



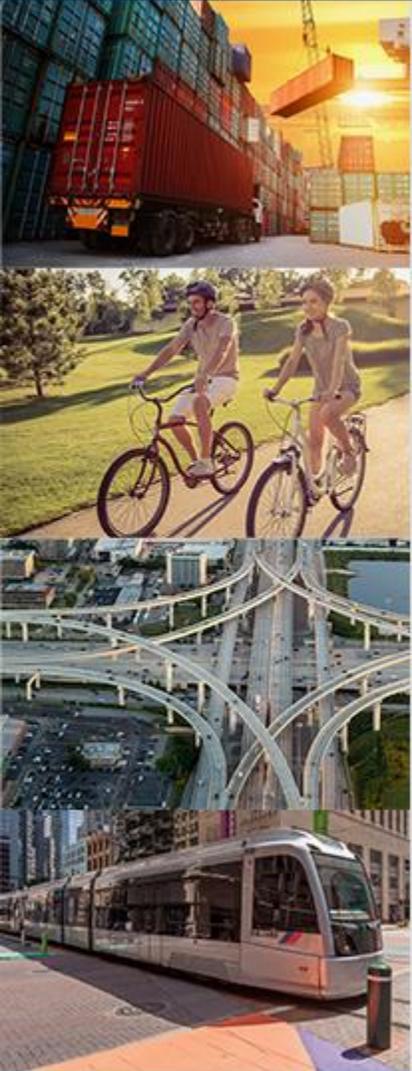
High Capacity Transit Task Force



March 8, 2018



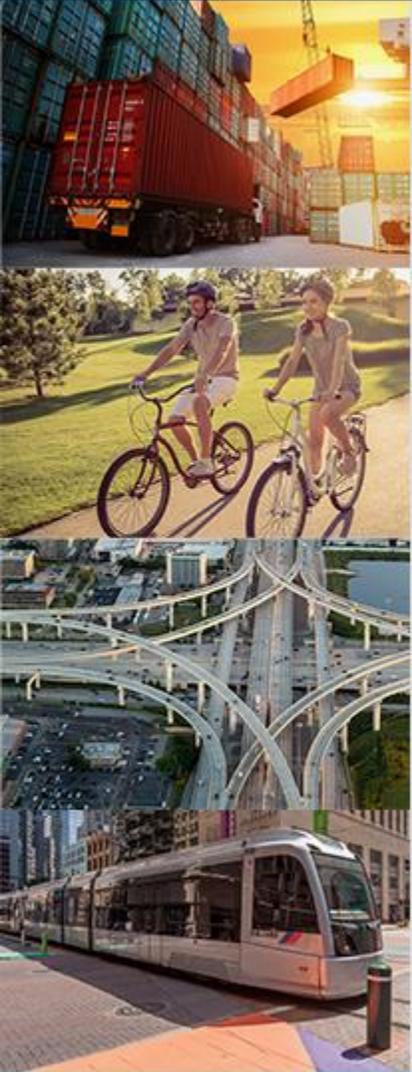
Today's Agenda



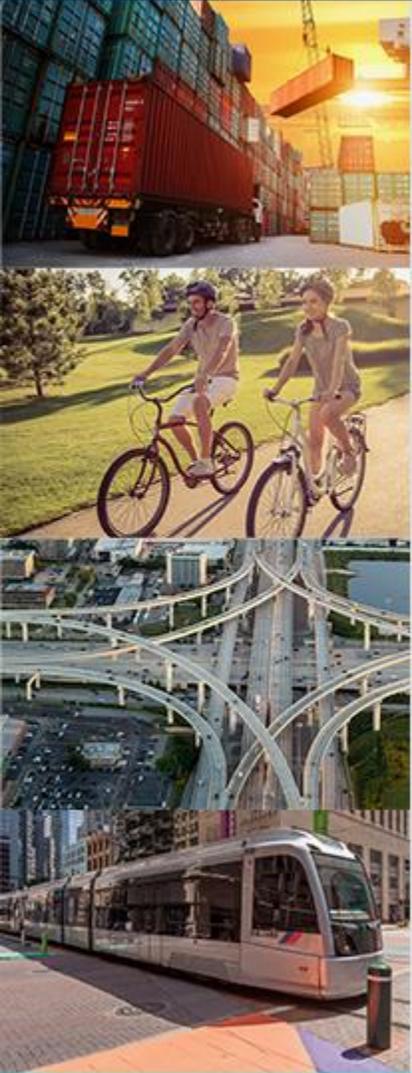
- Introductions
- Innovative Finance Report
- Service Concepts Report
- Economic Development Report
- Next Steps

Innovative Finance

- Draft Phase I Deliverable Document (in packet)
- Full List of Financing Tools
- Regional Governance Models

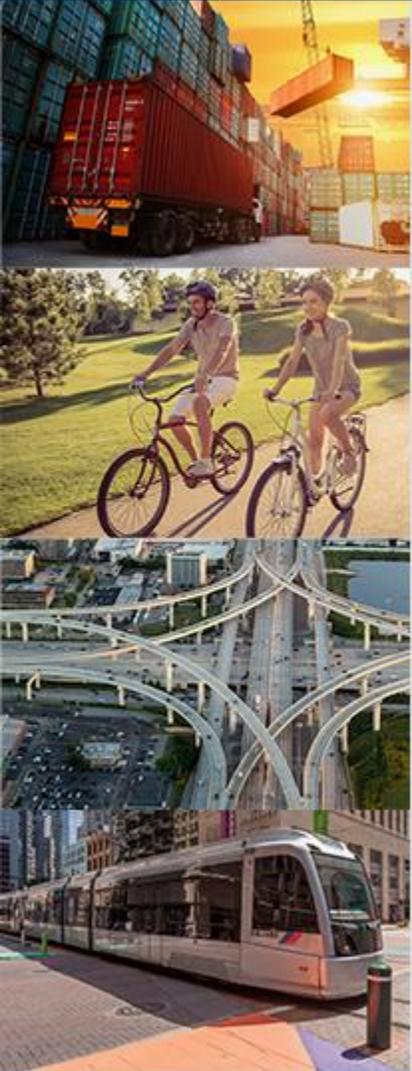


List of Financing Tools



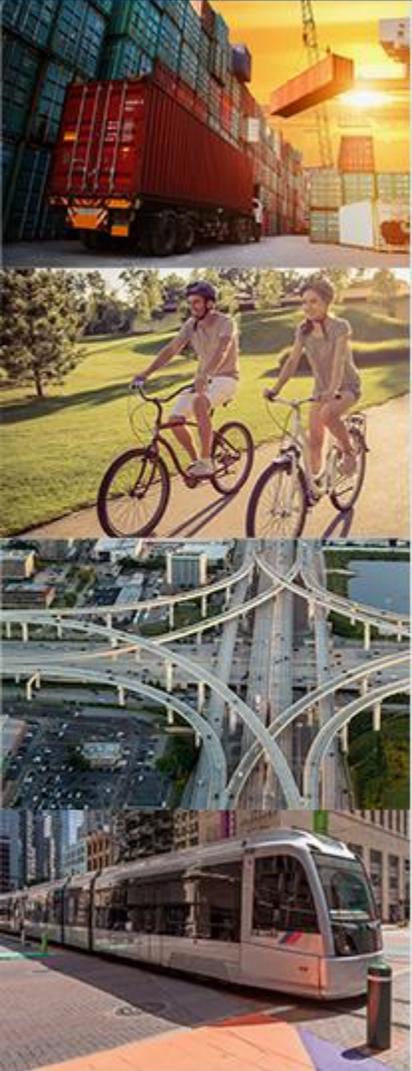
- Workgroup tasked with creating a “complete list” of tools to present to HCT Task Force
- Some tools might not currently be available/feasible
- Understand difference between **funding** tools and **financing** tools

Traditional Financing Tools



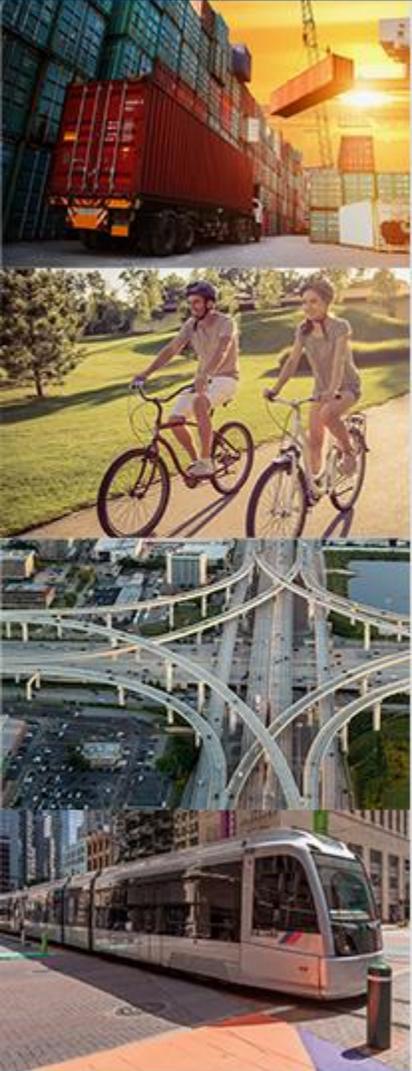
Financial Tool	Public Subsidy or Support?	Mechanism for funding/financing	Flow of funds to HCT infrastructure	Limitation on Usage?	Authorization or Application to HCT in Texas?
General Obligation Bonds	Yes	Dedicated source or general obligation pledge of taxing entity (e.g. municipality)	Directly to projects designated via program or referendum	Entity debt capacity	Yes – No legal limitation
Revenue bonds	Not directly	Debt secured by specific revenue stream (fares, rents, etc)	Directly to projects designated	Based upon project credit, forecast, etc.	Yes – No legal limitation
Sales Tax Revenue	Yes	Financing secured by commercial sales within selected entity tax borders	Yes - can be directly to designated project (determined via referendum usually)	Based upon public appetite for tax and state law	Yes – No legal limitation
Property Tax Revenue	Yes	Financing secured by property tax levies within selected entity tax borders	Yes - can be directly to designated project (determined via referendum usually)	Based upon public appetite for tax and county law	Yes – No legal limitation

Traditional Financing Tools



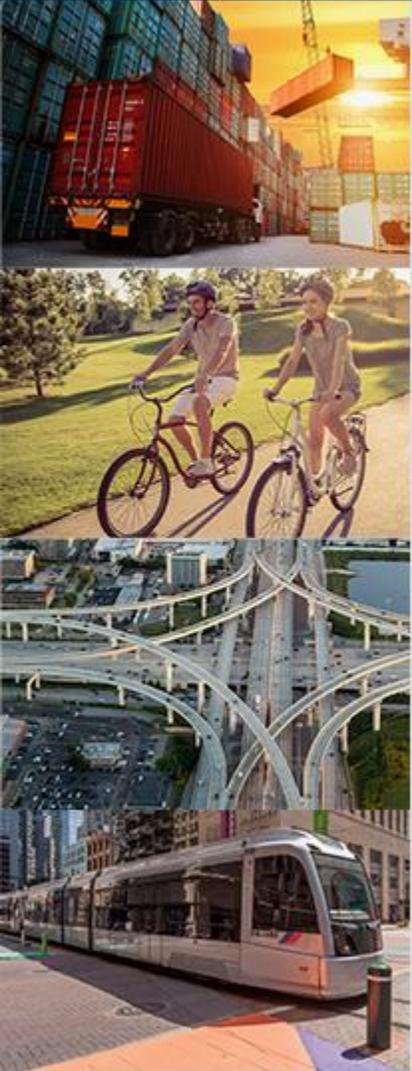
Financial Tool	Public Subsidy or Support?	Mechanism for funding/financing	Flow of funds to HCT infrastructure	Limitation on Usage?	Authorization or Application to HCT in Texas?
Grant Anticipation Notes	Yes	Debt secured by anticipated future federal grants	Directly to projects or program via grant	Limited by the value/parameters of federal grant	State grants cannot be applied to HCT projects
State Infrastructure Bank	Yes	Loan and Credit enhancements to sponsors of particular capital projects	Yes - to sponsors private and public	Limited by project type	Limited to highway-related projects only
Tax Increment Financing	Not directly	Financing secured by property tax revenues increases within specified area or district	Directly to infrastructure within designated area	Increase in tax base according to ordinance	Yes – No legal limitation
State Sources: SDFs and STOAs	Yes	Funding programs designed to provide direct, designated investments from state DoTs to transit projects and programs. Usually outside of metropolitan transit agencies.	Directly to programs and projects	Limited by state-level determination on funding	Limited to highway-related projects only

Traditional Financing Tools



Financial Tool	Public Subsidy or Support?	Mechanism for funding/financing	Flow of funds to HCT infrastructure	Limitation on Usage?	Authorization or Application to HCT in Texas?
Passenger Facility Charges (PFCs)	No - User charge	Charges applied to passengers by the airport agencies. Capped at \$4.50 per flight segment and with a maximum of \$18 per round trip flight.	Currently being discussed by the FAA and Federal government to allow PFCs to be applied towards HCT related to airports	Currently limited to direct airport facilities	To be determined
Transportation Reinvestment Zone (TRZ)	Not directly	Similar to TIFs, TRZs require the municipality to designate a zone in which it will promote the transportation project and enable incremental increases in funding to be applied to a specific transportation project with the designated one.	Directly to the identified and qualified project	No legal limitation	Yes – No legal limitation
Community Redevelopment Act and Grants (HUD Federal Program)	No - User charge	Program enabling state and local governments to transform a small portion of their Community Development Block Grant (CDBG) funds into federally guaranteed loans large enough to pursue physical and economic revitalization projects.	Flow to ancillary infrastructure to HCT, but not HCT directly	Limited to social infrastructure projects capable of spurring private investment	Limited to social infrastructure, not including transit

Innovative Financing Tools



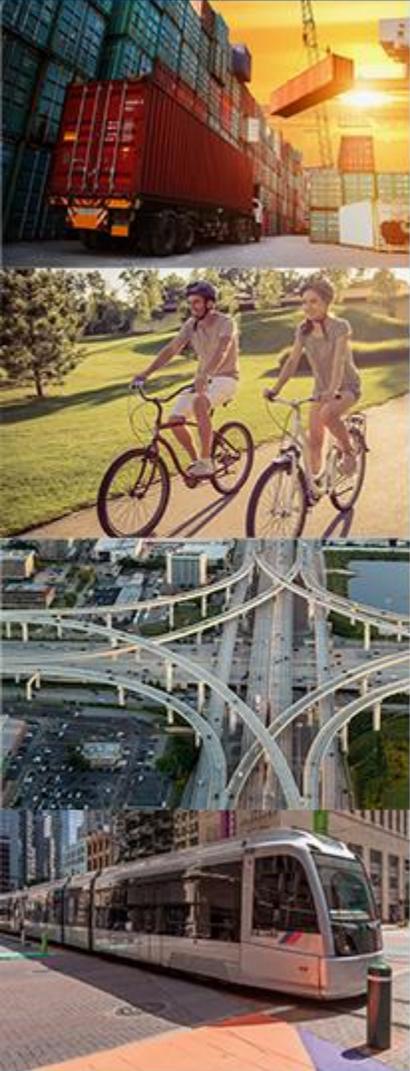
Financial Tool	Public Subsidy or Support?	Mechanism for funding/financing	Flow of funds to HCT infrastructure	Limitation on Usage?	Authorization or Application to HCT in Texas?
Private Activity Bonds (PABs)	In some cases	Tax-exempt debt issued by state or agency to provide financing for a private entity	Directly to project/private entity for which bonds are underwritten	State debt capacity for PABs as designated by federal law	Yes – No legal limitation
Transportation Infrastructure Finance Innovation Act (TIFIA)	Federal Subsidy	Subordinate loan (up to 49% of project) secured by the federal government	Directly to projects designated	Based upon project credit, forecast, etc.	Yes – No legal limitation
FRA Railroad Rehabilitation and Improvement Financing (RRIF)	Federal Subsidy	Subordinate loan (up to 100% of project) secured by the federal government. Specifically for rail infrastructure	Directly to project designated	Based upon project credit, forecast, etc.	Yes – No Legal Limitation
Public-Private Partnerships (P3s)	In some cases	Private Investment combined with public investment if applicable	Directly to project designated	None financially, legal limitations dependent upon public agency	Yes – No Legal Limitation

