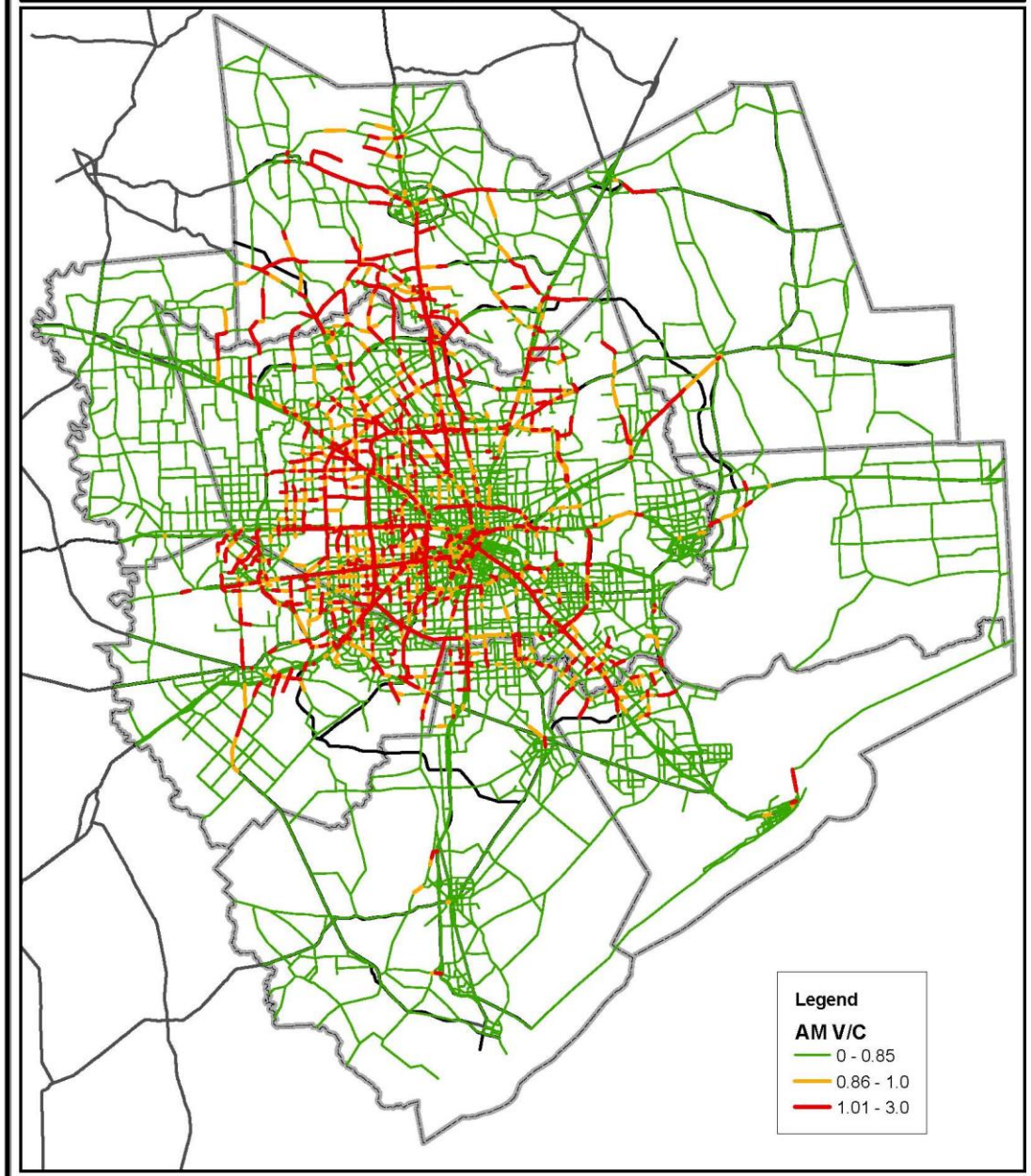
Background

- 8 County Region Not Done Growing!
  - Population grew **115%** last 35 years (3.5 M)
  - Next 35 years: **80 - 110%** (5.4 - 7.4M)
- Regional growth will continue to expand

Area	1980	2015	2050
Harris County	2.4 M	4.5 M	6.9 M
7 Counties	0.7 M	2.1 M	5.1 M

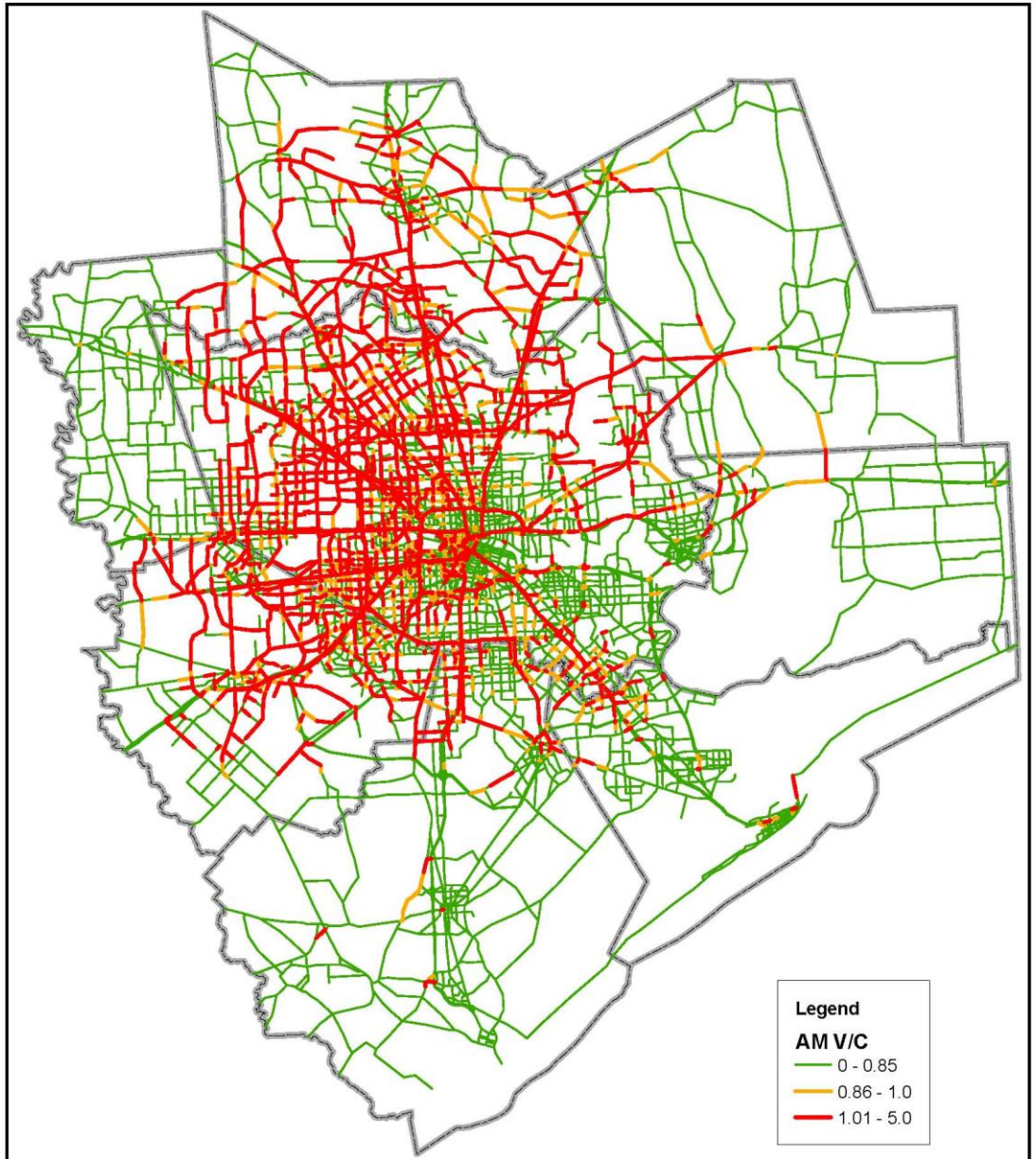
Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

