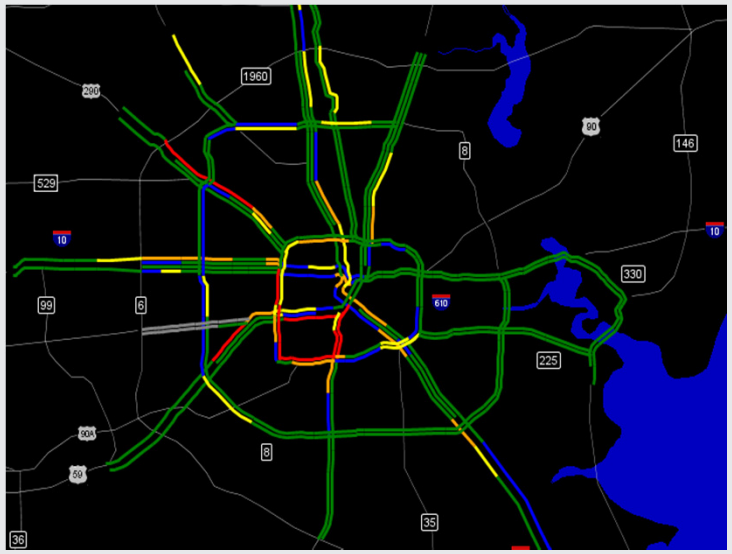
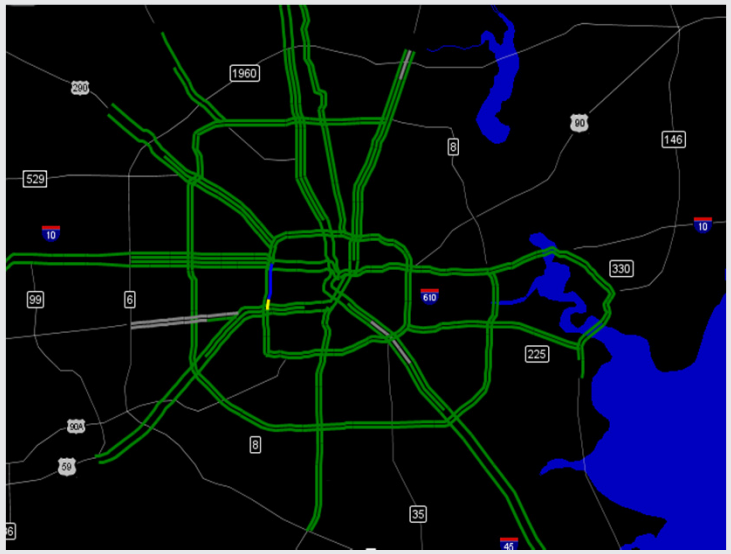
US 290 PM Peak



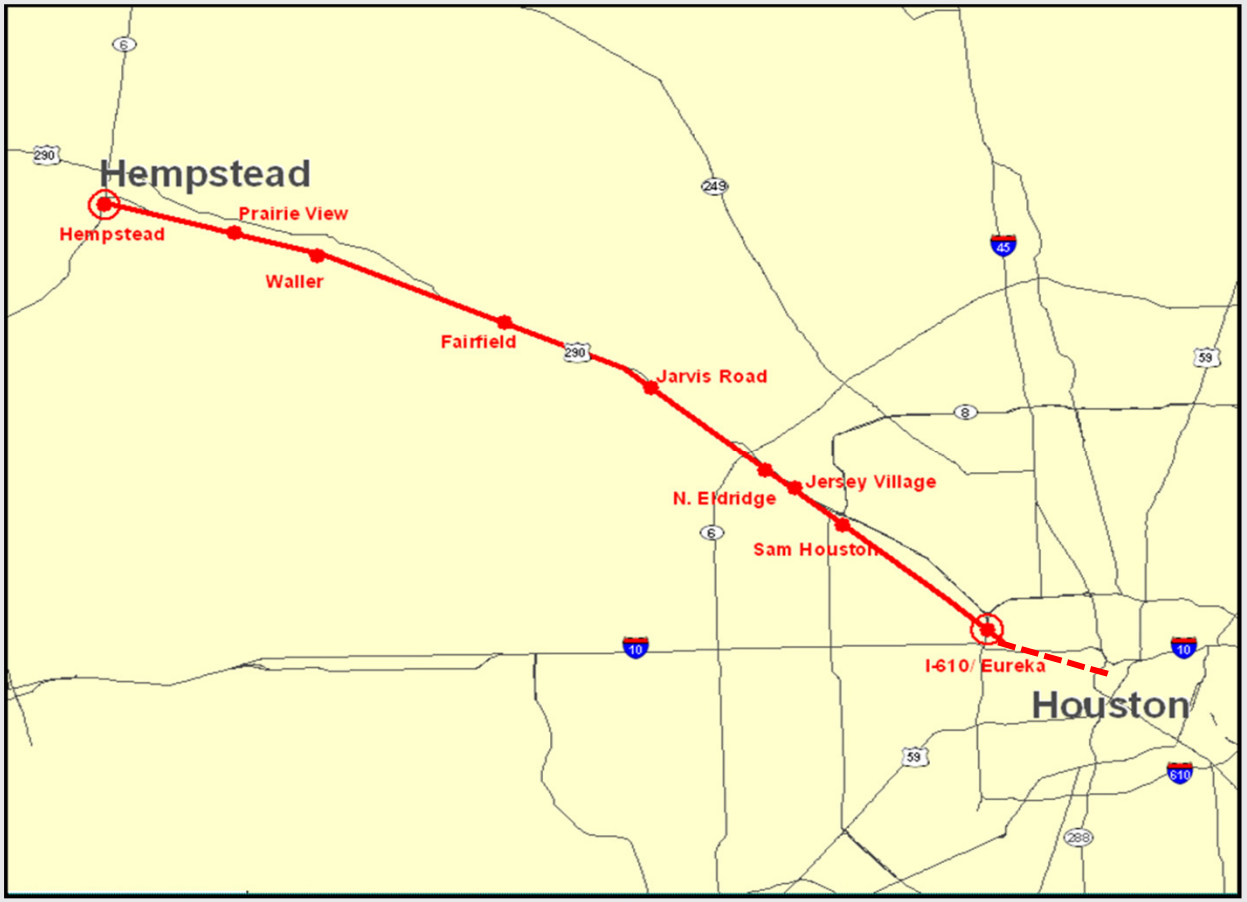
Houston PM Rush Hour Traffic Speed,
5:30 PM May 3, 2011



Houston PM Rush Hour Traffic Speed,
7:30 PM May 3, 2011

Source: Houston TranStar, Houston Speed Map Archive

Potential Station Locations



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Outreach

- Stakeholder Group
- City of Jersey Village
- City of Hempstead
- City of Prairie View
- City of Waller
- Cy-Fair Chamber of Commerce
- Harris County
- METRO
- Prairie View A&M University
- UPRR
- Waller County
- Waller County Economic Development Partnership
- Waller Economic Development Corporation
- Private Landowners