Innovative Financing Tools



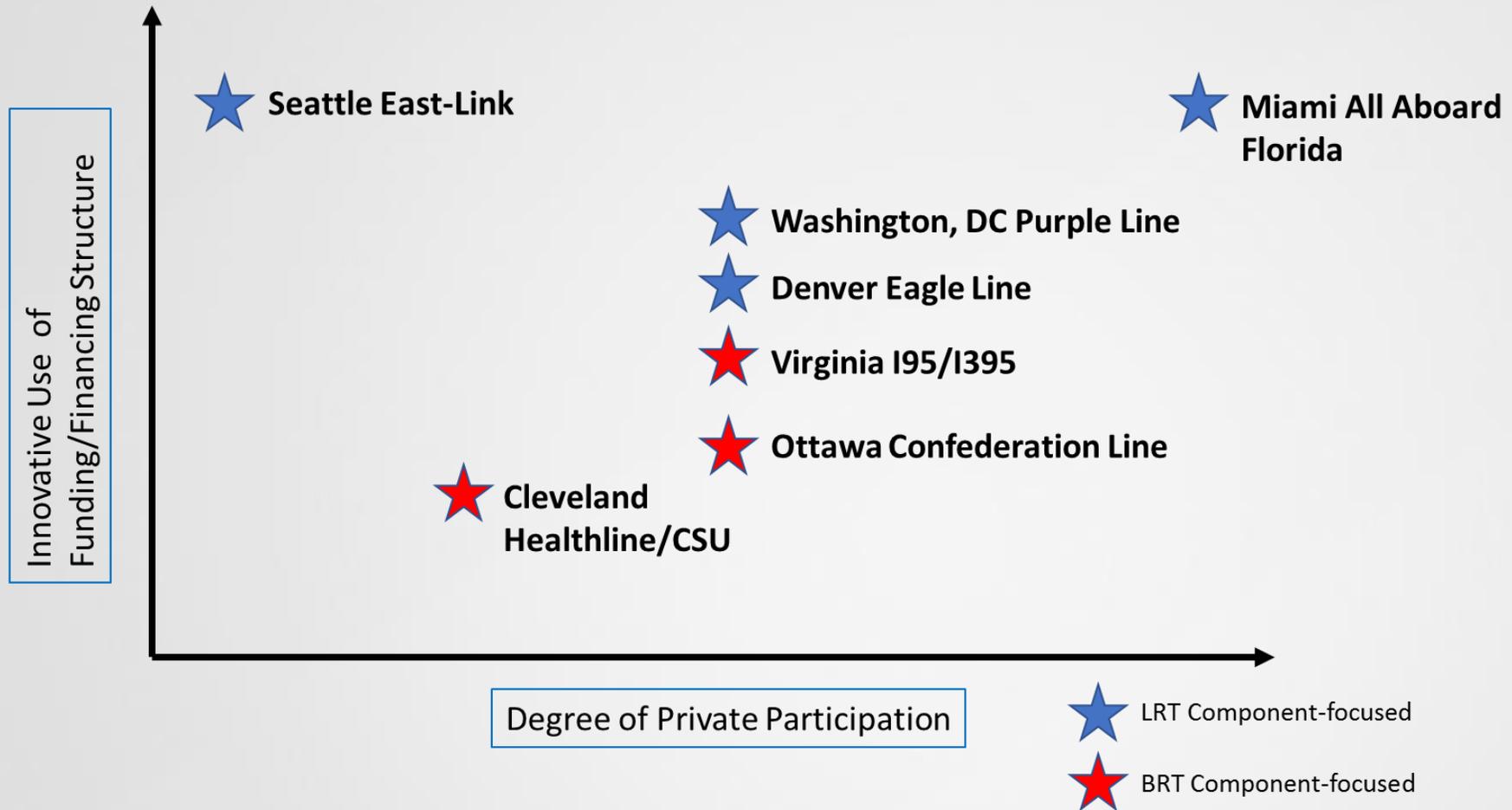
Financial Tool	Public Subsidy or Support?	Mechanism for funding/financing	Flow of funds to HCT infrastructure	Limitation on Usage?	Authorization or Application to HCT in Texas?
Value Capture (Includes Naming Rights, Station Revenues, Joint Development, Parking Revenues, Advertising, etc.)	Usually private	Private investment, existing or planning infrastructure	Directly to project designated	Private sector interest	Yes – No legal limitation
Transportation Development Credits (TDCs)	Public	Federal credits for local/state investment in toll facilities	Distributed per state/MPO policy	Per state/MPO policy	Yes – No legal limitation
Congestion and Toll Pricing	Based on private and commercial utilization	Pricing can be driven by facility or geography	Variable, based on program or policy	Utilization of facility or geography	???

Projects from Example Regions



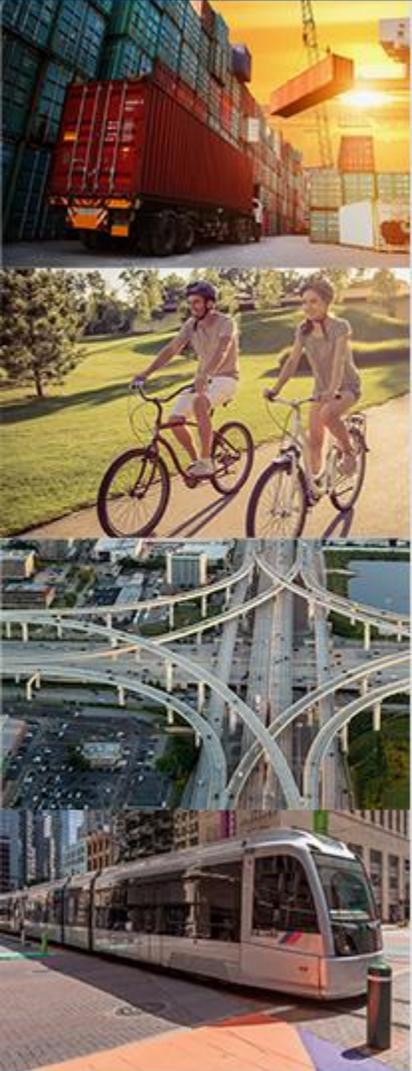
Example Region	Project Name	Project Type	Financing Tool(s) Used
Cleveland	Healthline/CSU	Bus Rapid Transit	Value Capture (Naming Rights)
Denver	Eagle Line	Light Rail	Sales Tax Revenues, TIFIA Loan, Value Capture (TIF District around Union Station), PPP
Miami	All Aboard Florida	Intercity Rail	Private Investment, Value Capture (station-area development)
Ottawa	Confederation Line	Light Rail	Tax revenues, federal and provincial grants, PPP
Seattle	East Link	Light Rail, HOV Lane Expansion	Tax Revenues, TIFIA Loans, Bond Proceeds, Grant Revenues, Local Contributions
Virginia	I-95/I-395	Bus Rapid Transit, HOV Lane	PAB, TIFIA Loan, PPP
Washington DC	Purple Line	Light Rail	TIFIA Loans, Private Activity Bonds

Projects from Example Regions

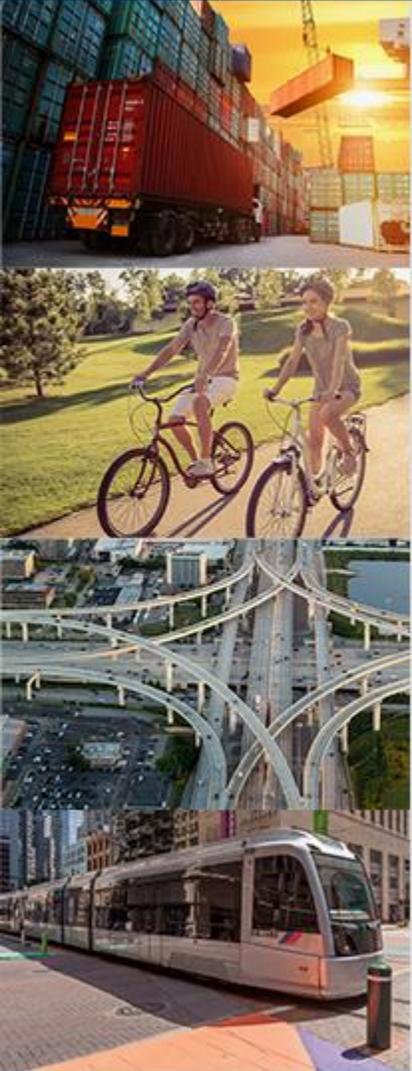


Governance Structures

- Single Regional/Local Transit Provider
- Jurisdictionally-Based Multiple Transit Provider
- Market-Based Multiple Transit Provider



Single Regional/Local Transit Provider



- **Regional transit service delivered through single decision-making body**
- **Benefits:** Ability to apply uniform service standards/fare policy and deliver a more coordinated regional transit network
- **Drawbacks:** Lack of control at local/community level, potential for uneven distribution of transit services and facilities based on jurisdictional contribution to the system

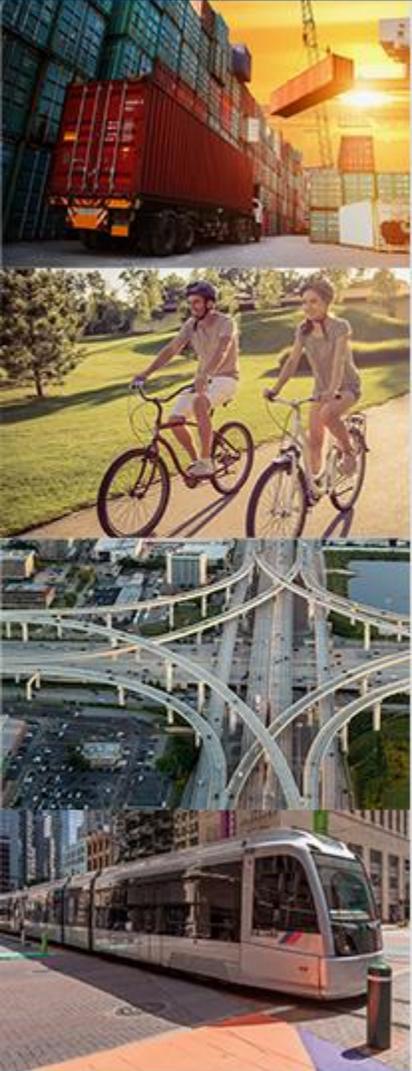
Jurisdictionally-based Multiple Transit Provider



- **Regional transit service delivered through multiple agencies, based on jurisdiction**
- **Benefit:** Local control over transit decision making
- **Drawbacks:** Non-uniform service standards, uncoordinated services and fare policies, potential difficulty in using transit for cross-regional travel

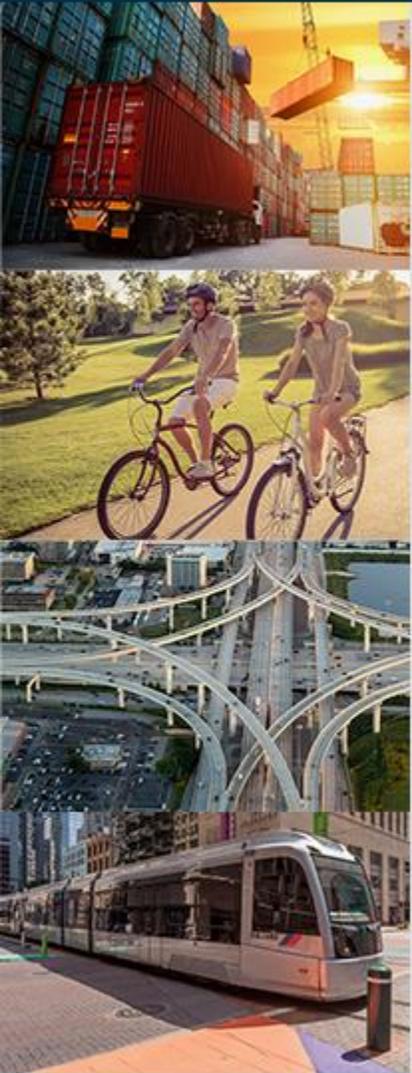
The transit service governance structure in the Houston-Galveston region is most closely related to this model.

Market-based Multiple Transit Provider



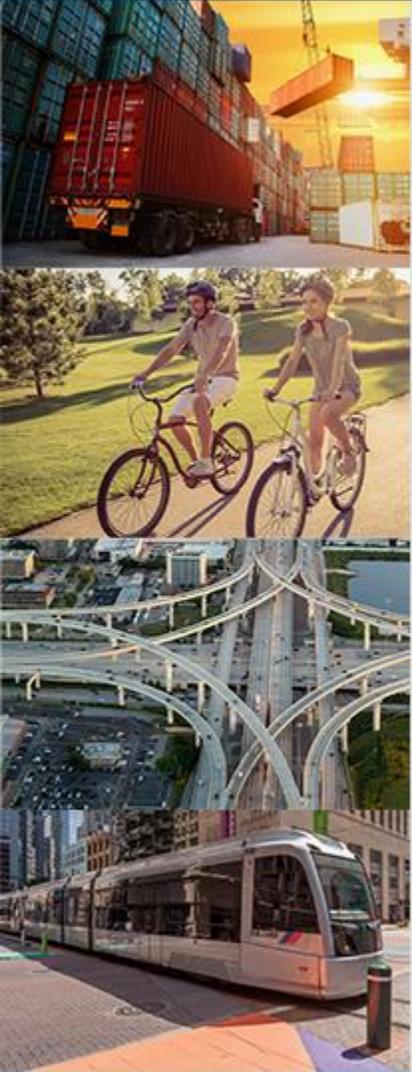
- **Responsibilities for local and regional services are allocated to different agencies**
- **Benefits:** Ability to apply uniform service standards for regional services, while providing local control over local services; local transit providers freed from potential burden of regional service operations
- **Drawbacks:** Potential for non-uniform service standards and differing fare policies between local transit providers and regional transit provider

Example Regions Governance Structure



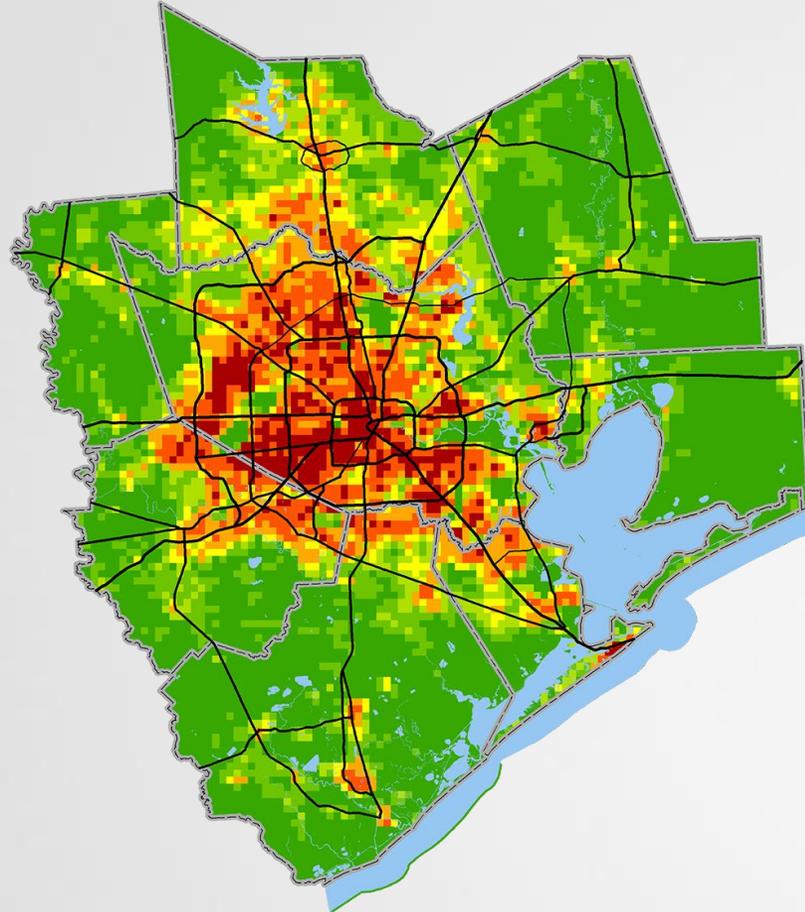
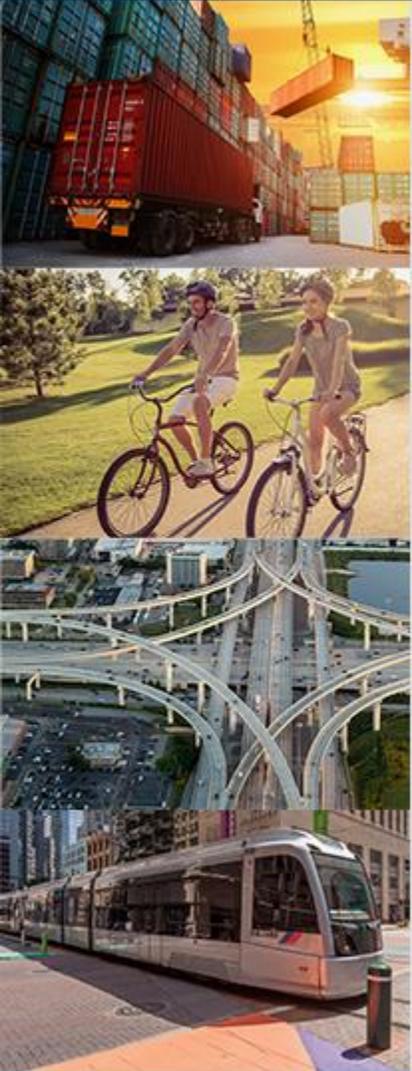
Country	City or Region	Single Regional/Local Provider	Jurisdictionally-based Multiple Provider	Market-based Multiple Provider
	Atlanta		<input checked="" type="checkbox"/>	
	Austin		<input checked="" type="checkbox"/>	
	Cleveland		<input checked="" type="checkbox"/>	
	Dallas/Fort Worth		<input checked="" type="checkbox"/>	
	Denver	<input checked="" type="checkbox"/>		
	Los Angeles			<input checked="" type="checkbox"/>
	Miami			<input checked="" type="checkbox"/>
	Seattle			<input checked="" type="checkbox"/>
	Washington, DC			<input checked="" type="checkbox"/>
	Ottawa		<input checked="" type="checkbox"/>	
	Vancouver	<input checked="" type="checkbox"/>		
	Dubai	<input checked="" type="checkbox"/>		