2017 RTP
AM Congestion



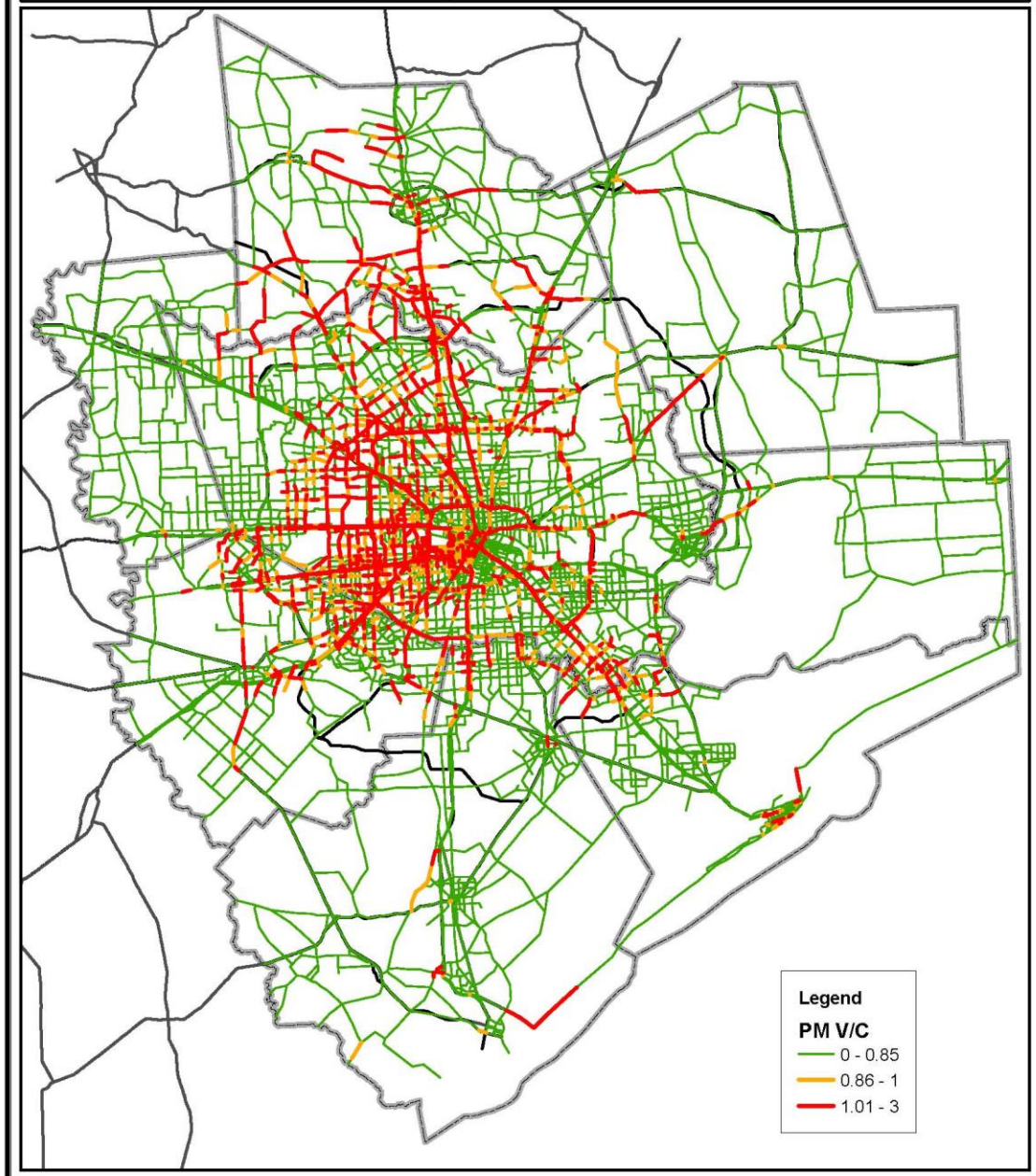
Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