GCRD Investment

- Track Improvements
- Platforms
- Maintenance Facilities
- Rolling Stock
- Operations and Maintenance

Others' Investment

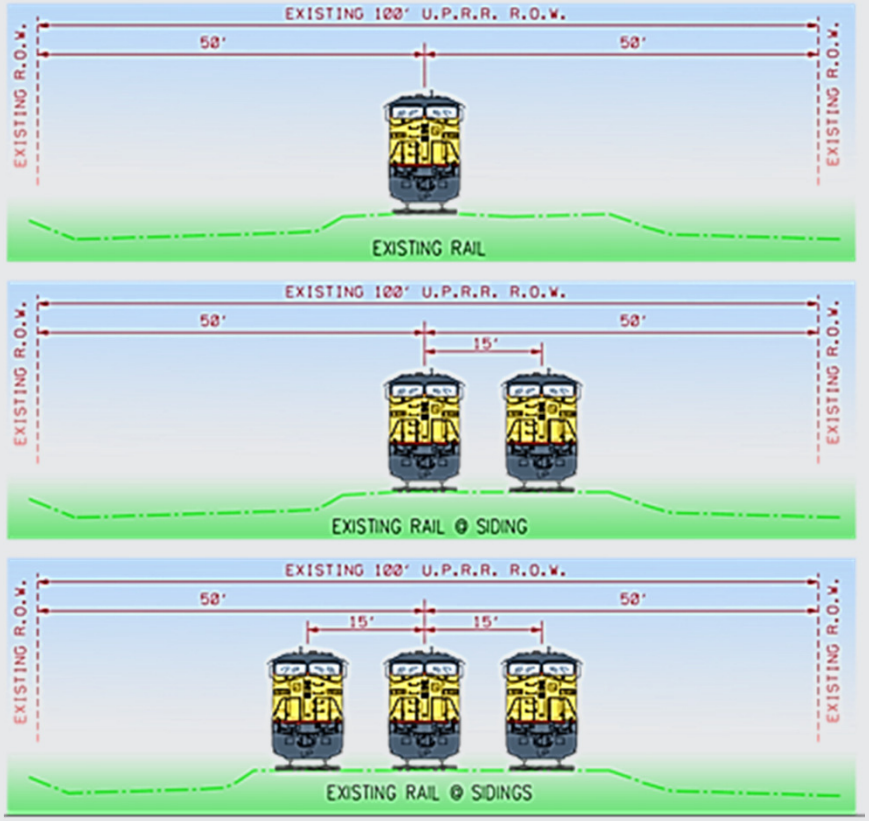
- Station Property
- Station Infrastructure
- Station Operations & Maintenance

Station Basic Infrastructure Issues

- Parking
- Expandability
- Ingress/Egress
- Drainage/Detention
- Utilities
- Grade Crossings
- Environmental Clearance
- Fault Lines
- Property Ownership
- Land Use/Zoning
- Comfort/Safety/Security

Freight Rail Operations

- Existing Operations
  - Beltway 8 to Hempstead
  - Beltway 8 to IH-610
- Existing Facilities



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Operating Assumptions

- Average Operating Speed – 45mph
- Distance Based Fares - $6.00 max.
- Headways- 20 Min Peak
- Wait Times- 4 Min Peak
- Bi-Level Commuter Cars – 150 Passenger Capacity
- METRO Solutions Phase II Fully Implemented
- Park & Ride Service Discontinued outside Beltway 8

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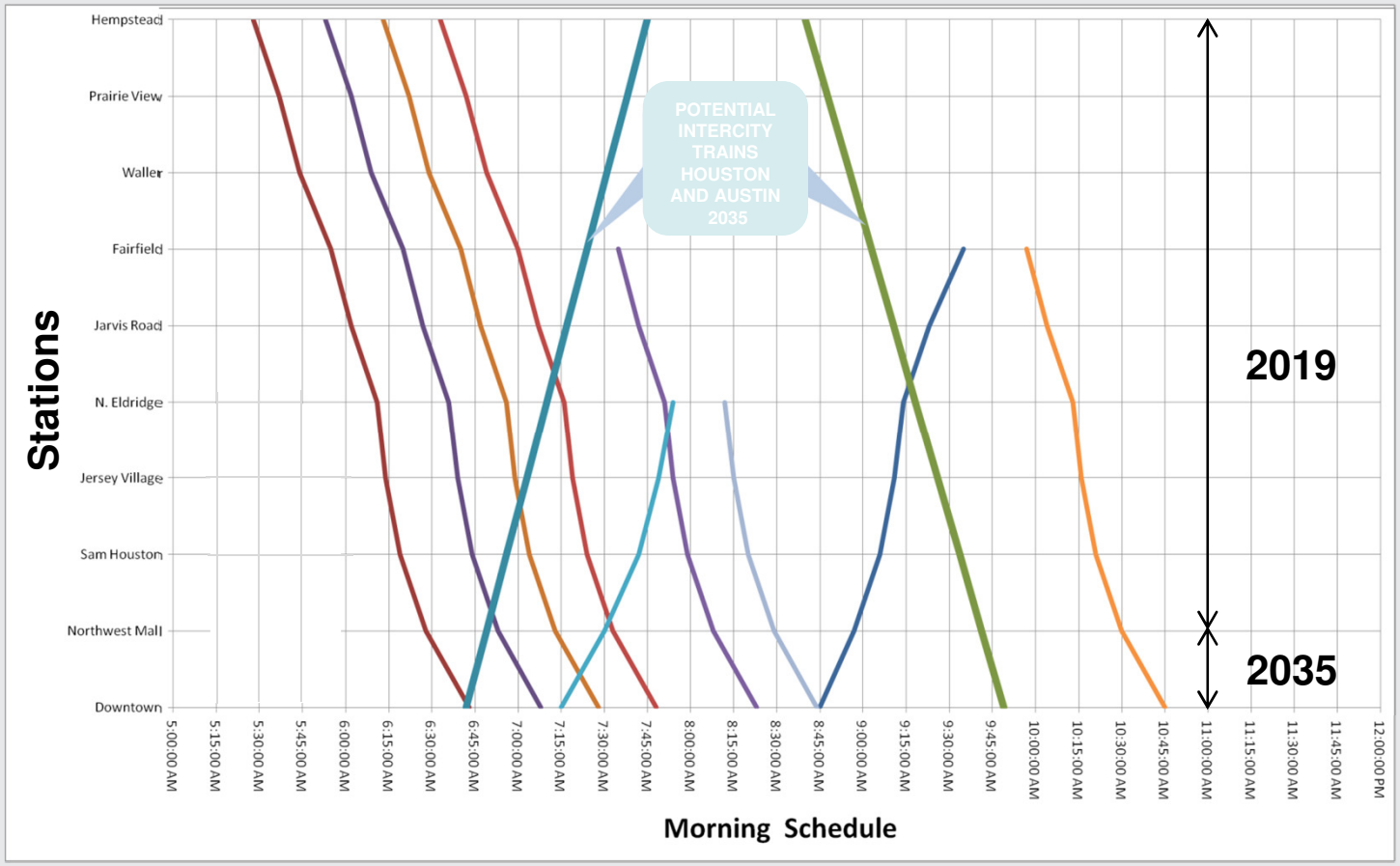
Ridership Projections