Service Concepts

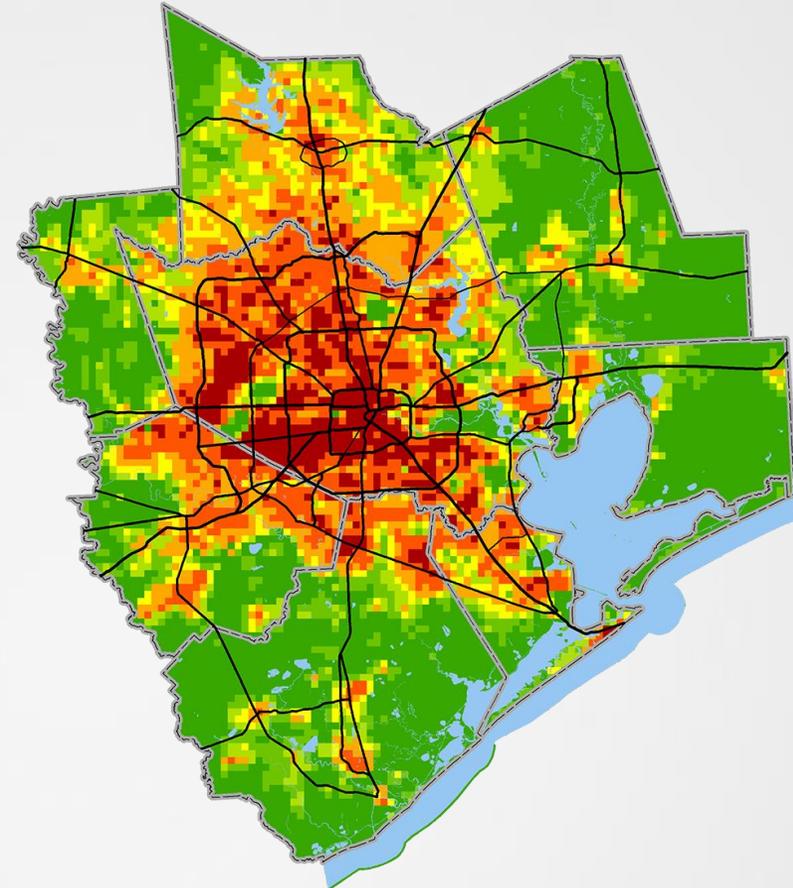


- Draft Phase I Deliverable Document (in packet)
- 2045 High Capacity Network
 - Travel demand modeling results
 - Geographic equity concerns
 - Compliance with Evaluation Criteria
- Guiding Principles
 - Chapter 13 of RTFS (in packet)

Population Growth

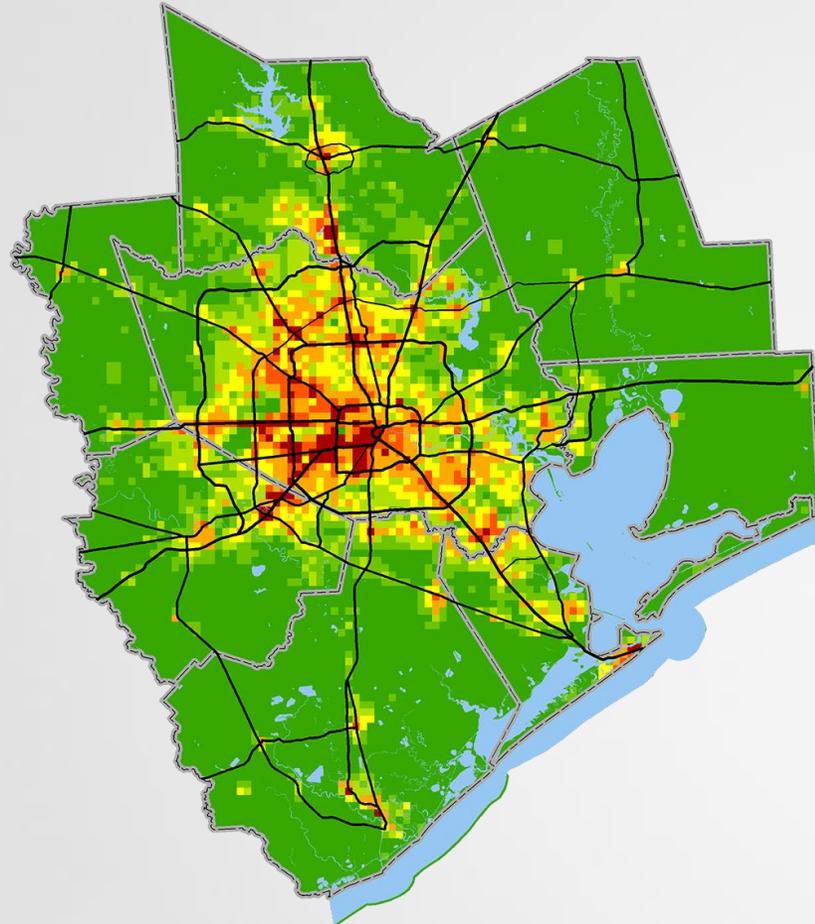
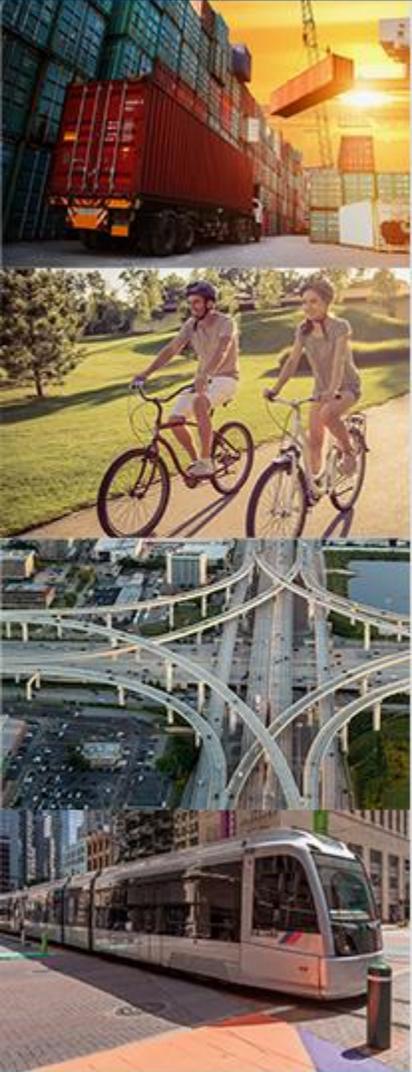


2017

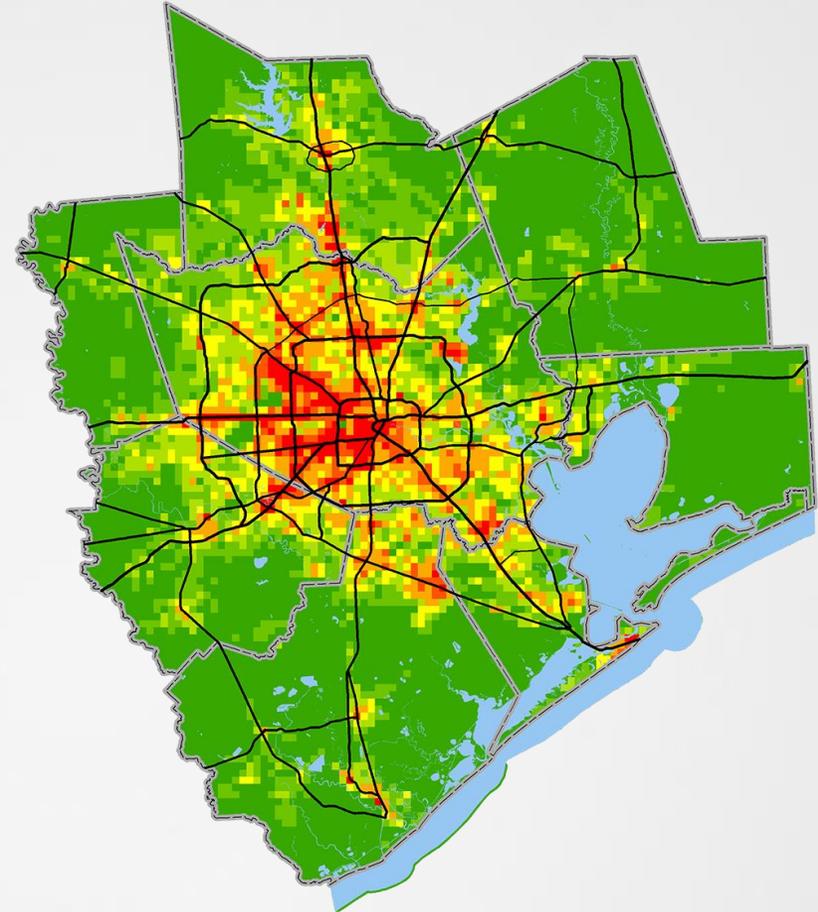


2045

Employment Growth

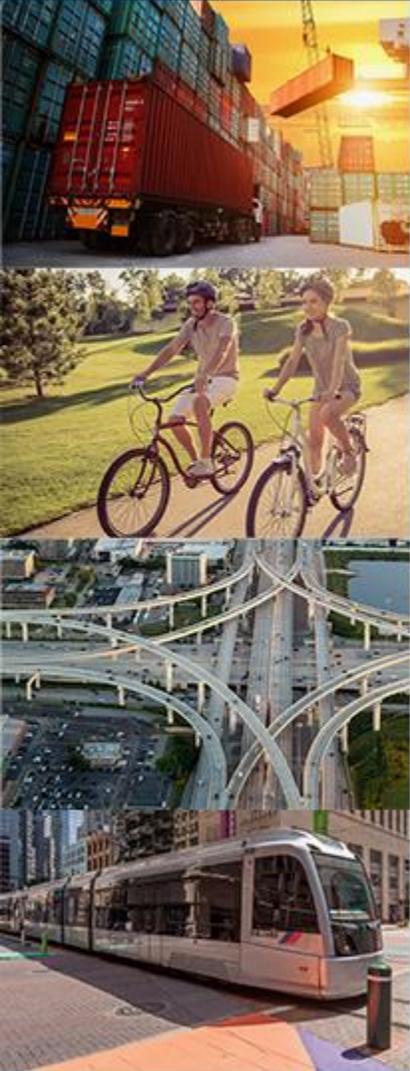


2017

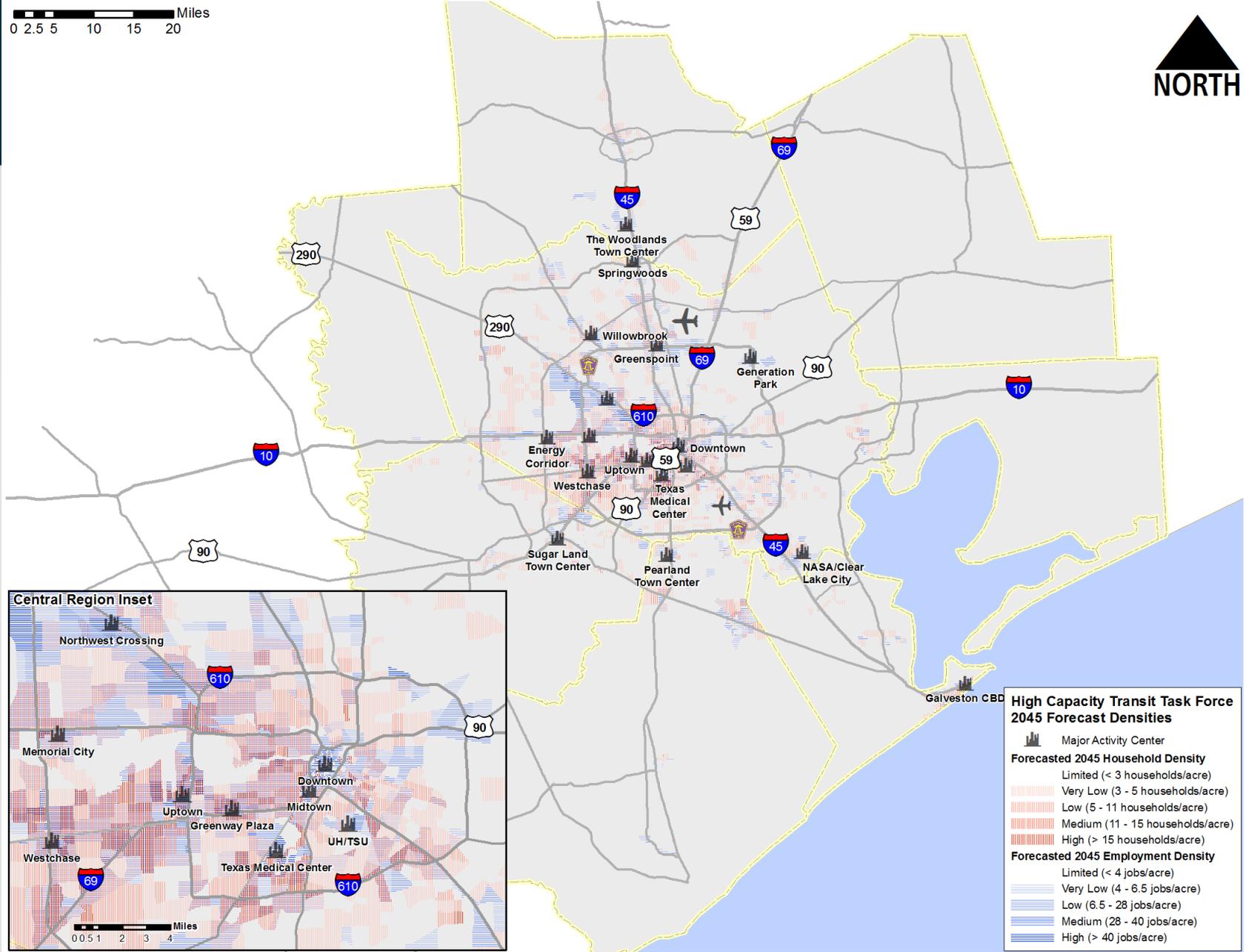


2045

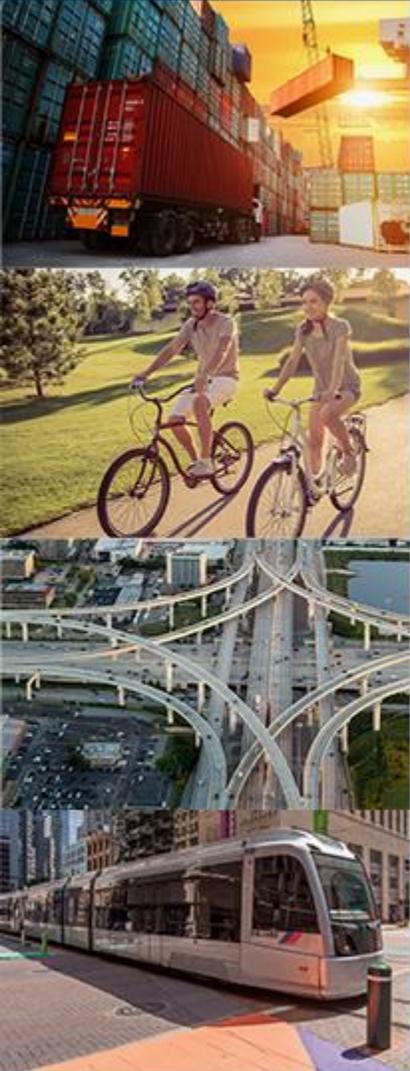
Density



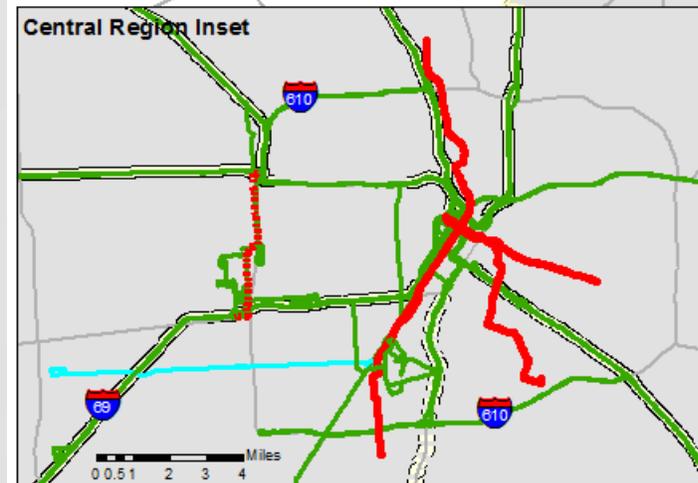
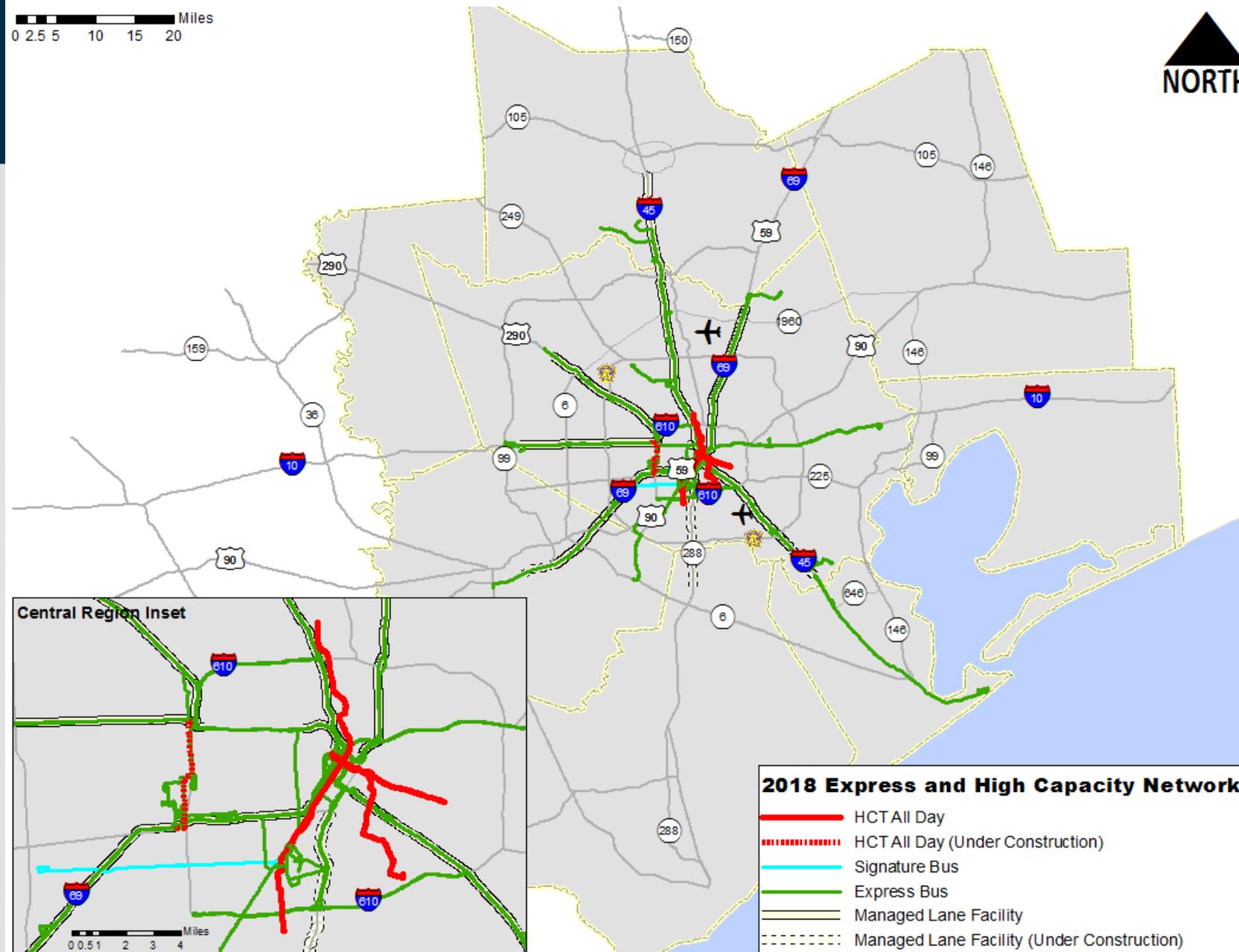
0 2.5 5 10 15 20 Miles