2040 RTP
AM Congestion



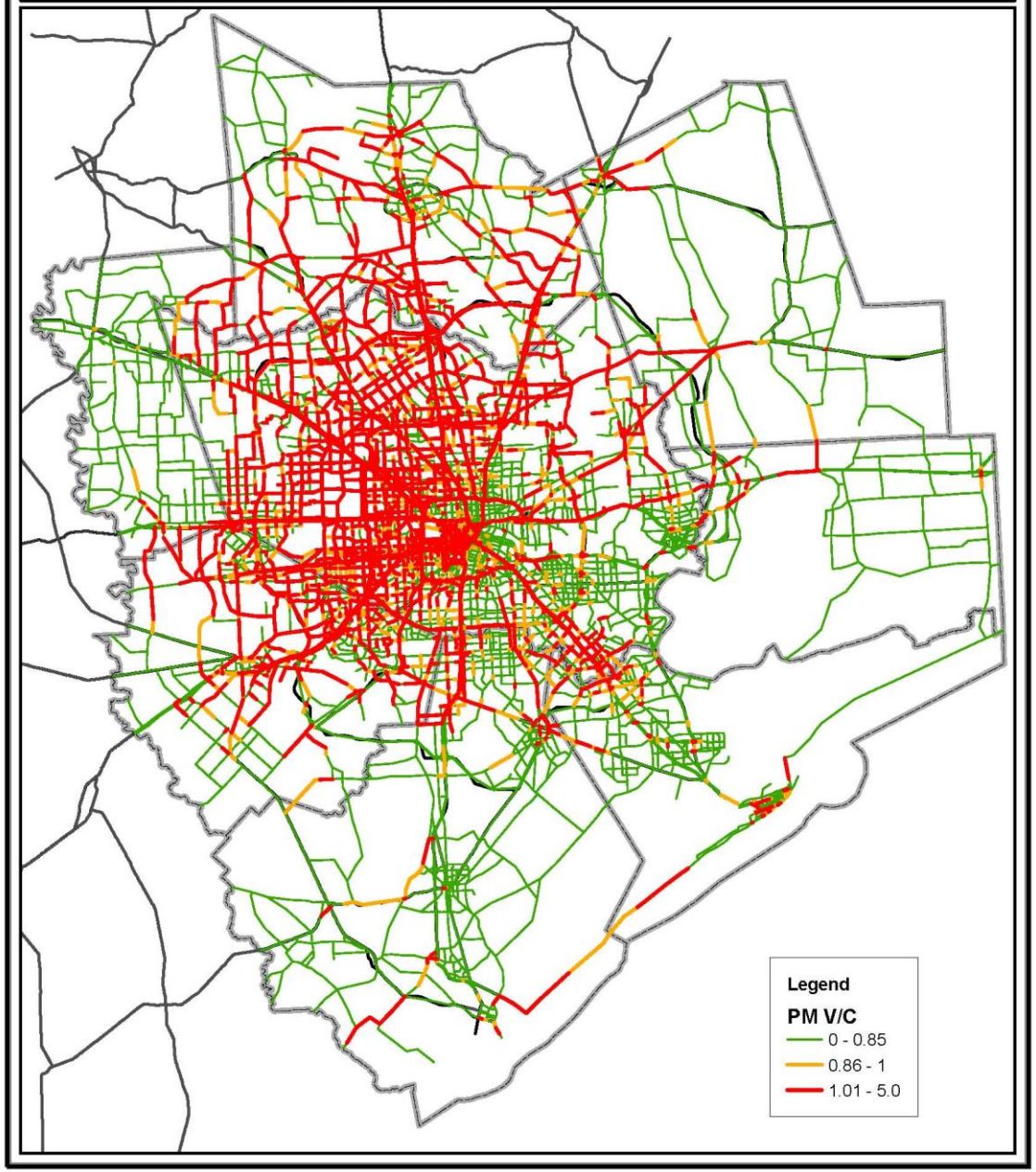
Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

2017 RTP
PM Congestion



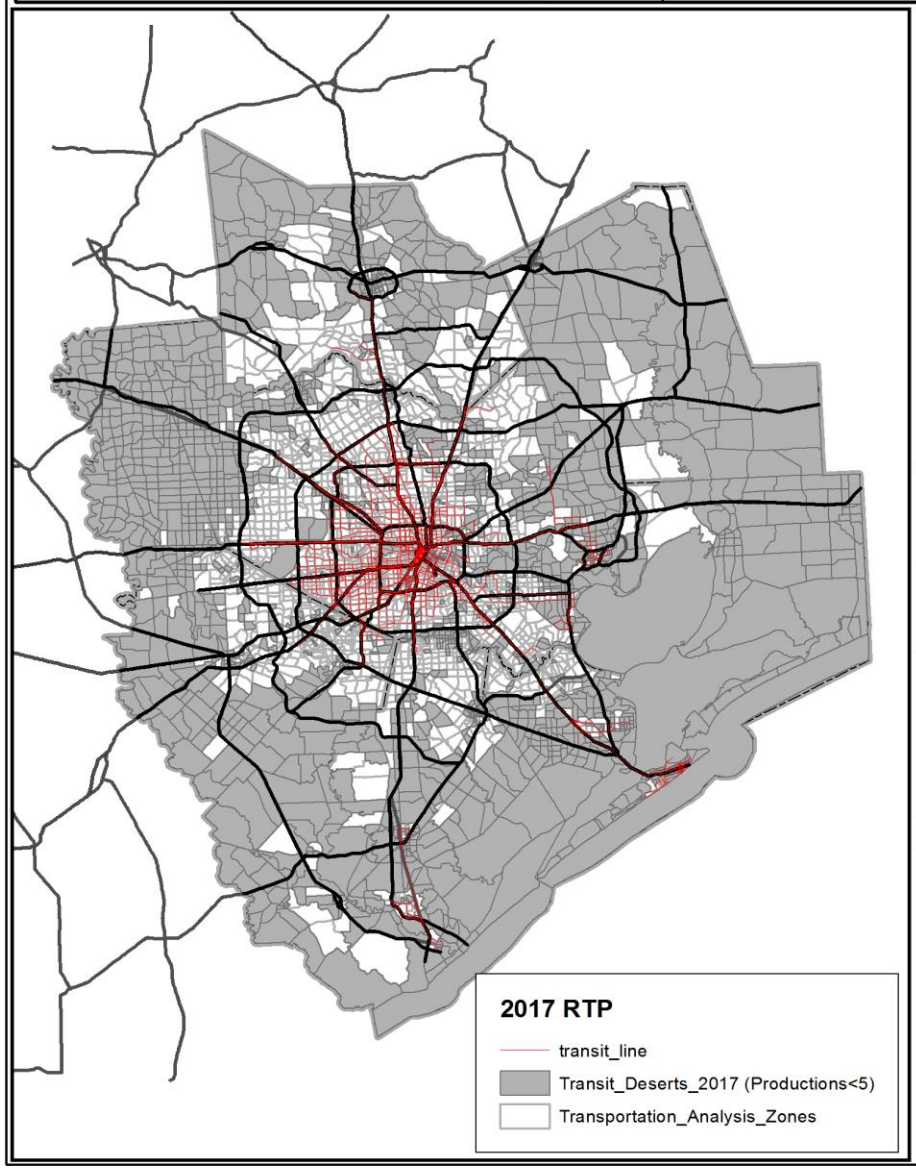
Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