	Total Daily Boardings
• Start Up (2019) – No CBD Link	2,640
• Build Out (2035) – No CBD Link	5,952
• Build Out (2035) – w/ CBD Link	18,816
• Build Out (2035 RTP Update) – w/ CBD Link	22,578

AM Train Schedule



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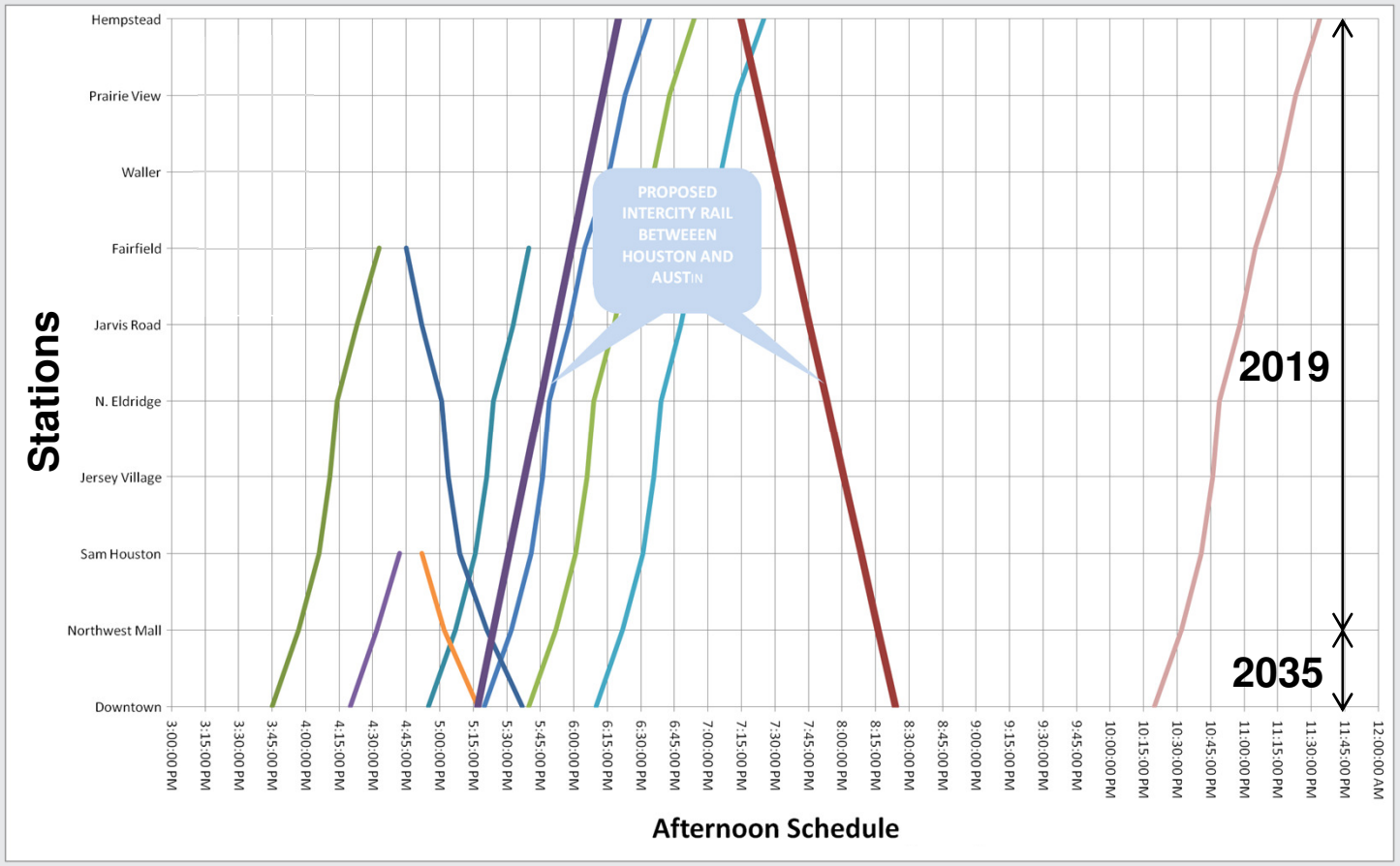
PM Train Schedule



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Terminal Facilities

- Northwest Mall

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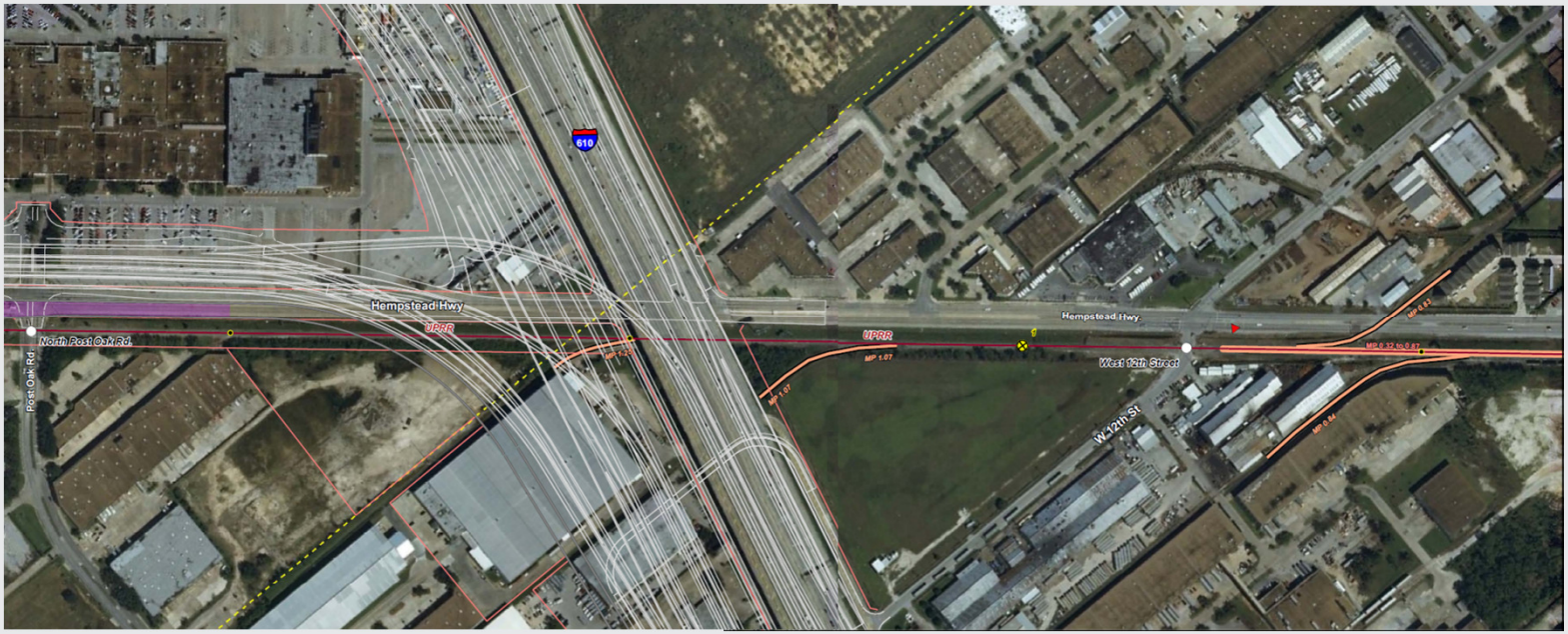
Terminal Facilities