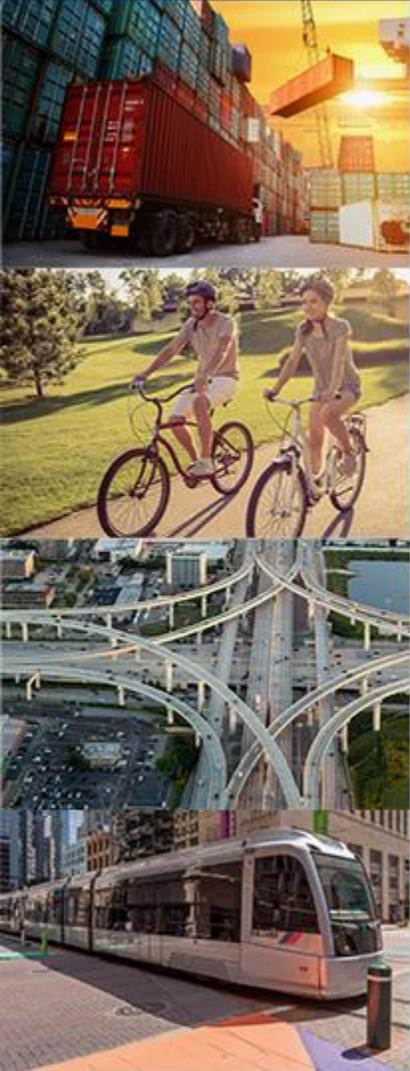
Today



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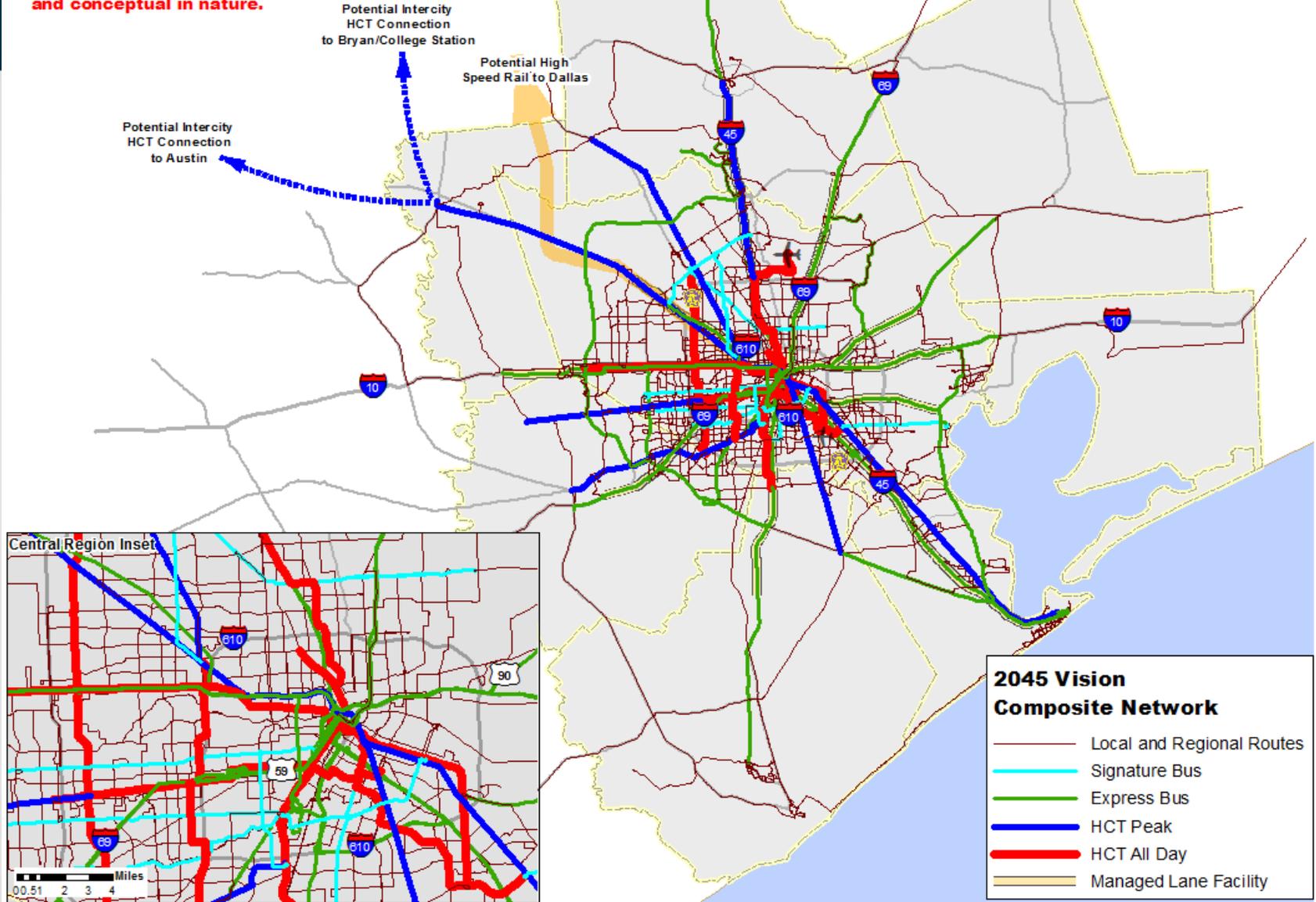


Vision

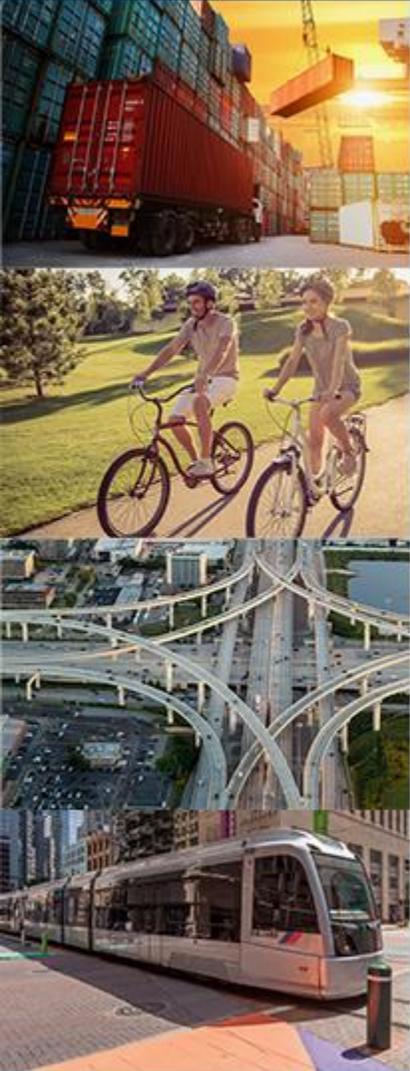


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NOTE: alignments are illustrative and conceptual in nature.



Vision



0 2.5 5 10 15 20 Miles

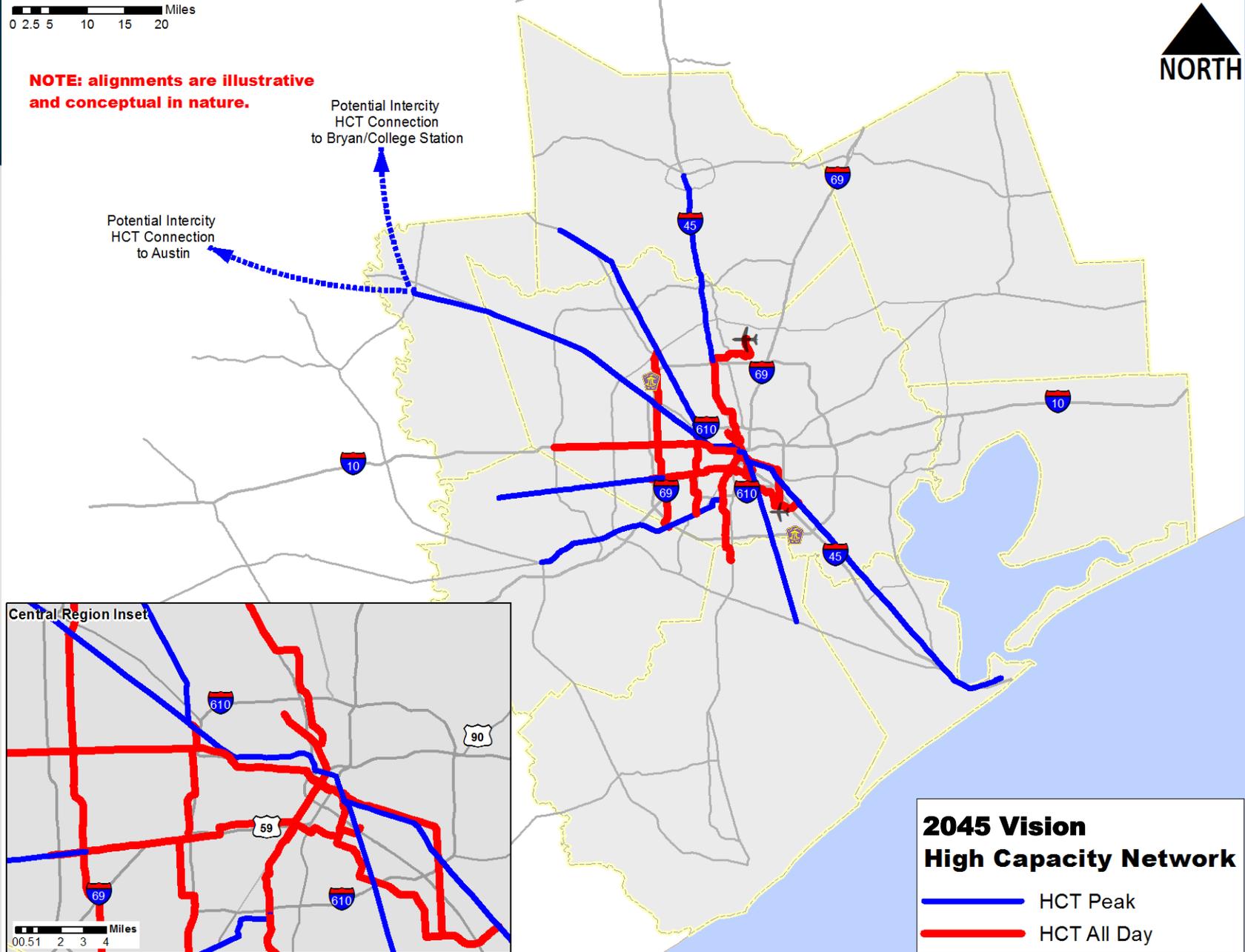
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Potential Intercity HCT Connection to Bryan/College Station

Potential Intercity HCT Connection to Austin

Central Region Inset

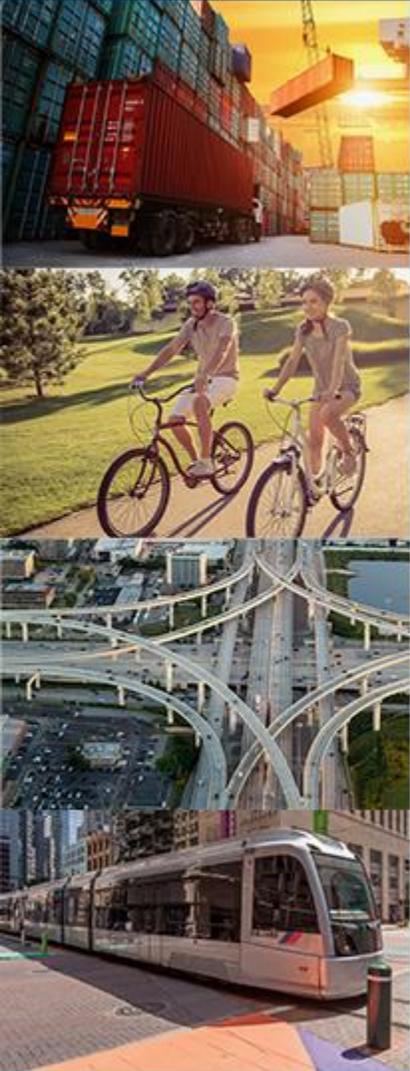
00.51 2 3 4 Miles



**2045 Vision
High Capacity Network**

-  HCT Peak
-  HCT All Day

Vision

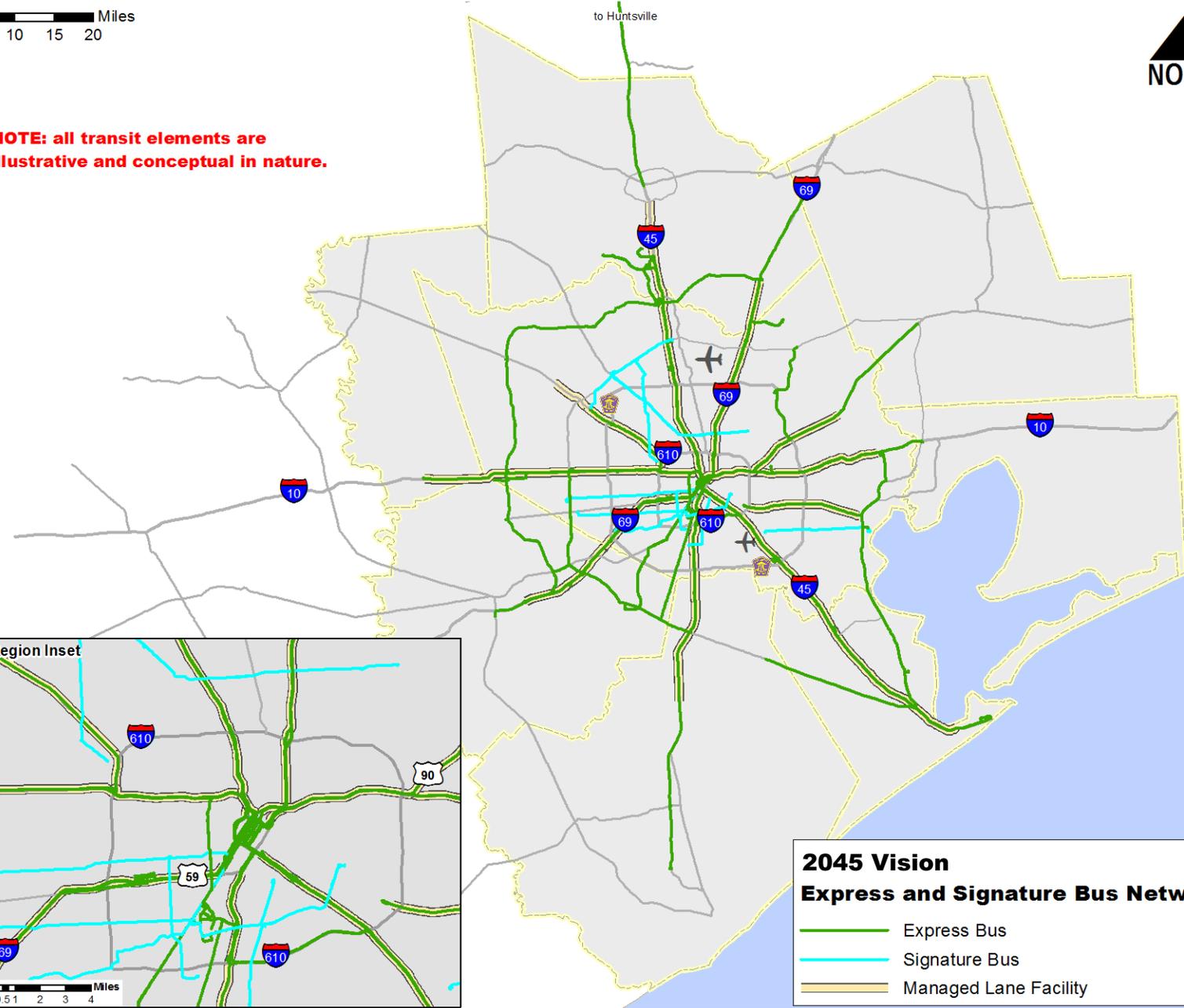
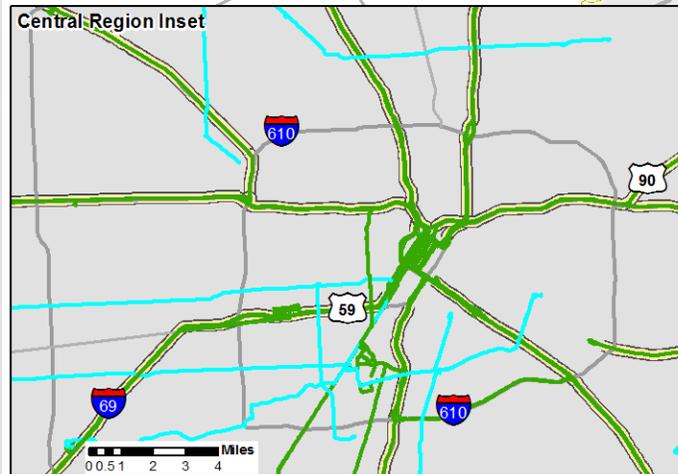


0 2.5 5 10 15 20 Miles

to Huntsville



NOTE: all transit elements are illustrative and conceptual in nature.