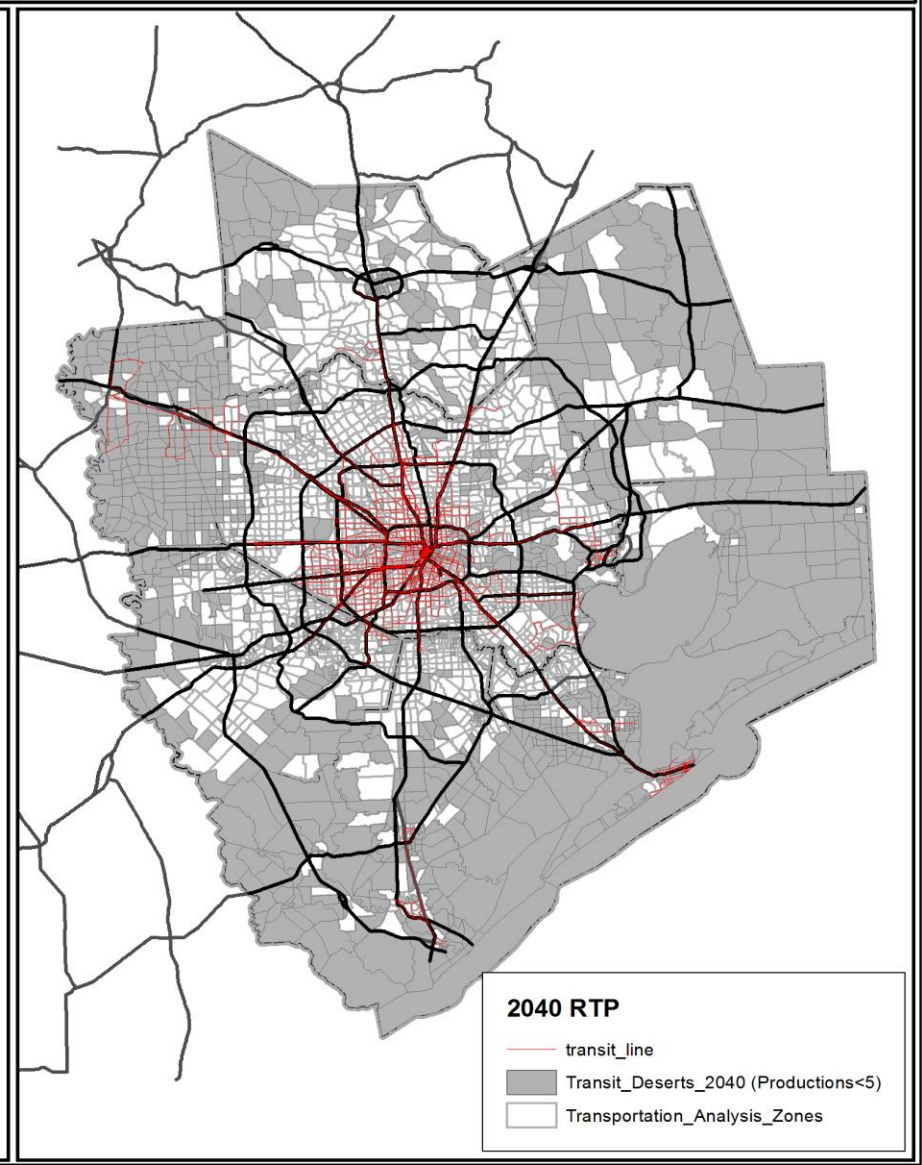
2040 RTP
PM Congestion



Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

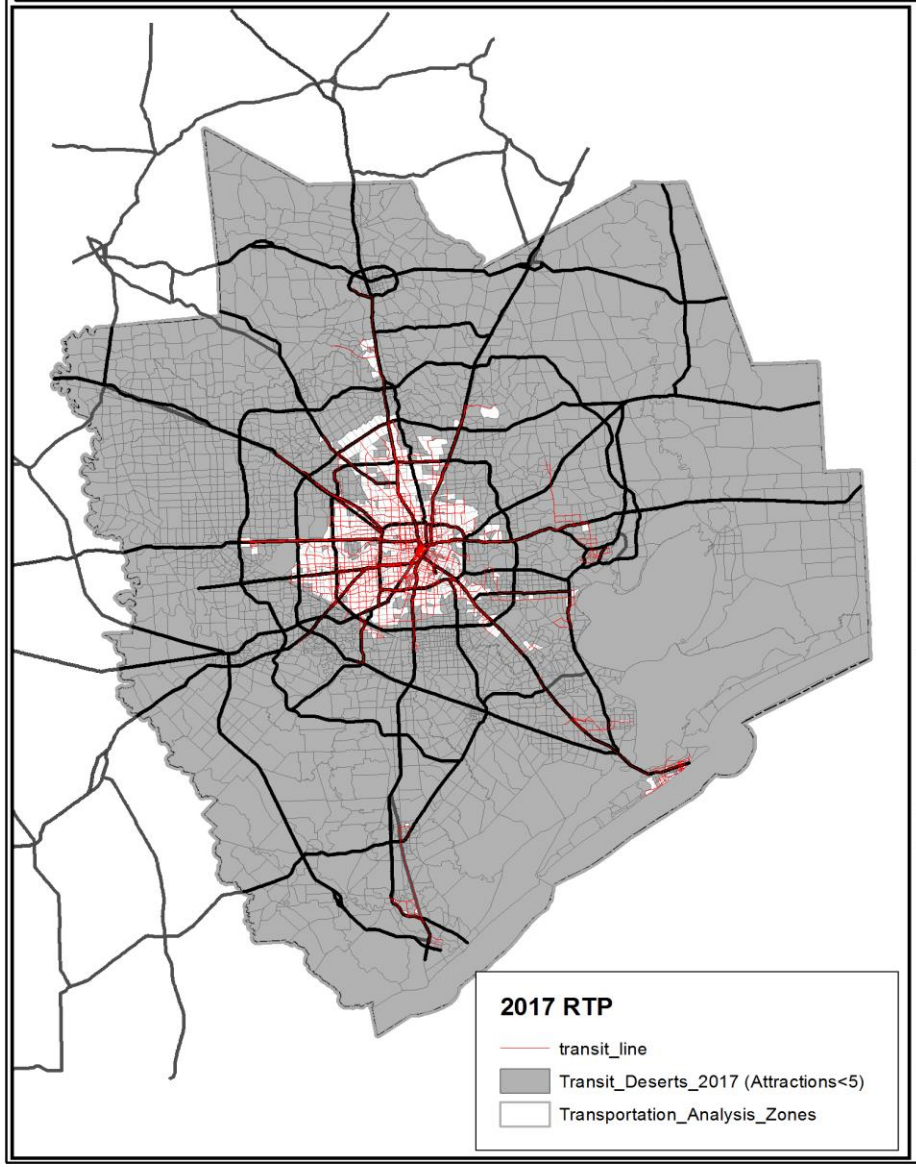
Transit Deserts - 2017 and 2040 RTP Productions Comparison