- US 290 & IH 610



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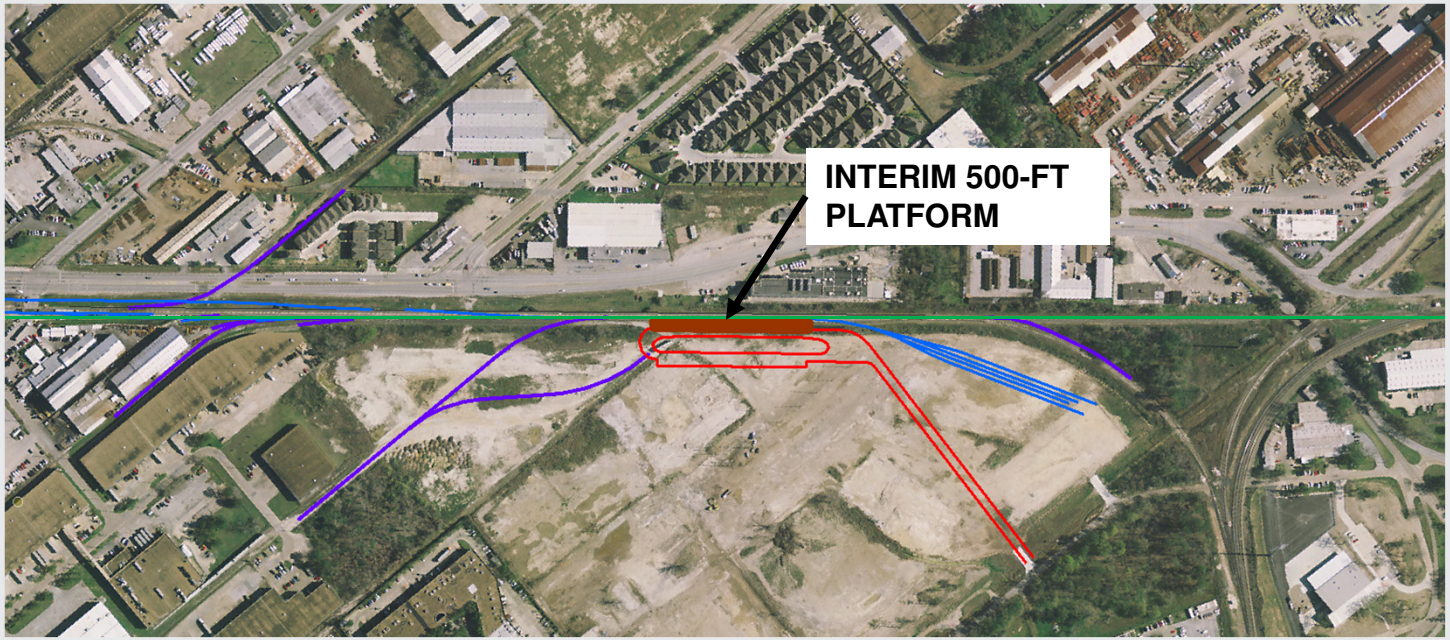
Terminal Facilities

- Interim Station



Interim Terminal Bus Needs (Peak)

- Downtown – 8
- Texas Medical Center (TMC) – 5
- Greenway Plaza – 3
- Galleria / Uptown – 2
- Total Peak Hour Busses - 18

Project Capital Costs

Start Up		
(2019)	Platforms	$12,900,000
	Track (45.2 miles)	$40,400,000
	Signals and Controls	$118,800,000
	Structures	$8,600,000
	Rolling Stock (10 cars)	$26,000,000
	Miscellaneous	$1,000,000
	Engineering & Contingencies	$83,000,000
	Total	**$290,700,000**

(All values in 2010 $)

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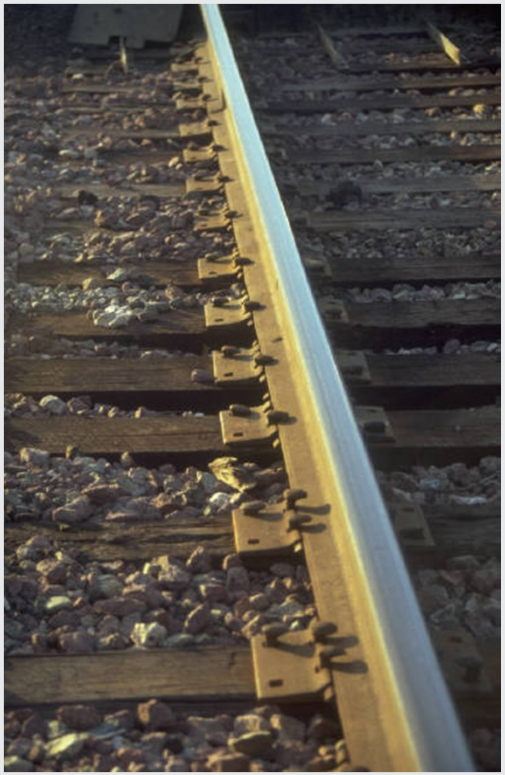
Project Capital Costs

Build Out (2035)	Track (5.7 miles)	$171,000,000
	Rolling Stock (32 cars)	$83,200,000
	Total	**$254,200,000**

(All values in 2010 $)

Annual O&M Costs

- Start Up (2019) - $ 6.6M
  - 7 daily trains w/ 2 passenger cars
  - Express bus service
- Build Out (2035) - $ 21.3M
  - 9 daily trains w/ 6 passenger cars
  - Express bus service