**2045 Vision
Express and Signature Bus Network**

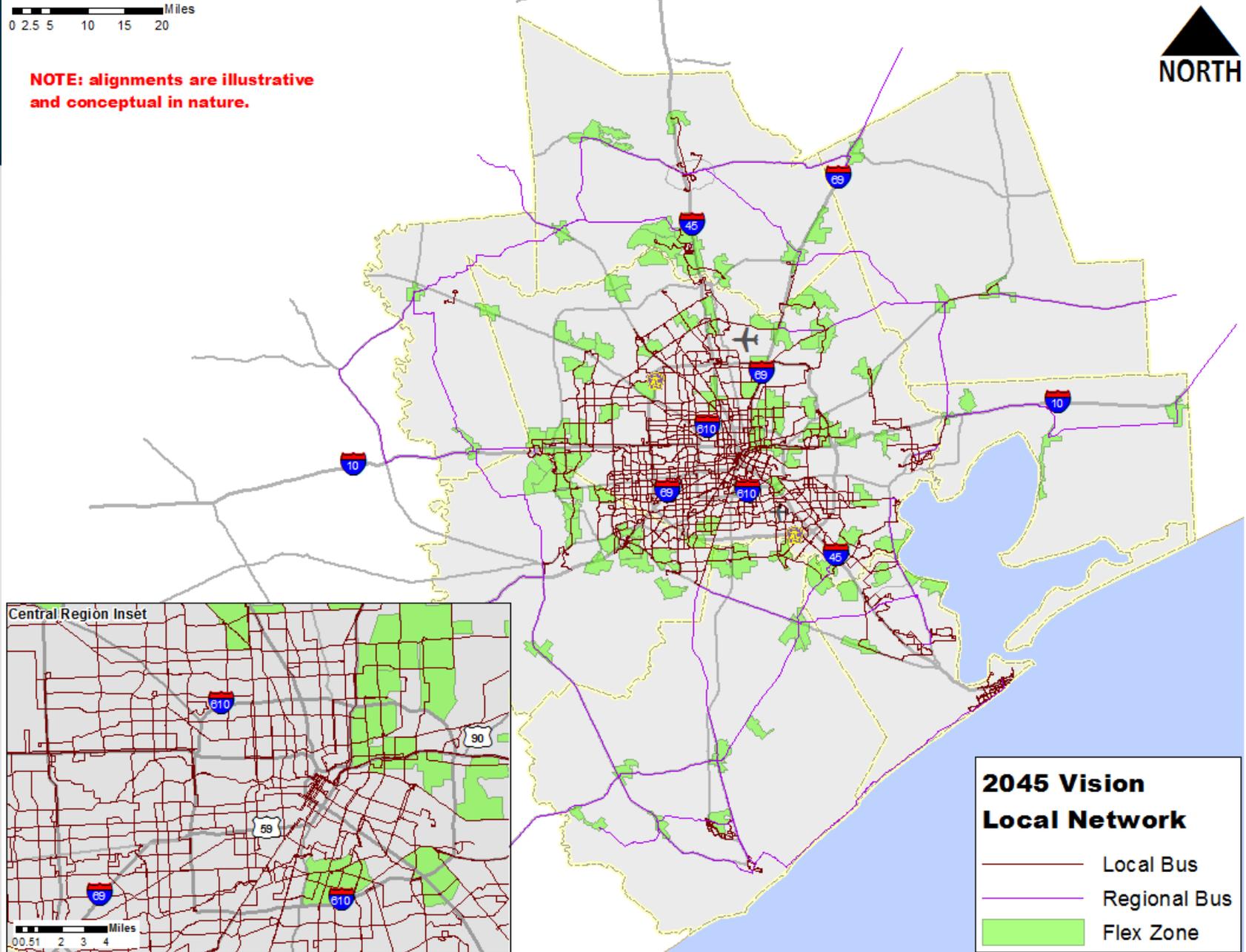
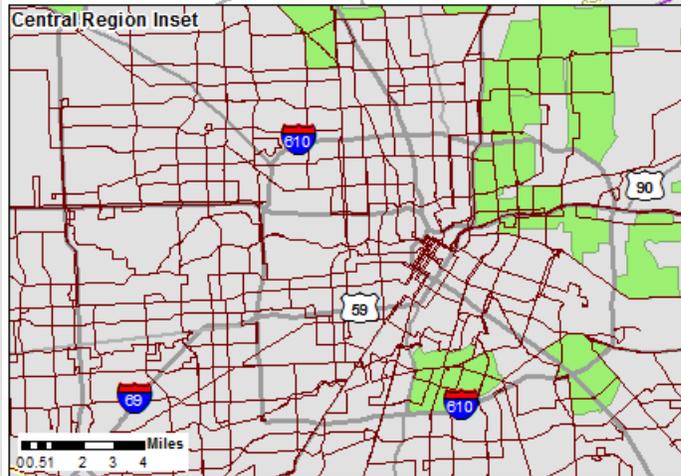
- Express Bus
- Signature Bus
- Managed Lane Facility

Vision



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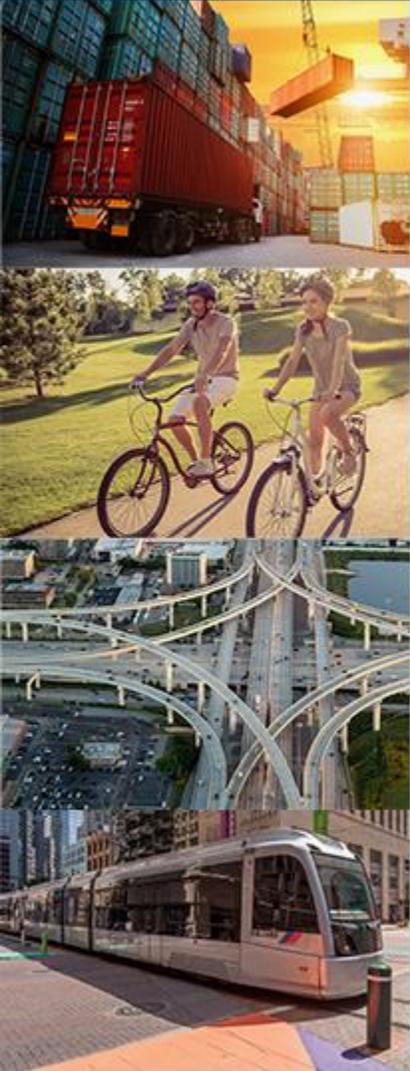
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**2045 Vision
Local Network**

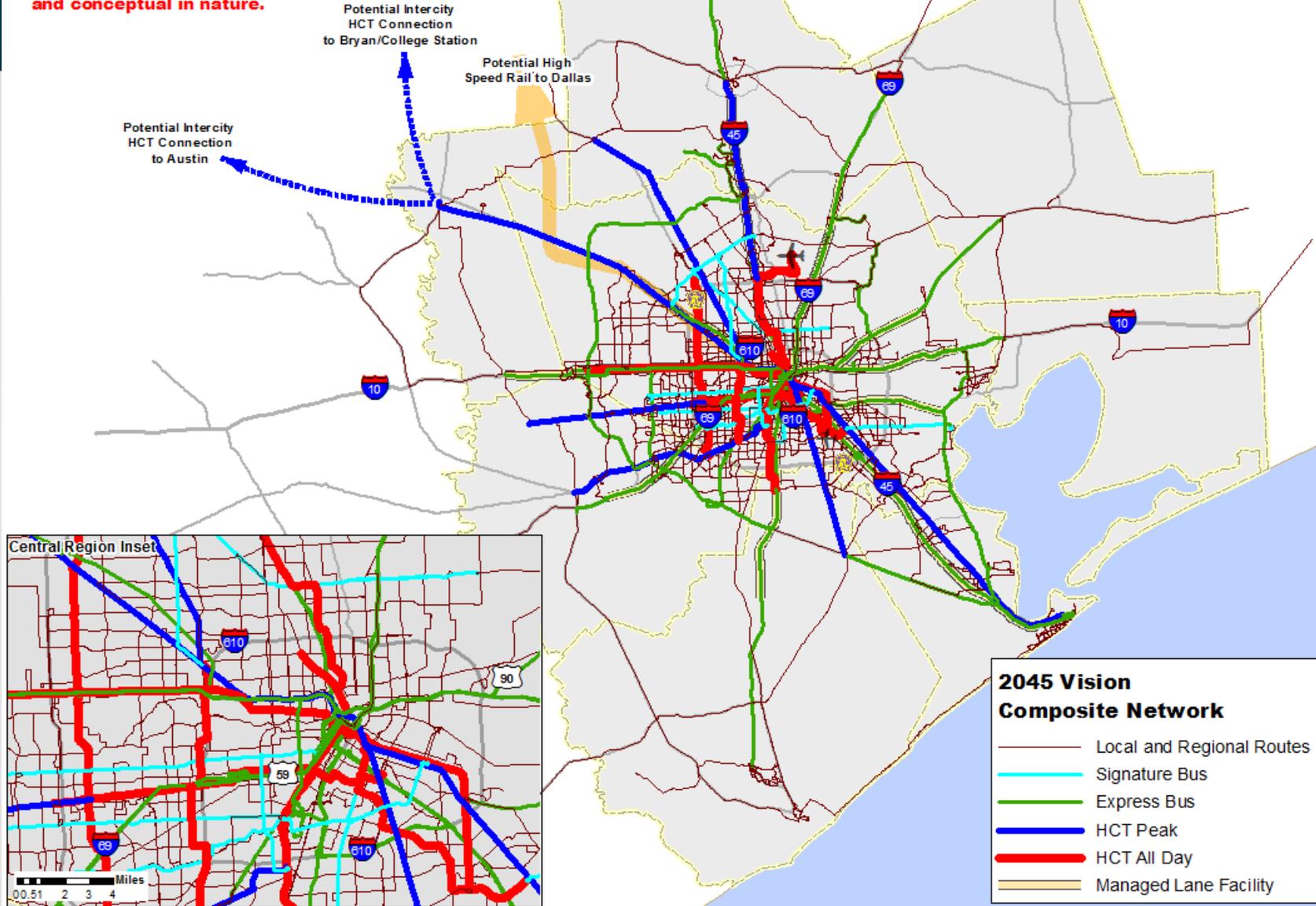
- Local Bus
- Regional Bus
- Flex Zone

Vision

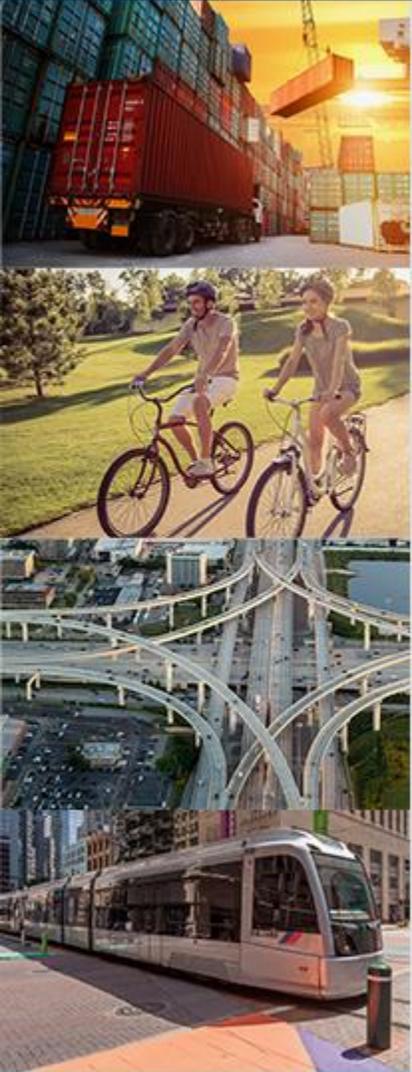


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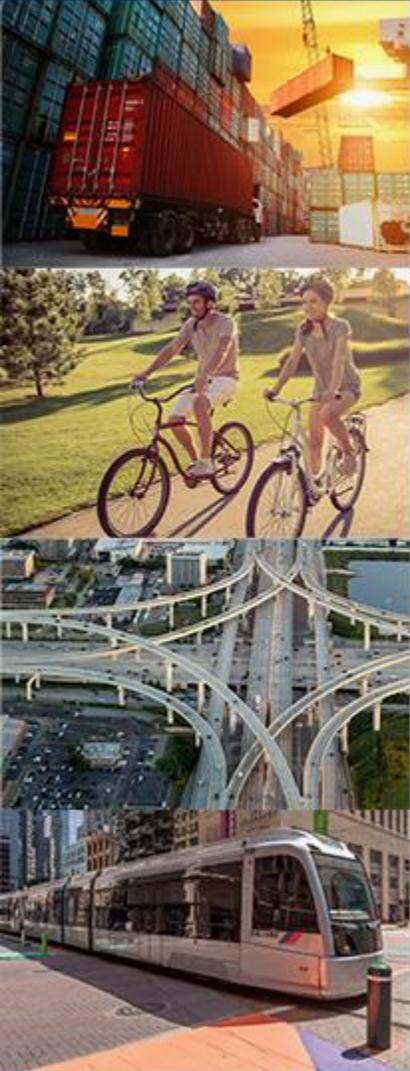


Revisions Requested by Workgroup



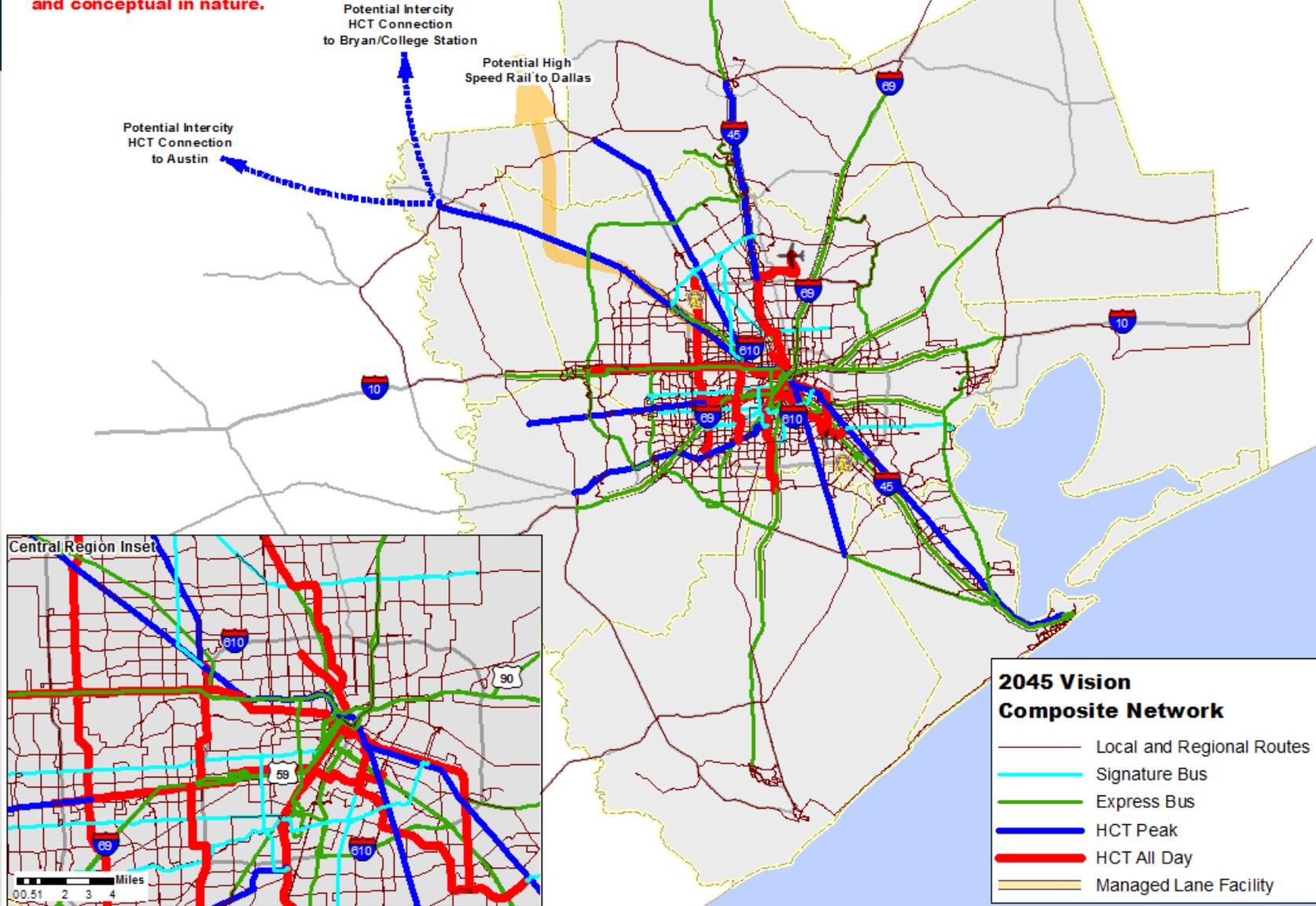
- Consolidate services in same corridor
- Extend “All Day” service to Conroe, Galveston, Sugar Land
- Upgrade “Signature Bus” services on Westheimer and Bellaire
- Additional “Signature Bus” services