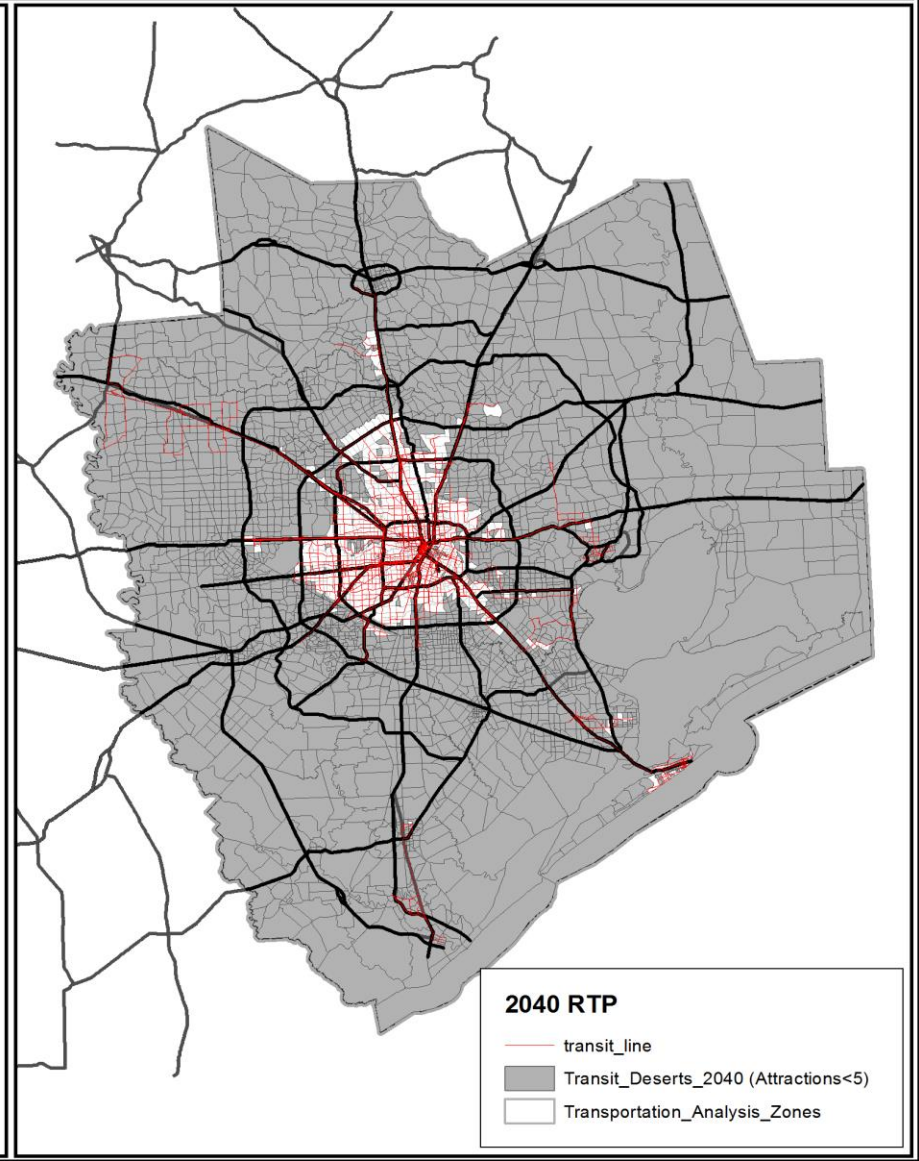




Houston-Galveston Area Council
3555 Timmons Ln, Suite 120
Houston, TX 77027
Phone: 713-627-3200
Web: www.h-gac.com

Transit Deserts - 2017 and 2040 RTP Attractions Comparison





HCT Service Concepts and Functional Application Examples

Service Concepts Breakout Session

September 29, 2017 HCT Workshop

Introductory Briefing & Agenda

- Service Concepts Overview
- Peer Region Functional Application Examples
- Service Concept Workgroup Breakout Session Agenda

SERVICE CONCEPTS OVERVIEW

Service Concept Overview

- MEGA-REGION SERVICE
- REGIONAL COMMUTER SERVICE
- SUBREGIONAL CORRIDOR SERVICE
- FIRST-MILE/LAST-MILE SERVICE
- DISTRICT CIRCULATOR SERVICE

Service Concept Characteristics

Service Concept	Travel Speeds	Route Length & Config.	Station Locations	Station Spacing
Mega-Region	Very High	100 to 300 Mile Corridor	Center of Metro Region	100 to 200 Mile Spacing
Regional Commuter	High	20 to 100 Mile Corridor	Along Corridor	5 to 10 Mile Spacing
Subregional Corridor	Moderate	5 to 20 Mile Corridor	Along Corridor	1 to 3 Mile Spacing
First-Mile/Last-Mile	Moderate/ Lower	1 to 3 Mile Route	HCT Station & in District/MAC	0.25 to 0.5 Mile Spacing
District Circulator	Lower	1 to 3 Mile Route	Internal to District/MAC	0.25 to 0.5 Mile Spacing

PEER REGION SERVICE CONCEPTS – TECHNOLOGY APPLICATION EXAMPLES

MEGA-REGION SERVICE

HOUSTON AND DALLAS/FORT WORTH

Dallas

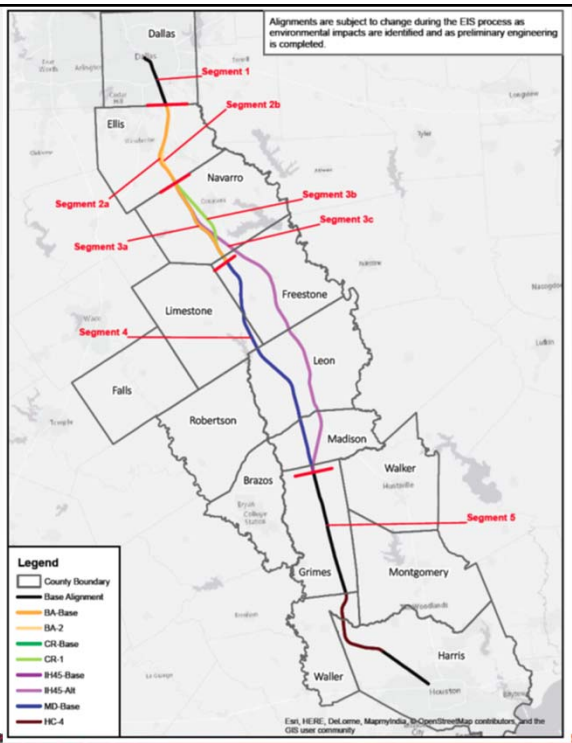
2016 Estimated MSA Population: 7,233,323

2010 Census MSA Density: 634 persons/square mile

Houston

2016 Estimated MSA Population: 6,772,470

2010 Census MSA Density: 630 persons/square mile



MEGA–REGION SERVICE – Texas Central Railway HSR

Source: Texas Central Partners

MEGA-REGION SERVICE

- Very High average travel speeds
- Serving stations in the center of major metropolitan regions
- Routes 100 to 300 miles in length
- Station spacing typically every 100 to 200 miles