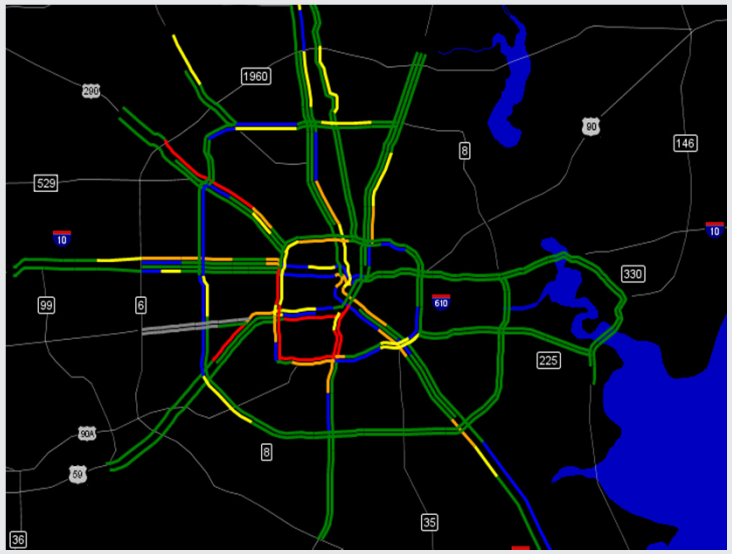
(All values in 2010 $)

Total Cost

		Total	Federal Contribution	Local Contribution
Start Up	Capital	$ 290,700,000	$ 145,350,000	$ 145,350,000
	O&M	$ 6,600,000	$ 0	$ 6,600,000
Build Out	Capital	$ 254,200,000	$ 127,100,000	$ 127,100,000
	O&M	$21,300,000	$0	$21,300,000
	Grand Total	**$ 572,800,000**	**$ 272,450,000**	**$ 300,350,000**

(All values in 2010 $)

US 290 PM Peak



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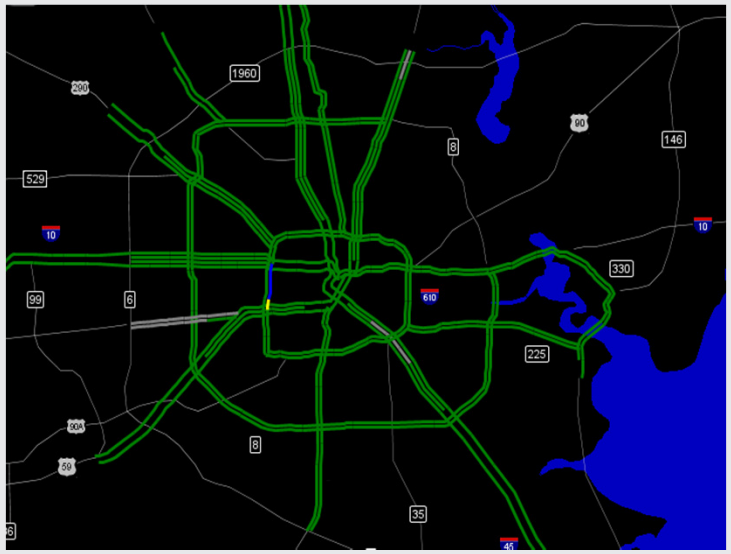


Houston PM Rush Hour Traffic Speed,
7:30 PM May 3, 2011

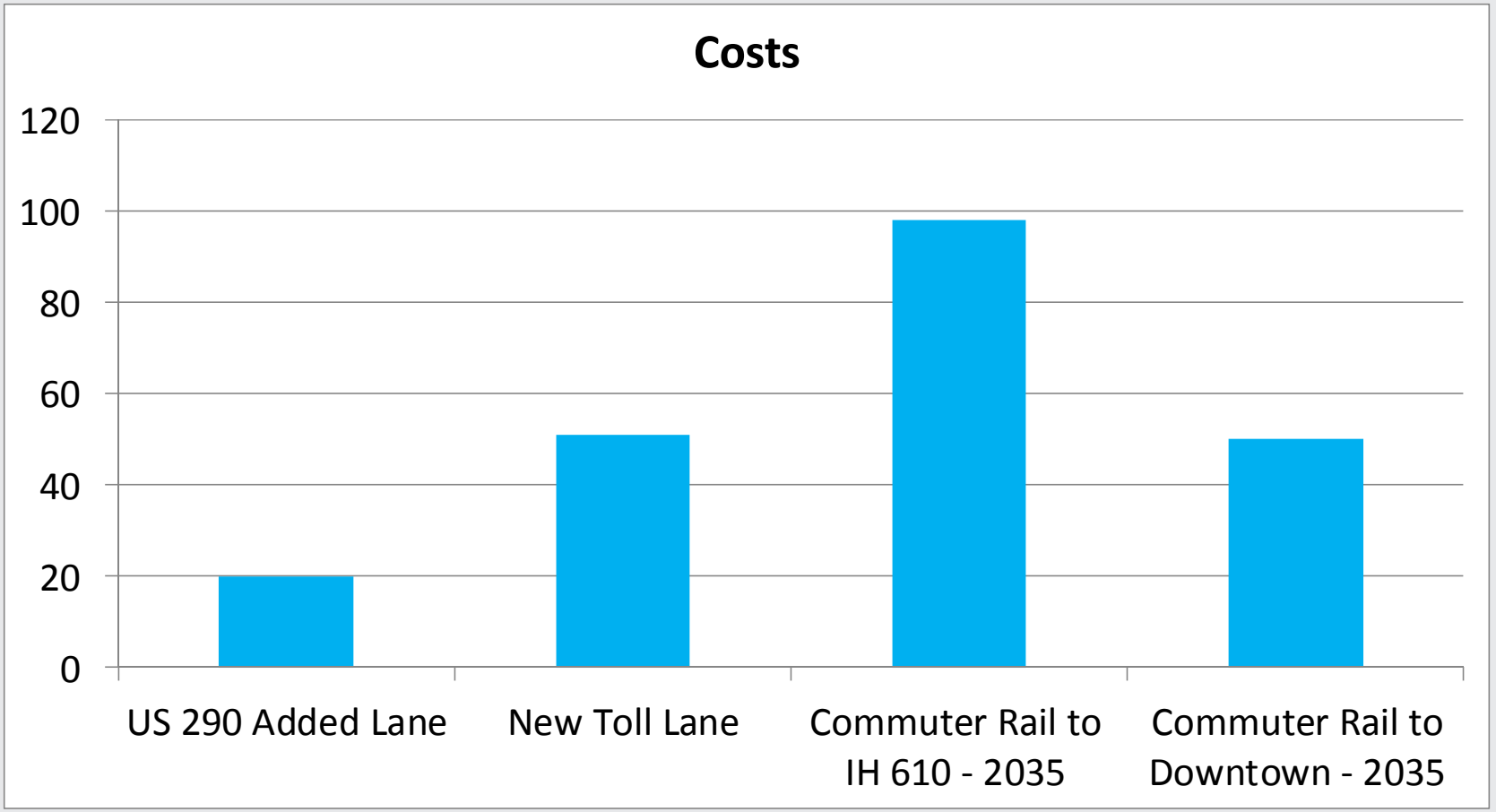
Source: Houston TranStar, Houston Speed Map Archive

Peak Hour Passenger Cost Comparison

Is Rail Comparable to Road?