Vision

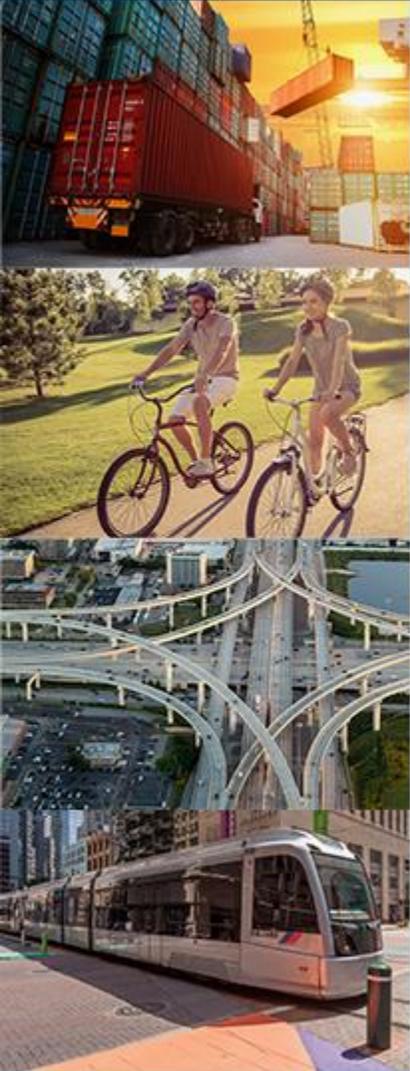


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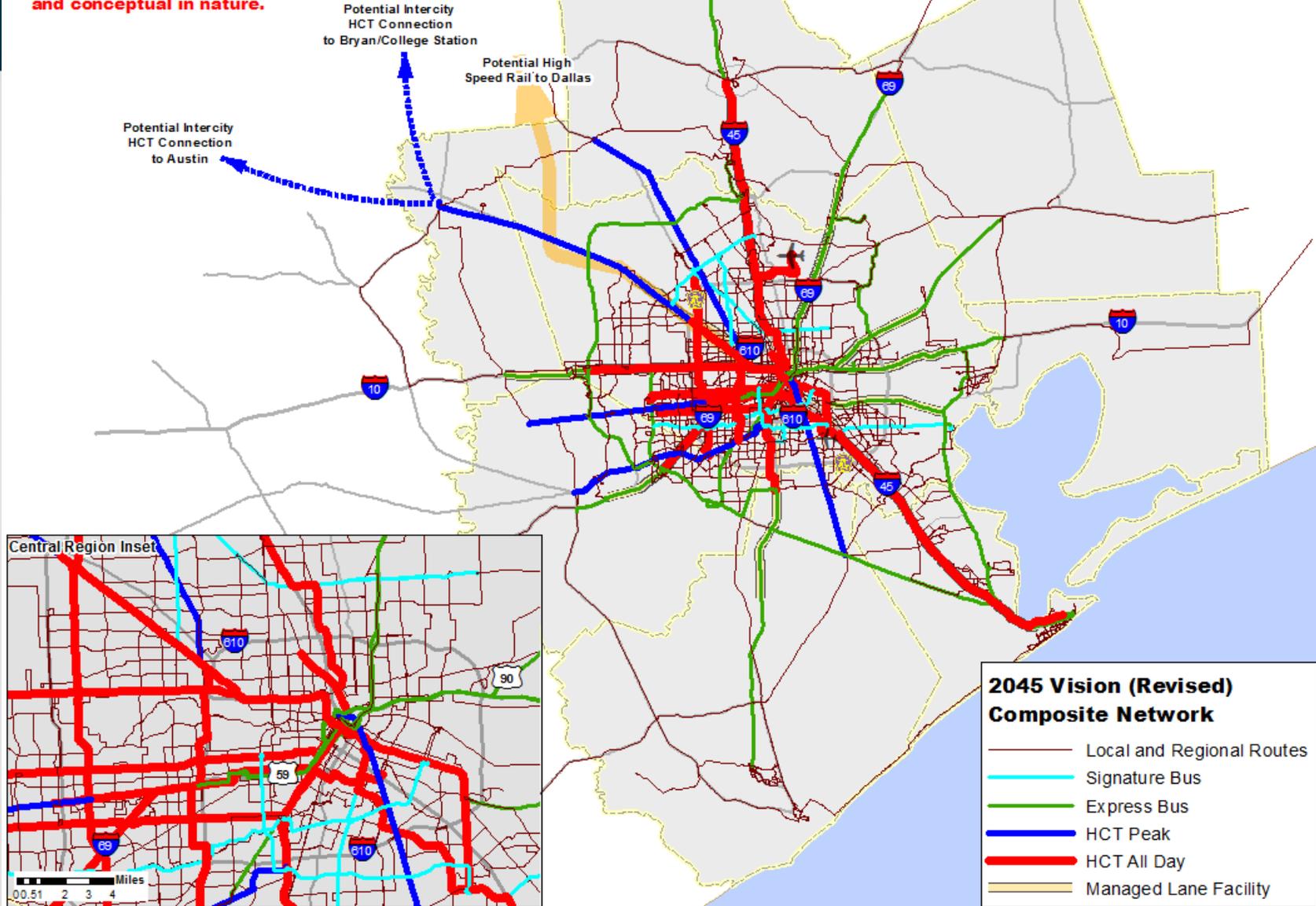


ReVision

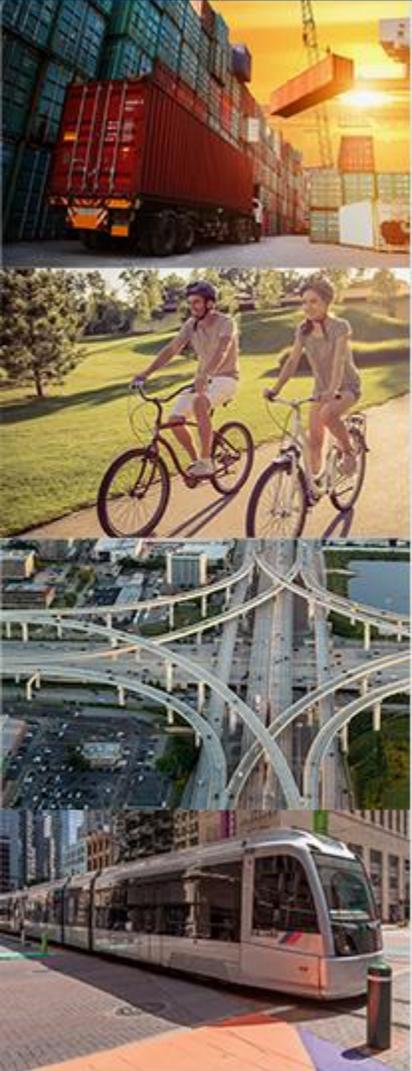


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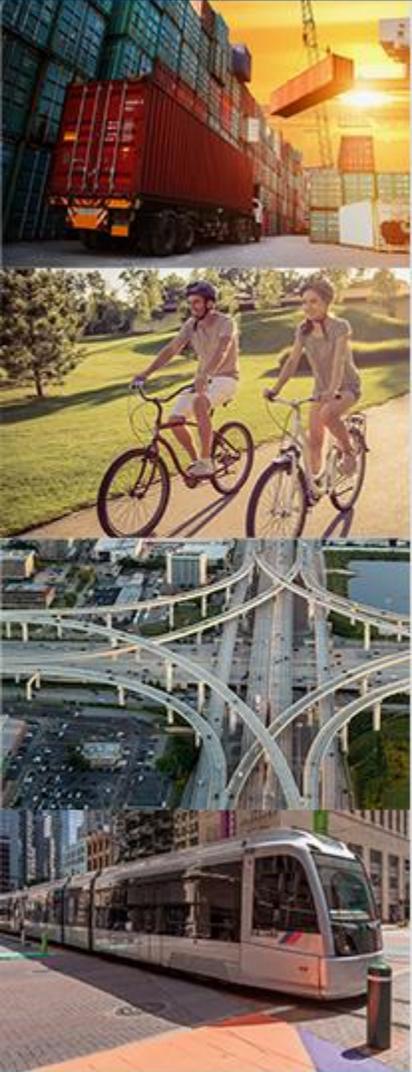


Service Concepts Comparison Table



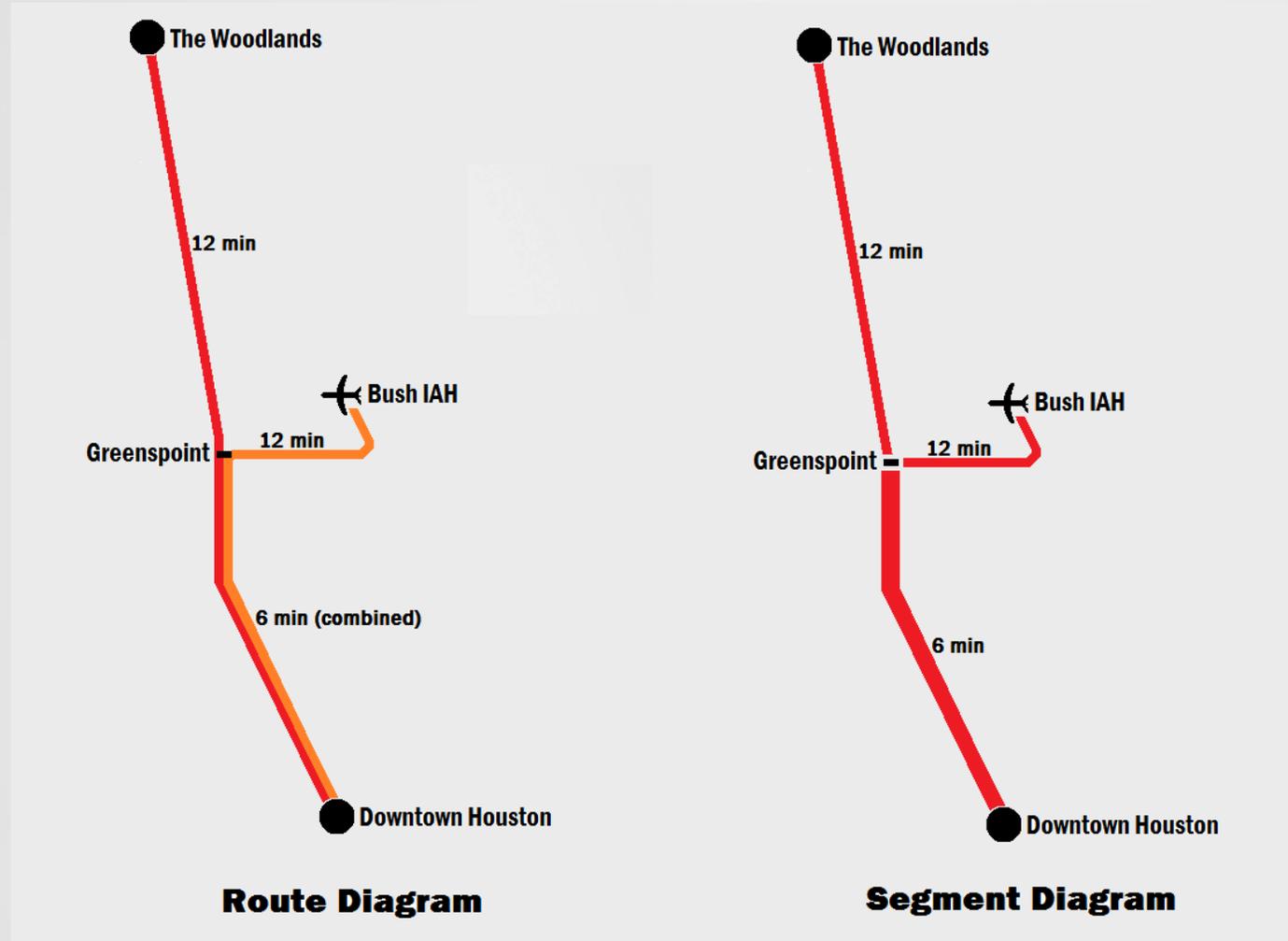
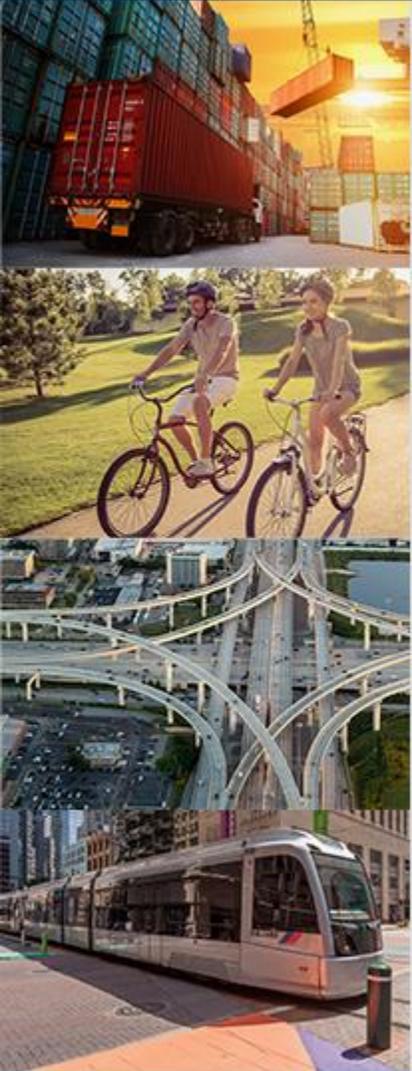
Vision Map	Service Concepts Workgroup	Potential Technologies
Flex Zone	District Circulator First Mile/Last Mile	Deviated Fixed Route; Demand Response
Local and Regional Bus	Local Circulation and Connectivity	Local Fixed-route Bus; Deviated Fixed Route; Bus Rapid Transit (arterial)
Signature Bus		
Express Bus	Regional Commuter/Express	Express/Limited-stop Bus; Bus Rapid Transit; Light Rail DMU, Heavy Rail, Commuter Rail
HCT Peak		
HCT All Day	Sub-Regional Corridor and Internodal Service	Bus Rapid Transit; Light Rail; Heavy Rail; ATS

Model Assumptions: Mode Choice

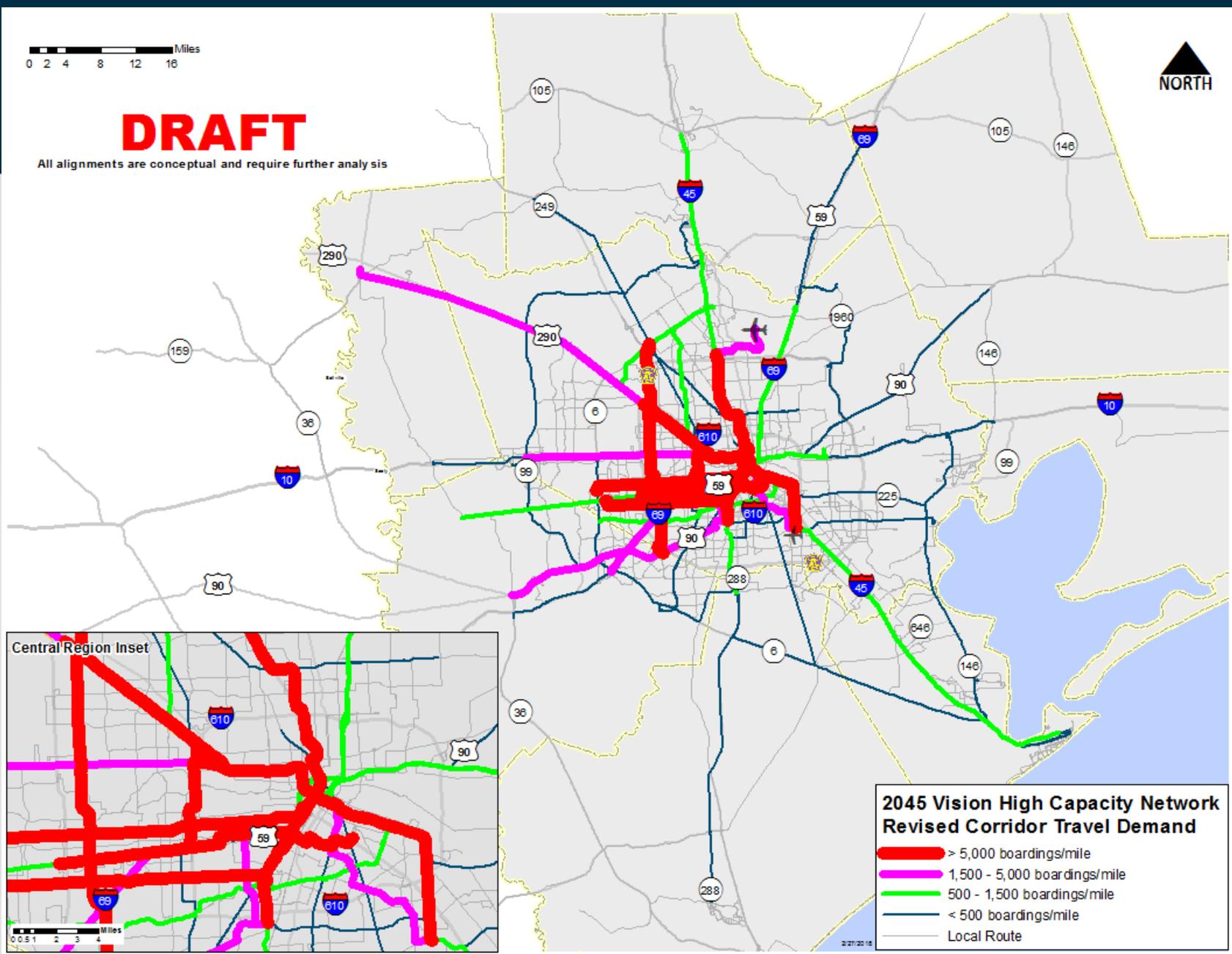
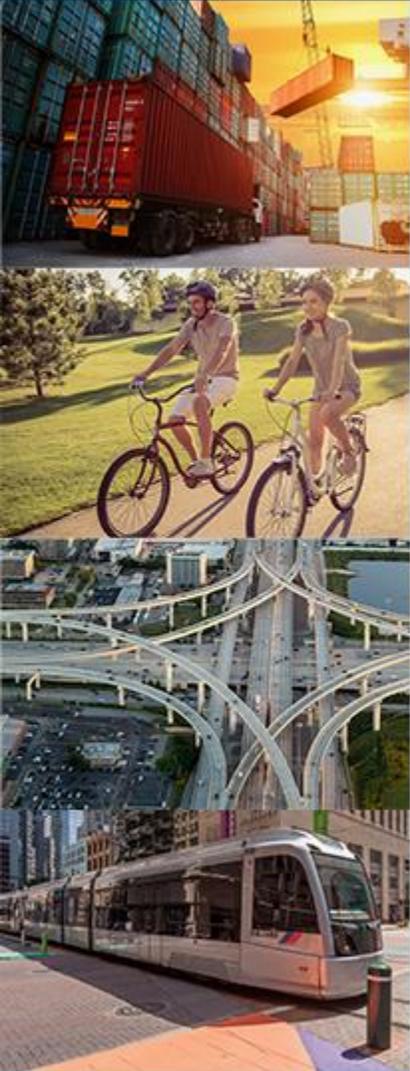