Other Mega-Region Service Technology Examples

Source: Wikimedia

Northeast Corridor Service –
Bombardier Acela Train
Owner/Operator: Amtrak

Mega-Region Service Concept in Japanese 2050 Plan

Source: ITS Japan

26

REGIONAL COMMUTER SERVICE

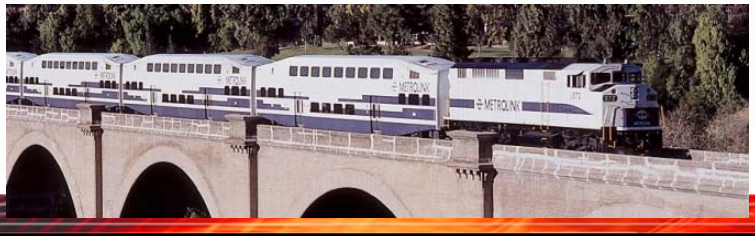
PEER REGION – LOS ANGELES

2016 Estimated MSA Population: 13,310,447

2010 Census MSA Density: 2,645 persons/square mile

REGIONAL COMMUTER SERVICE – Los Angeles Metrolink Commuter Rail

- San Bernadino Line – 60 mi.
- Orange Co. (Oceanside) Line – 80 mi.
- Antelope Valley (Lancaster) Line – 60 mi.
- Riverside Line – 50 mi.
- Ventura Co. Line – 60 mi.



REGIONAL COMMUTER SERVICE

- High average travel speeds
- Serving stations along corridors
- Routes 20 to 100 miles in length
- Station spacing typically every 5 to 10 miles

Other Regional Commuter Service Technology Examples

Source: Stadler

FORT WORTH, TEXAS
TexRAIL 2018
Owner/Operator:
Fort Worth Transportation Authority

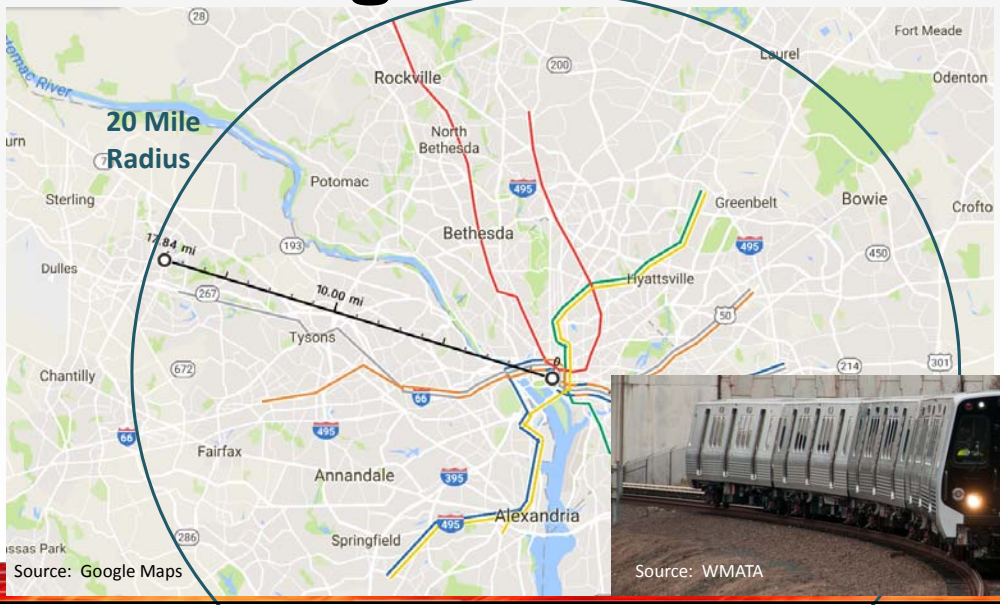
HOUSTON, TEXAS
Woodlands Express P&R
Owner/Operator:
Woodlands Township

SUBREGIONAL CORRIDOR SERVICE PEER REGION – WASHINGTON DC

2016 Estimated MSA Population: 6,131,977

2010 Census MSA Density: 1,084 persons/square mile

SUBREGIONAL CORRIDOR SERVICE – Washington Metro Rail



Source: Google Maps

Source: WMATA

SUBREGIONAL CORRIDOR SERVICE

- Moderate average travel speeds
- Serving stations along corridors
- Routes 5 to 20 miles in length
- Station spacing typically every 1 to 3 miles

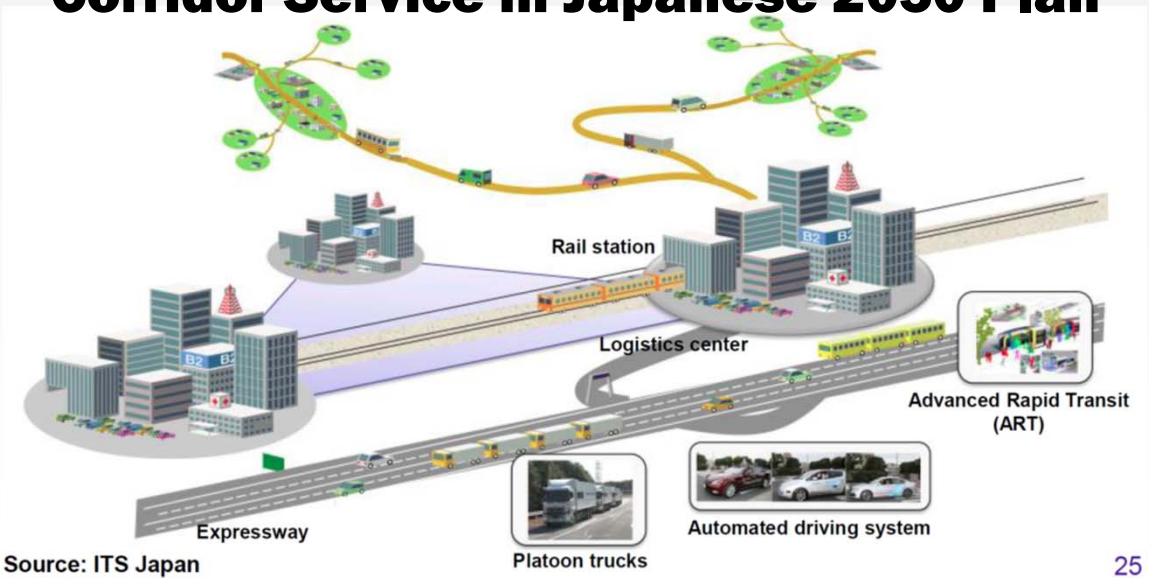
Other Subregional Corridor Service Technology Examples