Service	No. of Passengers in 4 Hours	Cost (000)	Cost per Rush Hour Passenger ($000)
1 Additional Lane on US 290, LOS D	6,650	$179,000	$26
1 New Toll Lane	6,650	$341,000	$51
2035 Ridership to IH-610	2,976	$290,700	$98
2035 Ridership to Downtown	9,408	$471,000	$50

Peak Hour Passenger Cost Comparison



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Next Steps

- Develop a Funding Strategy for Local Match and O&M.
- Advocate Corridor Preservation.
- Develop a Plan for CBD Access.
- Consider Initiation of FTA New Starts Process.
  - Analyze Impacts to At-Grade Crossings.
- Update Corridor Ridership Modeling
  - H-GAC 2035 RTP Update.
  - Develop a Service Plan for Prairie View A&M University.

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Questions?

GCRD Board Meeting

September 13, 2011

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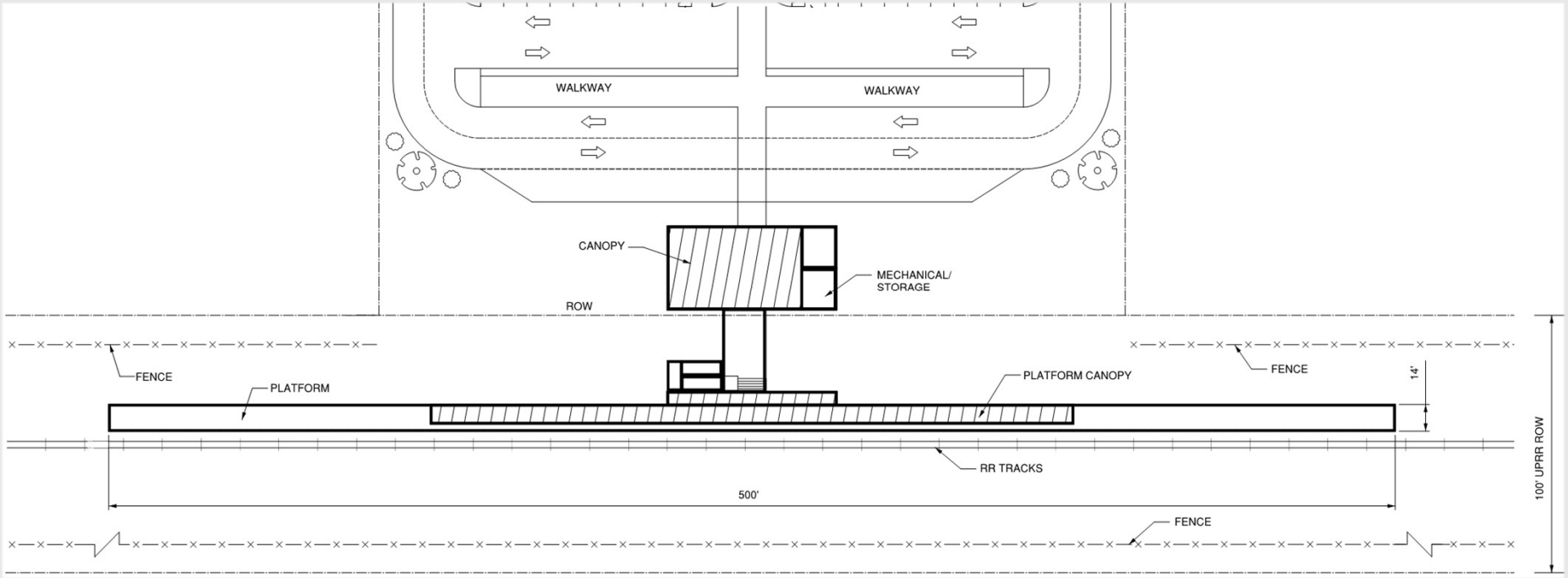
Modeling Comparison

Assumption	METRO	HGAC Commuter Rail Connectivity Study	GCRD Hempstead Commuter Rail Study
Number of Stations	4	8	**10**
Headways (Peak/Off Peak)	15/30	20/30	**20/30**
Speed (MPH/Avg)	59*	45-50	**45**
Travel Time (minutes)	38*	84**	**69****
		* - Grand Parkway to Downtown	** - Hempstead to Downtown
Forecast (2019)	YR-2015		
Grand Parkway to Downtown	11,000-12,000	N/A	N/A
Grand Parkway to IH 610	2,700-3,000	N/A	N/A
Hempstead to IH 610	N/A	N/A	**2,640**
Forecast (2035)	YR-2030		
Grand Parkway to Downtown	21,000-22,000	N/A	N/A
Hempstead to Downtown	N/A	6,904	**18,816**
Grand Parkway to IH 610	4,500-5,000	N/A	N/A
Hempstead to IH 610	N/A	N/A	**5,952**

Station Layout



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Hempstead Station

- AM Boardings
  - 2019 – 97
  - 2035 - 185
- AM Alightings
  - 2019 – 2
  - 2035 – 4
- Parking Needs
  - 2019 – 76 spaces
  - 2035 – 144 spaces
- Constraints
  - At-Grade Crossings
  - Parking Availability

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Prairie View Station

- AM Boardings
  - 2019 – 2
  - 2035 – 4
- AM Alightings
  - 2019 – 122
  - 2035 – 352
- Parking Needs
  - 2019 – 25 spaces
  - 2035 – 50 spaces
- Constraints
  - At-Grade Crossing
  - Parking Availability
  - Expandability
  - Last Mile Service

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Waller Station

- AM Boardings
  - 2019 – 57
  - 2035 – 463
- AM Alightings
  - 2019 – 11
  - 2035 – 22
- Parking Needs
  - 2019 – 50 spaces
  - 2035 – 361 spaces
- Constraints
  - At-Grade Crossings
  - Floodplains
  - Parking Availability