- “Sub-model” determines choice
- Factors considered:
 - Fare
 - Travel time (speed)
 - Income
 - Parking cost

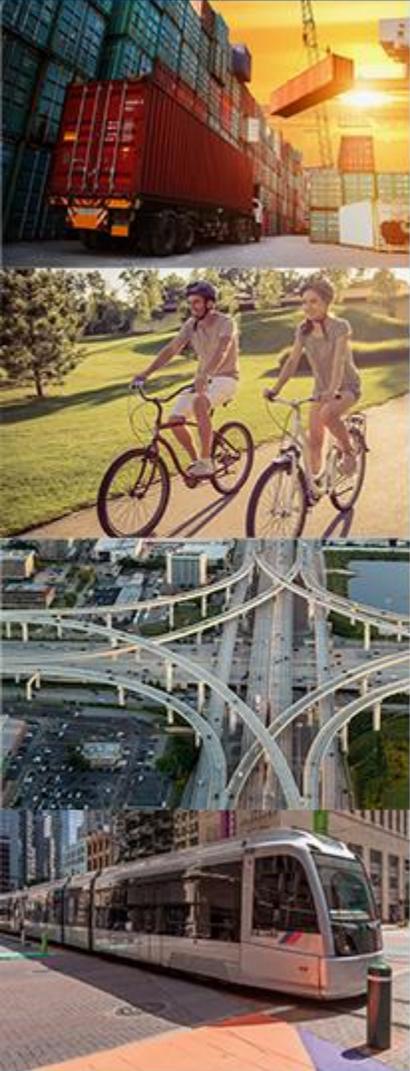
Model Assumptions: Route Design



Demand



Model Results Comparison Table



	Current/ Existing*	2040 RTP	2045 Vision	Revised Vision
Eight County Population	6,453,485	10,018,623	10,761,907	10,761,907
Eight County Employment	3,198,083	4,465,474	4,770,131	4,770,131
Number of Fixed Routes	156	168	293	259
Miles of HCT Guideway	27.6	125.3	383.1	410.3
Annual Transit Demand (Fixed Route Boardings)	87,946,240	219,833,955	613,154,700	758,688,900
Share Local Circulation/Connectivity	68.2%	60.1%	40.5%	30.2%
Share Regional Commuter/Express	10.7%	8.0%	14.8%	9.8%
Share Subregional Corridor and Internodal	21.1%	31.9%	44.6%	60.0%
Annual Passenger Miles (Fixed Route)	525,029,502	1,011,219,635	3,310,635,000	3,882,673,200
Transit Mode Share (HBW)	2.3%	6.1%	16.3%	~20%

*2016 National Transit Database, 2012-2016 US Census ACS

Demand

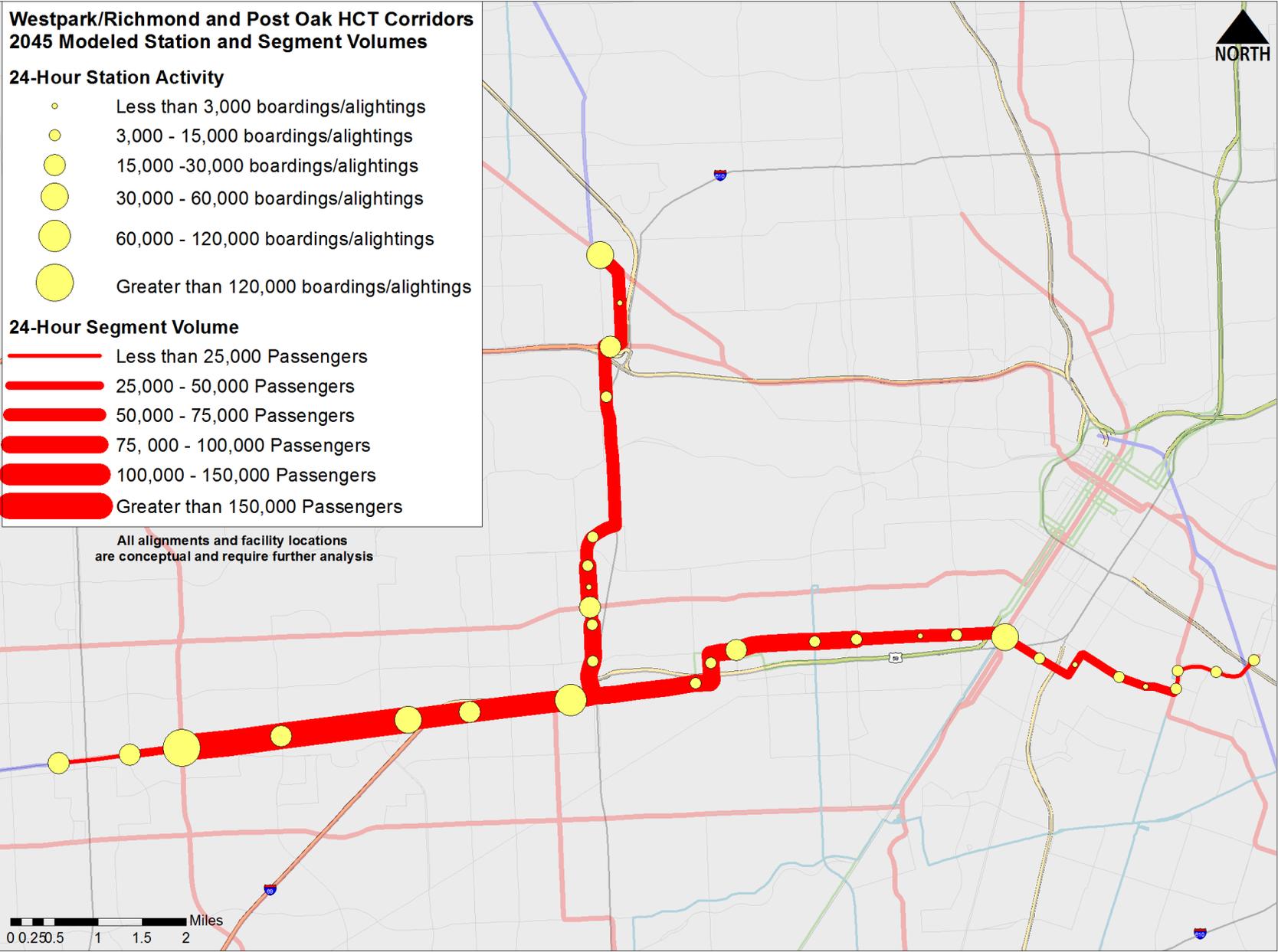


Westpark/Richmond and Post Oak HCT Corridors 2045 Modeled Station and Segment Volumes

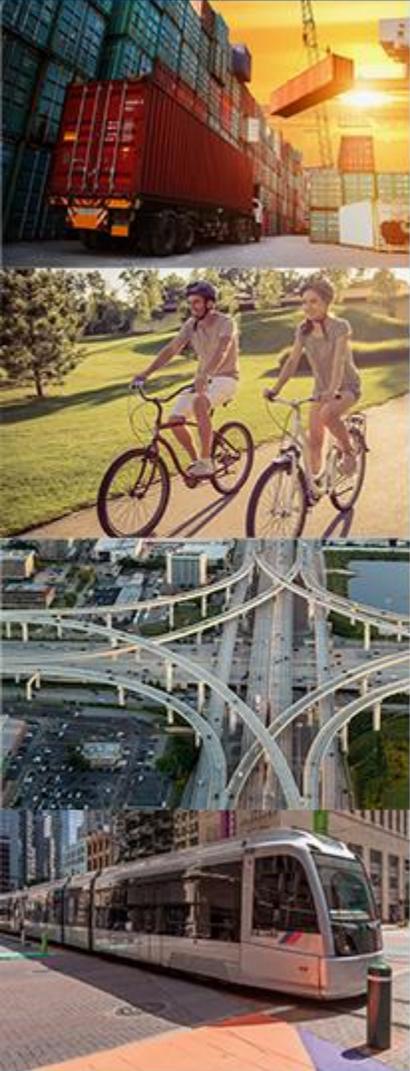
- 24-Hour Station Activity**
- Less than 3,000 boardings/alightings
 - 3,000 - 15,000 boardings/alightings
 - 15,000 - 30,000 boardings/alightings
 - 30,000 - 60,000 boardings/alightings
 - 60,000 - 120,000 boardings/alightings
 - Greater than 120,000 boardings/alightings

- 24-Hour Segment Volume**
- Less than 25,000 Passengers
 - 25,000 - 50,000 Passengers
 - 50,000 - 75,000 Passengers
 - 75,000 - 100,000 Passengers
 - 100,000 - 150,000 Passengers
 - Greater than 150,000 Passengers

All alignments and facility locations are conceptual and require further analysis

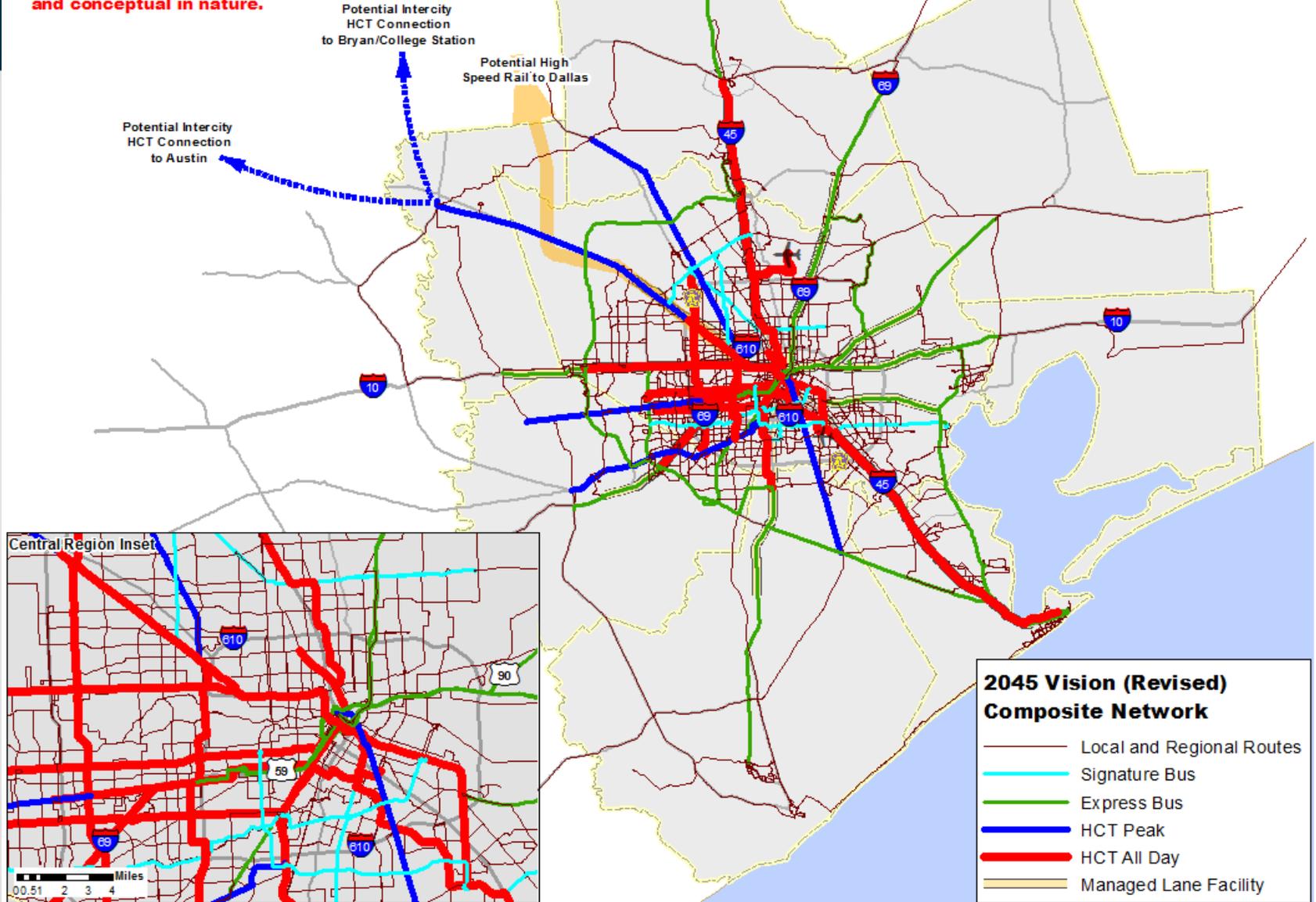


Equity

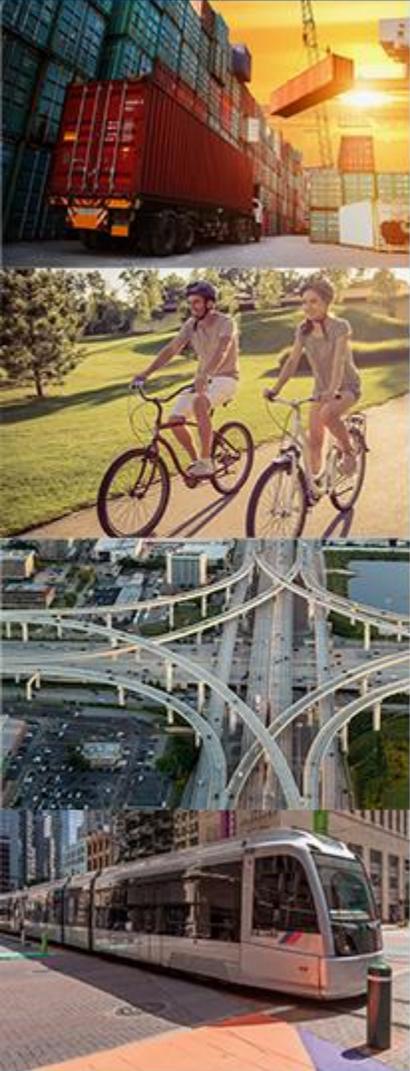


0 2.5 5 10 15 20 Miles

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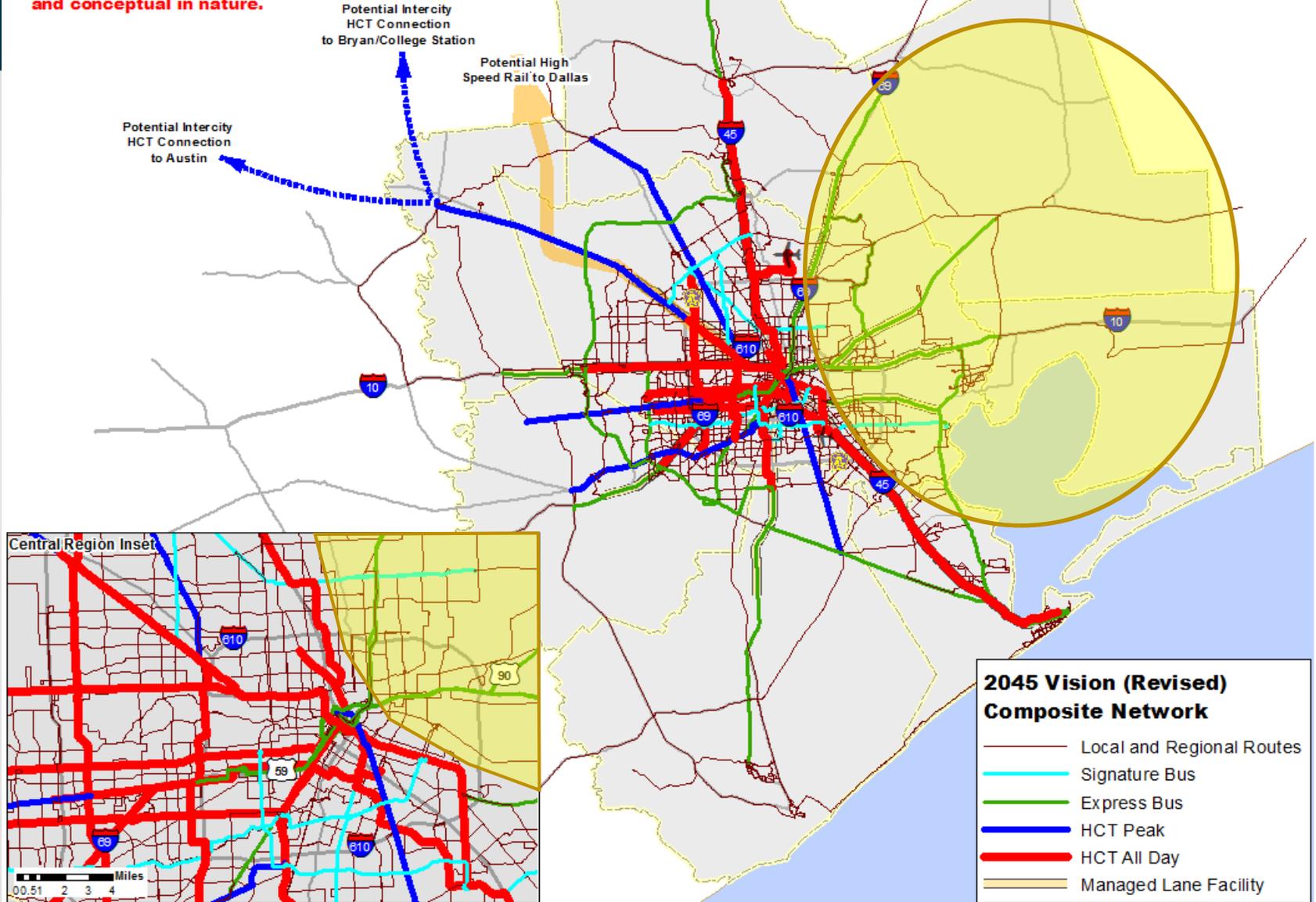