Photo Source:
##http://www.flickr.com/photos/chrisyarzab/##Chris Yarzab##

LOS ANGELES
Orange Line BRT
Owner/Operator:
LA Metro Transit

DALLAS
Dallas Light Rail
Owner/Operator:
Dallas Area Rapid Transit

Regional Commuter and Subregional Corridor Service in Japanese 2050 Plan



Source: ITS Japan

25

FIRST MILE/LAST MILE SERVICE

PEER REGION – DUBAI, UAE

2016 Estimated MSA Population: 2,788,9

2010 Census MSA Density: N/A

FIRST-MILE/LAST-MILE SERVICE – Dubai UAE Bluewaters APM

Source: Construction Business News, March 15, 2017

Contract Awarded for Bluewaters Island Transport System

The transport system will feature –

- 25 driverless Group Rapid Transit (GRT) vehicles each with ***24 passengers capacity***
- Connection to the ***Tower Metro Station*** 2.5 km away.
- ***3,350 people per hour per direction initial capacity***, with ability to increase to 5,000 pphpd.
- Application of ***Level 4 autonomous vehicle technology*** operating on a dedicated transitway to provide a highest capacity and throughput

Source: 2getthere
https://www.2getthere.eu/projects/bluewaters-island-apm/

FIRST-MILE/LAST-MILE SERVICE

- Moderate/Lower average travel speeds
- Serving passengers arriving/departing the HCT station and connecting into a nearby Urban District or Major Activity Center
- Routes 1 to 3 miles in length
- Station spacing typically every 0.25 to 0.5 miles

Other First-Mile/Last-Mile Service Technology Examples

WASHINGTON DC
Owner/Operator: Washington DC Department of Transportation, DC Circulator Line

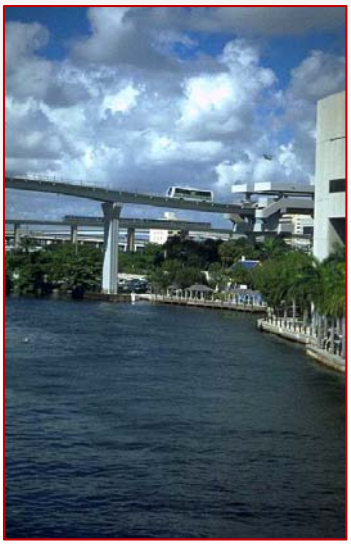
DISTRICT CIRCULATOR SERVICE

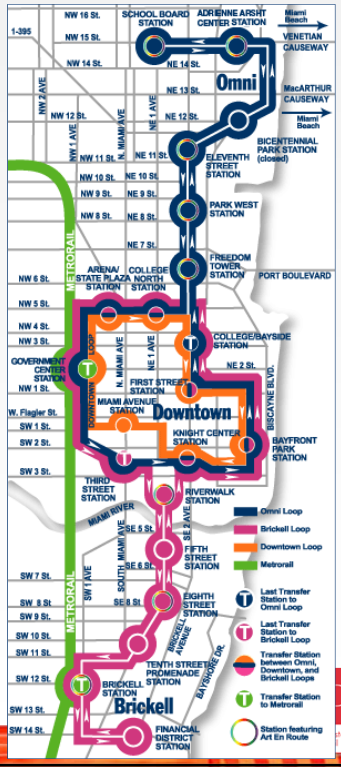
PEER REGION – MIAMI

2016 Estimated MSA Population: 6,066,387

2010 Census MSA Density: 966 persons/square mile

DISTRICT CIRCULATOR SERVICE – Miami Metromover





DISTRICT CIRCULATOR SERVICE

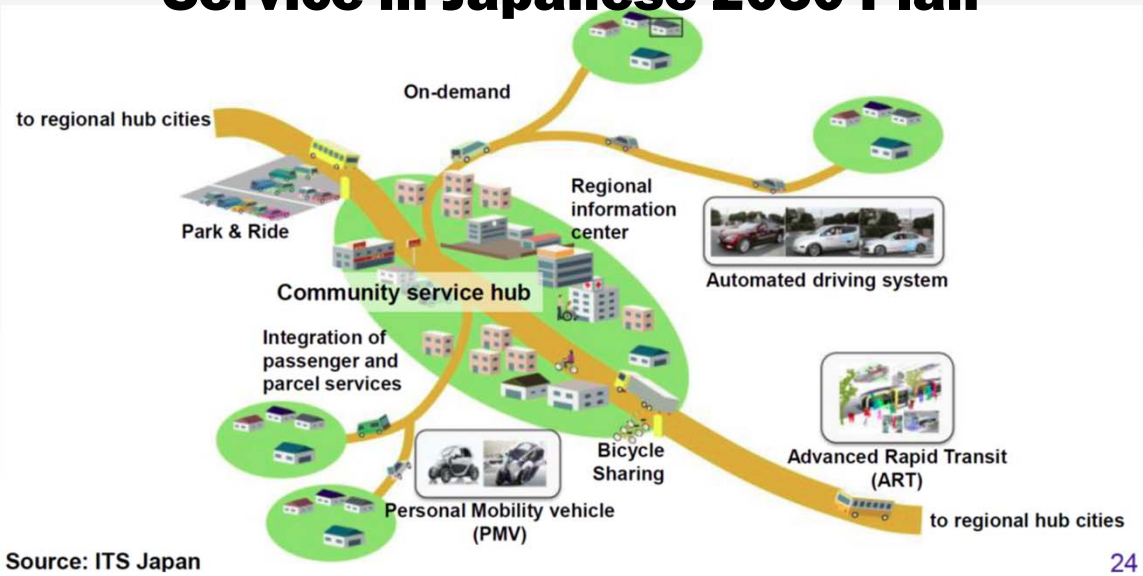
- Lower average travel speeds
- Primarily serving internal trips within an Urban District or Major Activity Center
- Alignment often configured as linear corridors, as interconnecting loops or as a "network"
- Routes 1 to 3 miles in length
- Station spacing typically every 0.25 to 0.5 miles

Other District Circulator Service Technology Examples

Source: Wikipedia, Alstom Ciradis X05
By lantomferry at English Wikipedia, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=48227555