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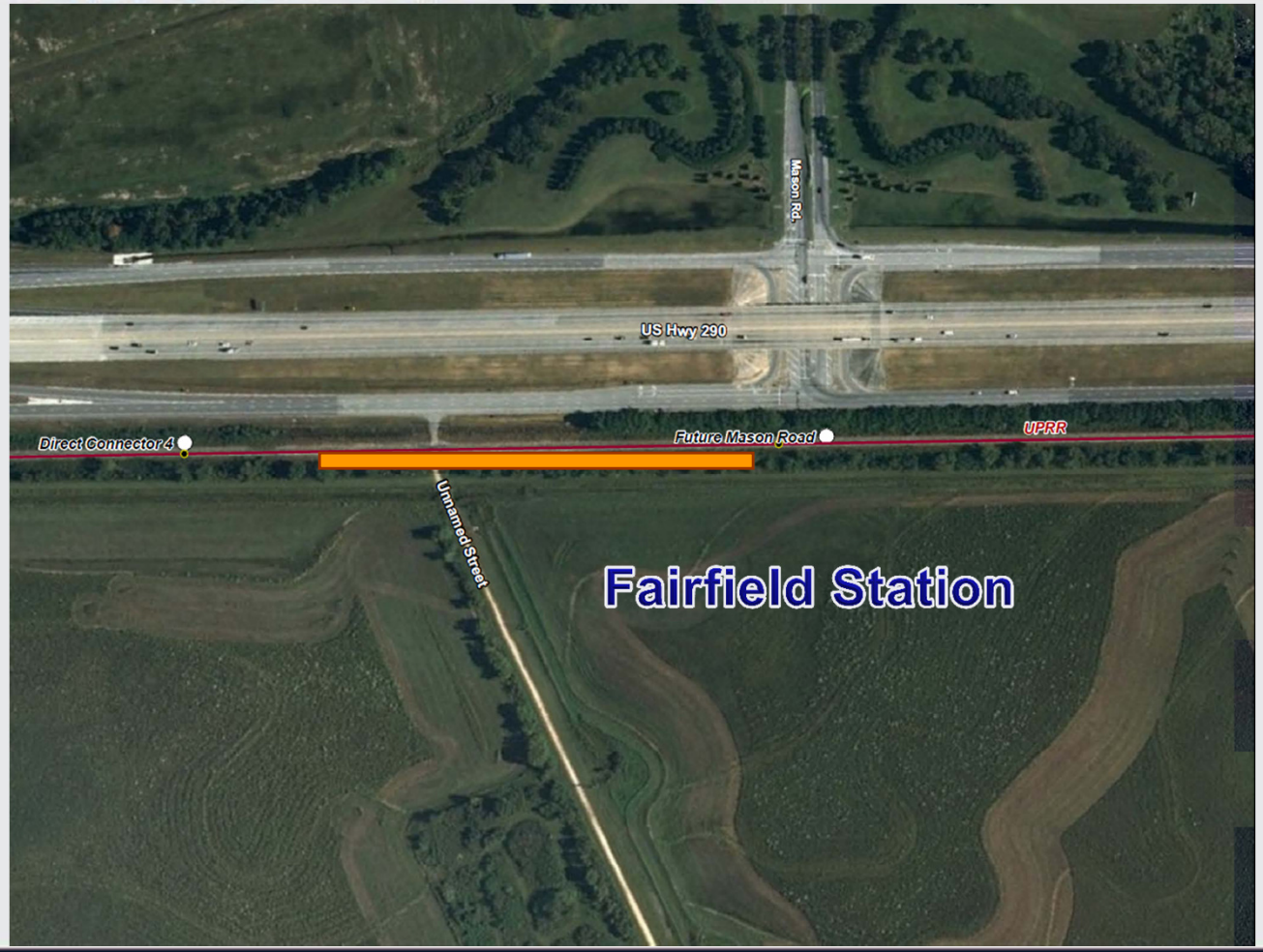
Fairfield Station

- AM Boardings
  - 2019 – 138
  - 2035 – 1600
- AM Alightings
  - 2019 – 17
  - 2035 – 30
- Parking Needs
  - 2019 – 108 spaces
  - 2035 – 1248 spaces
- Constraints
  - At-Grade Crossing
  - Wetlands
  - Managed Lanes / HCT



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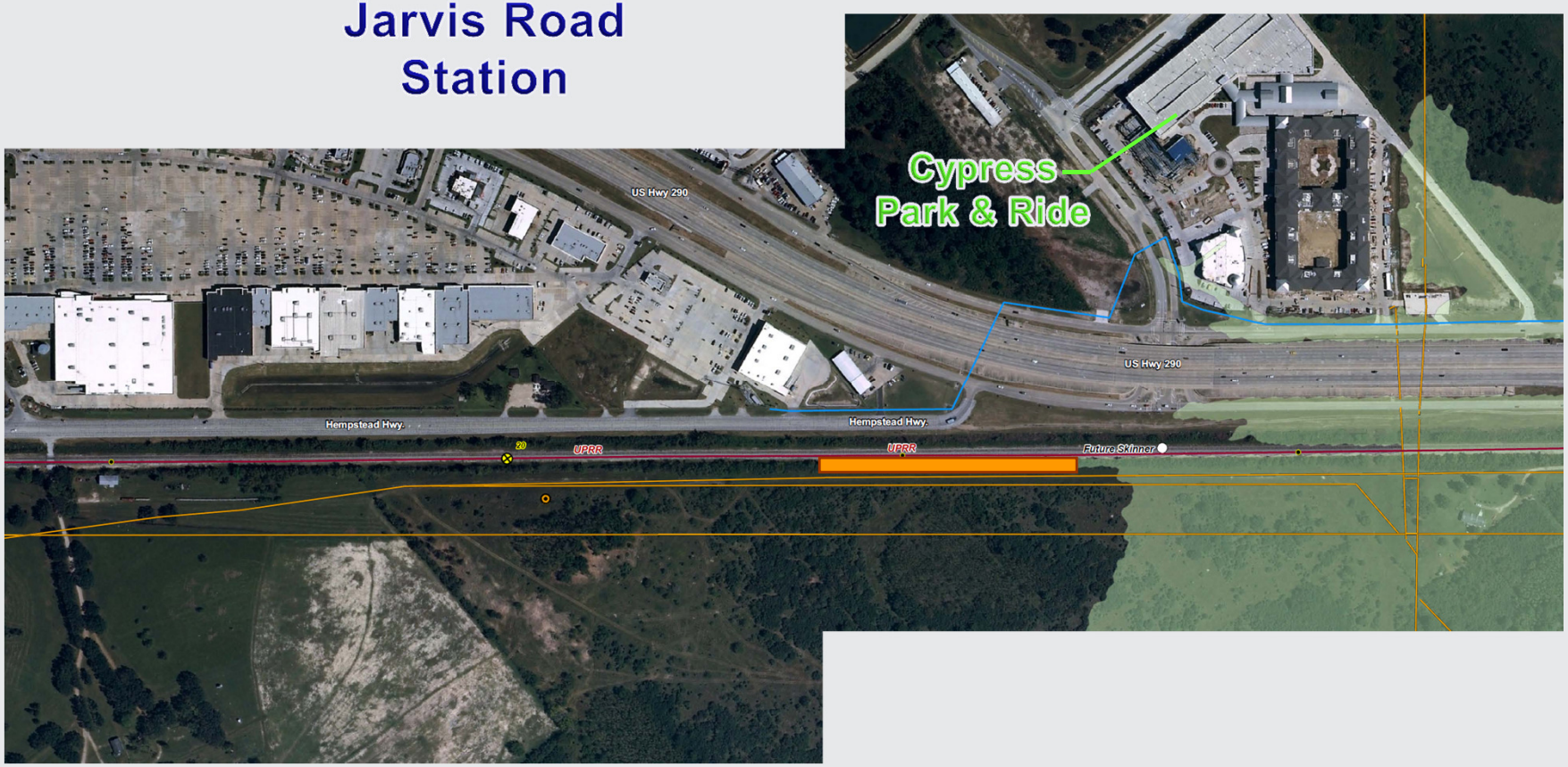
Jarvis Road / Towne Lake Station