DUBAI, UAE
Dubai Street Tram
Owner/Operator:
Dubai Roads & Transport Authority

District FM/LM and District Circulator Service in Japanese 2050 Plan



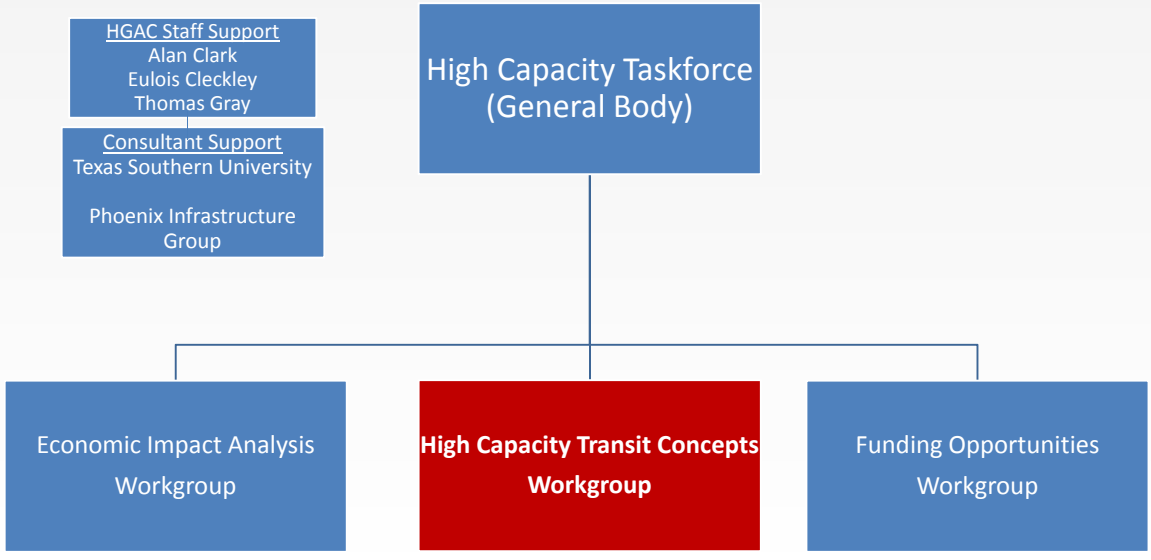
Source: ITS Japan

SERVICE CONCEPT WORKGROUP BREAKOUT SESSION AGENDA

Service Concept Workgroup Breakout Session Agenda

- Purpose of the Service Concepts Workgroup
- Workgroup Approach to Service Concepts
- Key Topics to be Investigated First
- Meeting Schedule(s) for SC Workgroup
- Deliverables on Service Concepts

Taskforce Structure



Purpose of Service Concept Workgroup

1. Define the functional purpose of each Service Concept
2. Document the Technology Applications that should be considered for deployment in each Service Concept
3. Provide guidance to the other HCT Workgroups on the full suite of Service Concepts and Technology Applications to be addressed
4. Describe in a preliminary manner the technical, performance, and environmental/ societal impact characteristics of the multimodal HCT System

Workgroup Approach to Service Concepts – Activities and Assignments

<u>October and November</u>

1. Research Peer City examples of Service Concepts and factors justifying the concept application
2. Catalogue and assess options for HCT Technology Applications deployable within each Service Concept
3. Evaluate the implications for service accessibility within the diverse economic/demographic population

Workgroup Approach to Service Concepts – Activities and Assignments

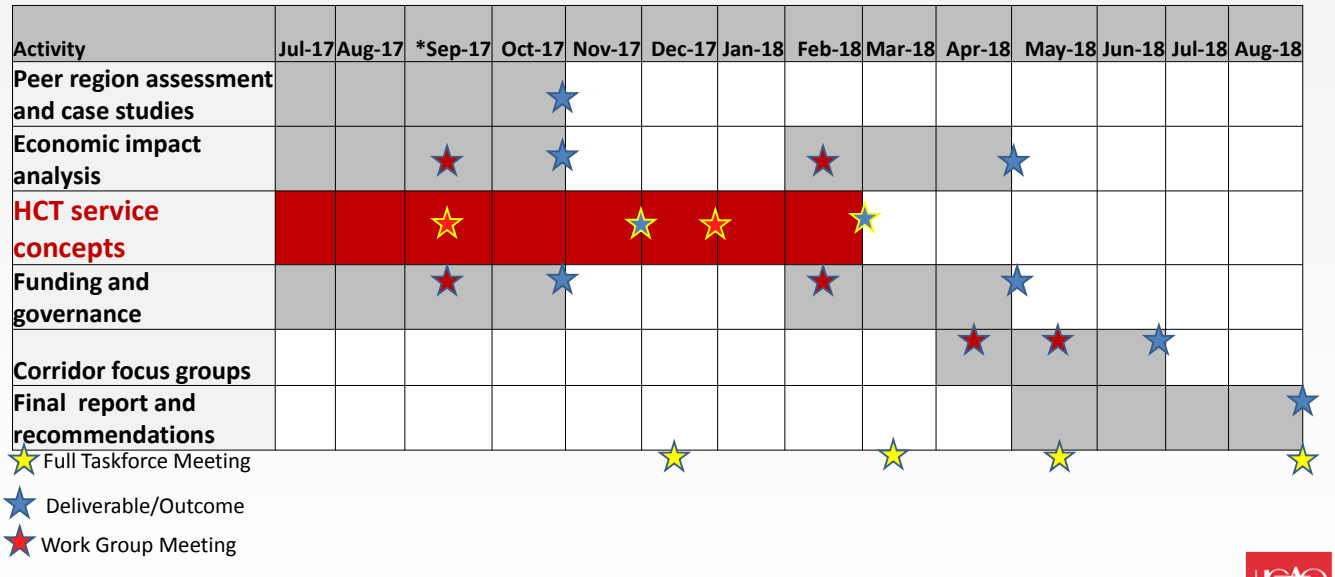
December, January and February

4. Develop Pros and Cons of each technology application within each Service Concept, and the leveraging of transit mode share by linking/integrating Service Concepts as a HCT System
5. Perform a preliminary assessment of integrated Service Concepts and Technology Applications for major corridors and urban districts throughout the Houston Metropolitan Region

Key Topics to be Investigated and Reported at Next Workgroup Meeting

1. Peer City Service Concepts and Technology Applications
2. Apparent Pros and Cons of the Technology Applications and Service Concept as Deployed in the Peer Cities
3. Advanced Technology Applications Necessary to Consider for Houston's Future

Meeting Schedule in Consideration of the HCT Task Force Timeline



*Taskforce workshop scheduled for September 29th

HCT Task Force Key Deliverables

- Peer region assessment and case studies (HGAC staff)
  - July-September 2017
- Report on economic impact of HCT (workgroup)
  - Phase One: July-October 2017
  - Phase Two: February 2018-April 2018
- **Report on HCT service concepts (SC Workgroup)**
  - **November 2017 – Preliminary Findings**
  - **February 2018 – Final SC Workgroup Report**
- Report on funding and governance (workgroup)
  - Phase One: July-October 2017
  - Phase Two: February- April 2018
- Final report and recommendations (HGAC Staff)
  - May-August 2018





HCT SERVICE CONCEPTS WORKGROUP BREAKOUT SESSION IS NOW CONCLUDED

Thank You!!