- AM Boardings
  - 2019 – 145
  - 2035 – 1351
- AM Alightings
  - 2019 – 20
  - 2035 – 49

- Parking Needs
  - 2019 – 113 spaces
  - 2035 – 1054 spaces
- Constraints
  - At-Grade Crossing
  - Floodplains
  - Pipelines
  - Pedestrian Access
  - Managed Lanes / HCT

Jarvis Road Station



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N. Eldridge Parkway Station

- AM Boardings
  - 2019 – 109
  - 2035 – 1906
- AM Alightings
  - 2019 – 126
  - 2035 – 190

- Parking Needs
  - 2019 – 85 spaces
  - 2035 – 1487 spaces
- Constraints
  - At-Grade Crossings
  - Parking Availability
  - Pipelines
  - Pedestrian Access
  - Managed Lanes / HCT

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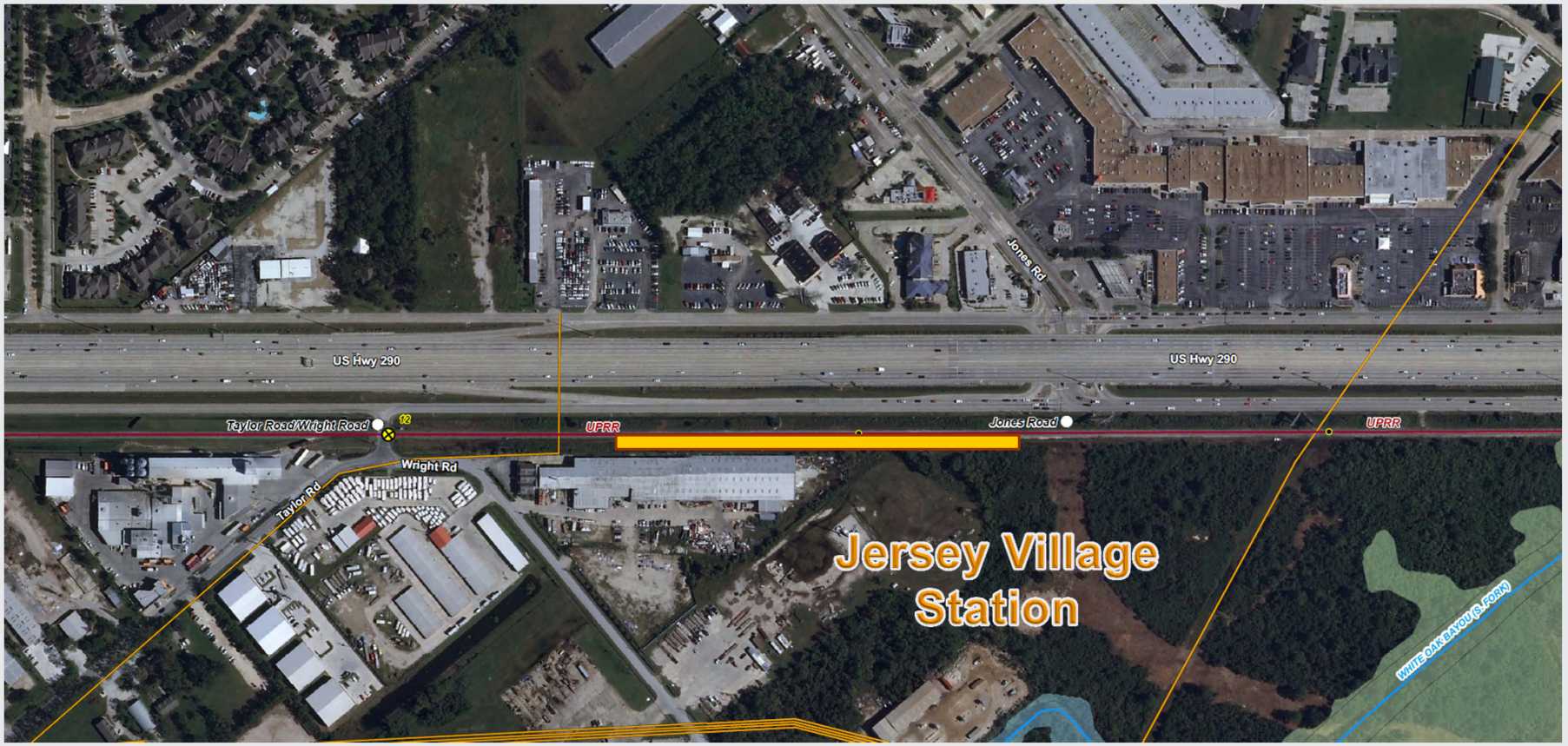
Jersey Village Station

- AM Boardings
  - 2019 – 457
  - 2035 – 501
- AM Alightings
  - 2019 – 124
  - 2035 – 371

- Parking Needs
  - 2019 – 356 spaces
  - 2035 – 391 spaces
- Constraints
  - At-Grade Crossing
  - Parking Availability
  - Pipelines
  - Managed Lanes / HCT



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Sam Houston Tollway Station

- AM Boardings
  - 2019 – 96
  - 2035 - 740
- AM Alightings
  - 2019 – 225
  - 2035 – 975

- Parking Needs
  - 2019 – 75 spaces
  - 2035 – 577 spaces
- Constraints
  - At-Grade Crossing
  - Floodplains
  - Parking Availability
  - Pedestrian Access

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US 290 / IH 610 Station

- AM Boardings
  - 2019 – 219
  - 2035 – 1074
- AM Alightings
  - 2019 – 673
  - 2035 – 3132
- Parking Needs
  - 2019 – 171 spaces
  - 2035 – 838 spaces
- Constraints
  - At-Grade Crossings
  - Overhead Structures
  - Parking Availability
  - Pedestrian Access

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Downtown Station

- AM Boardings
  - 2019 – 0
  - 2035 - 1584
- AM Alightings
  - 2019 – 0
  - 2035 – 4283
- Parking Needs
  - 2019 – 0 spaces
  - 2035 – 475 spaces
- Constraints
  - At-Grade Crossings
  - Parking Availability

Status of the Corridor

- US 290 - LOS Projections
- 2035 RTP Update –

  $ 80B in projects dropped
- TxDOT Funding Uncertain
- US 290 Improvements Slowed
- Hempstead Managed Lanes – Toll Viable?
- Non-Attainment / Air Quality Issues