Equity

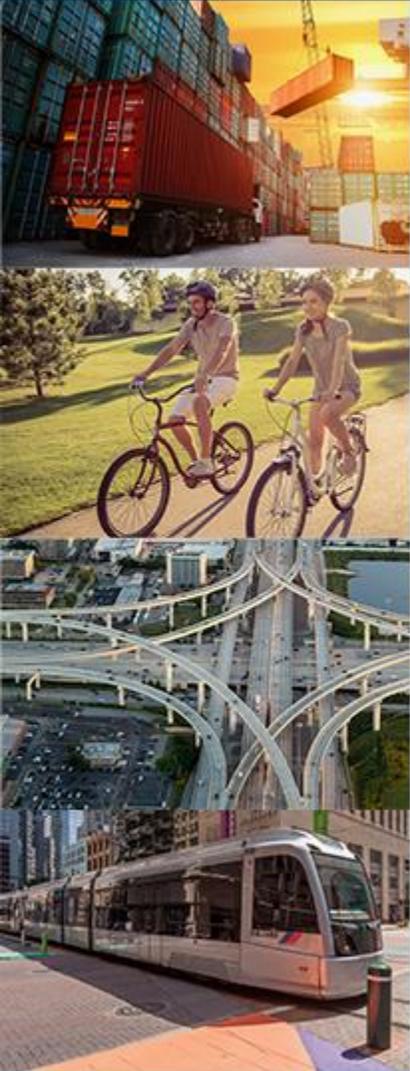


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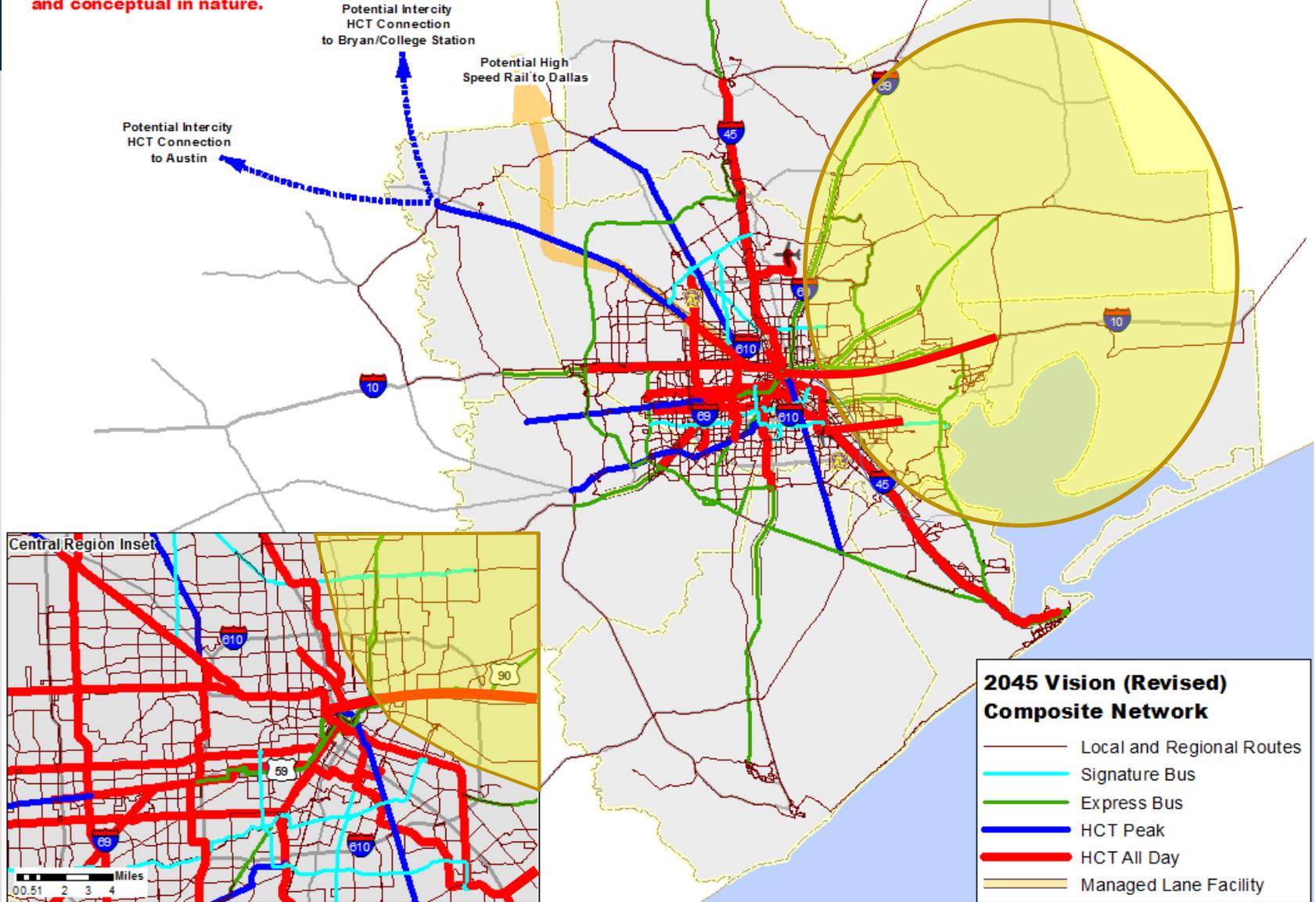


Equity

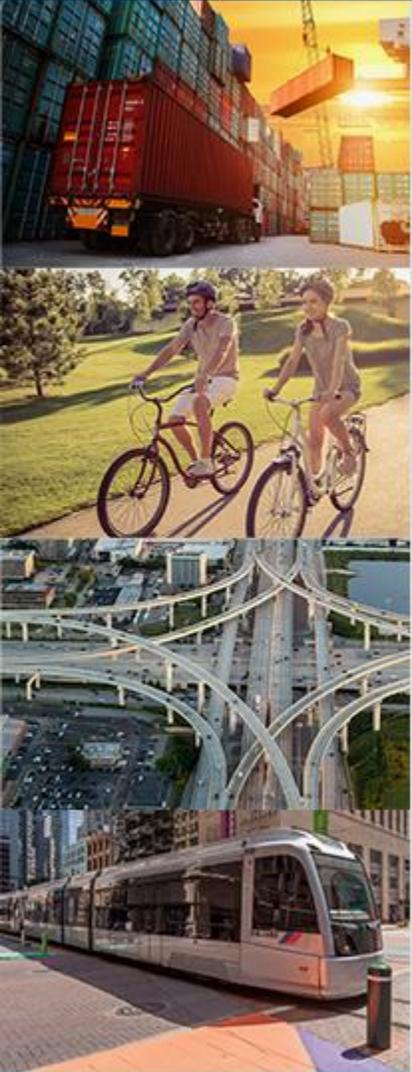


0 2.5 5 10 15 20 Miles

NOTE: alignments are illustrative and conceptual in nature.



Evaluation Criteria



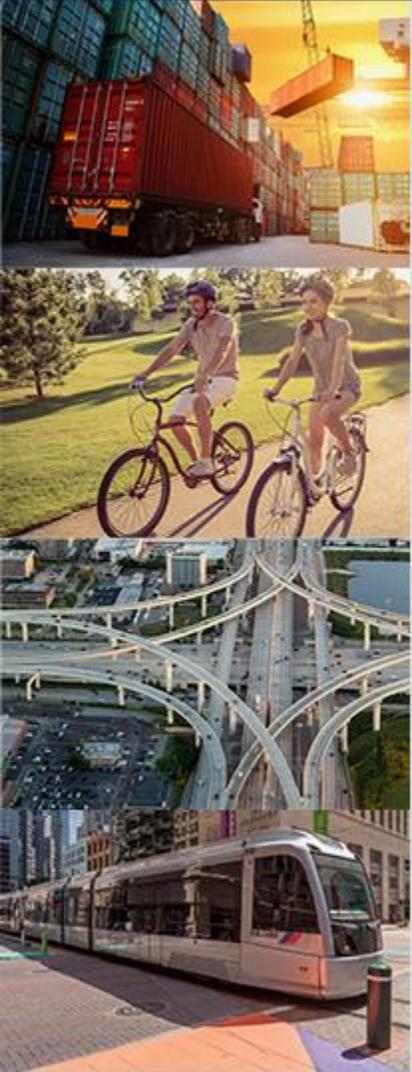
- Does the proposed option improve access and mobility from communities to and from major activity centers such as:
 - Workplaces/Employment Centers?
 - Health and Education Centers?
 - Economic Centers?
 - High Capacity Transit Hubs?
- Does the proposed option present the best travel alternatives to heavily congested freeways and roadways?

Evaluation Criteria



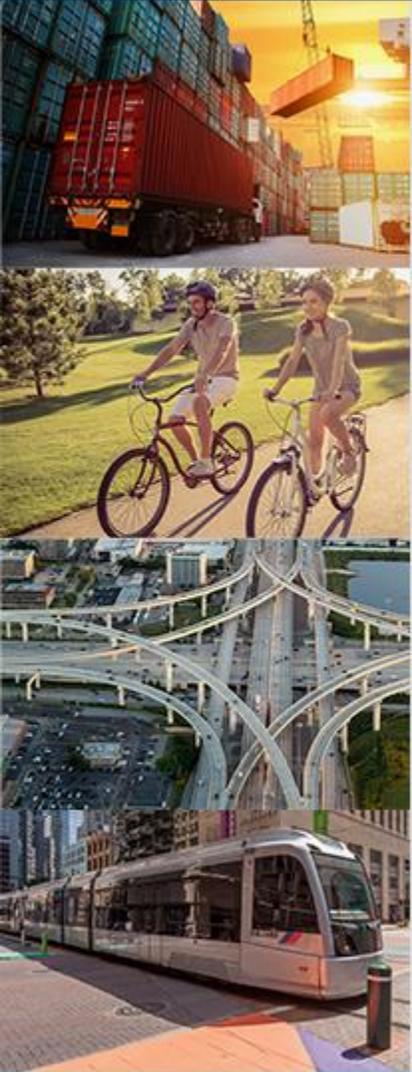
- Does the proposed option contribute to the economic development of the region or its standing as an international City/Hub?
- Does the proposed option enhance the full spectrum of livability (live, work, play; see H-GAC Livable Centers studies) for people of all incomes, abilities, and ages?

Evaluation Criteria



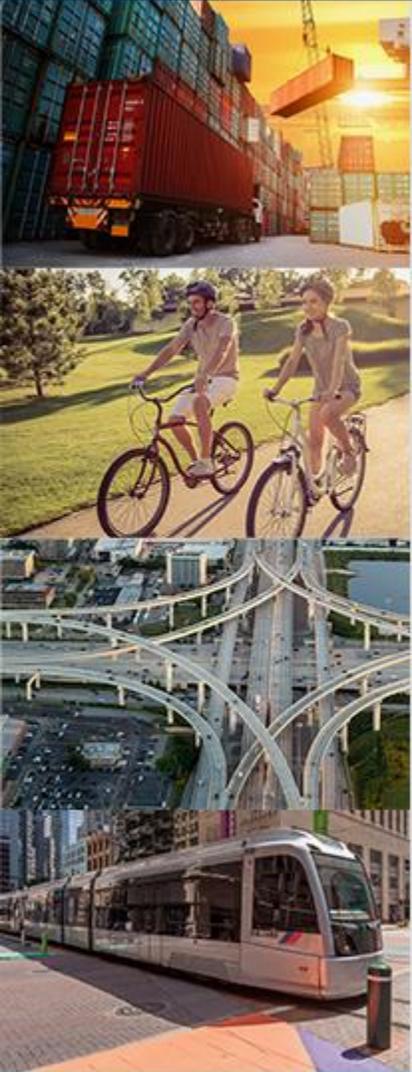
- Does the proposed option allow sufficient flexibility to change service patterns as warranted by evolving demand?
- Does the proposed option provide connectivity for an integrated multimodal HCT system with system-wide, cohesive connections from start-to-finish (for the maximum span of service hours possible)?

Evaluation Criteria



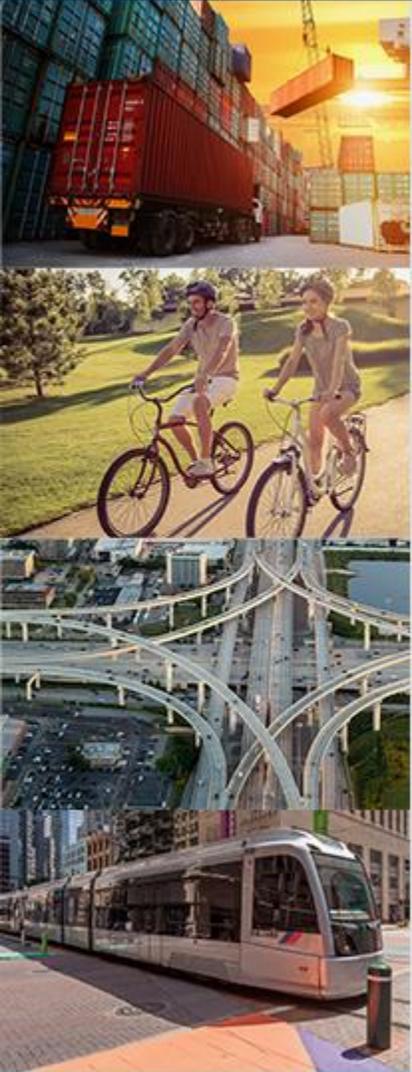
- Does the proposed option make the transit system more resilient in the event of extreme demand or catastrophe?
- Does the proposed option allow transit users and non-users to travel safely?
- Does the proposed option contribute to emissions reductions?

General Principles/Supporting Concepts



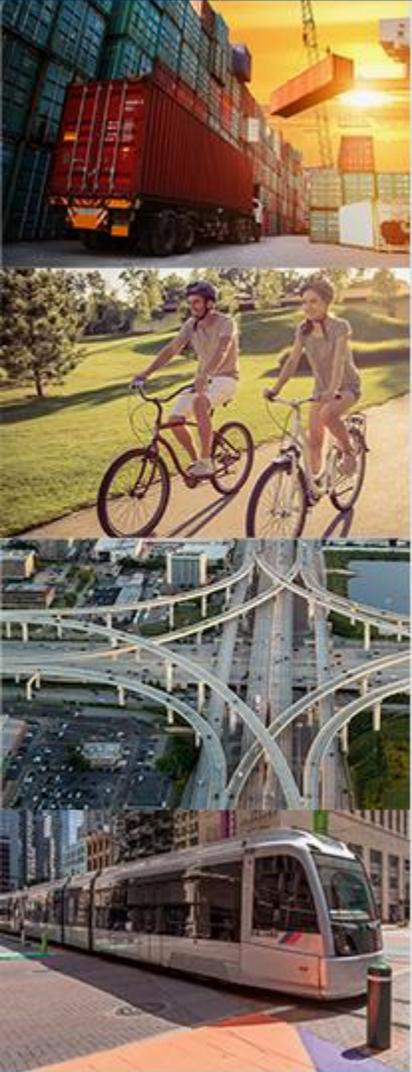
- Policies that should be in place to support/promote HCT in the region
- Some concepts will require cooperation with/assistance from local governments
- Regional HCT requires regional cooperation

General Principles: Regional Fare



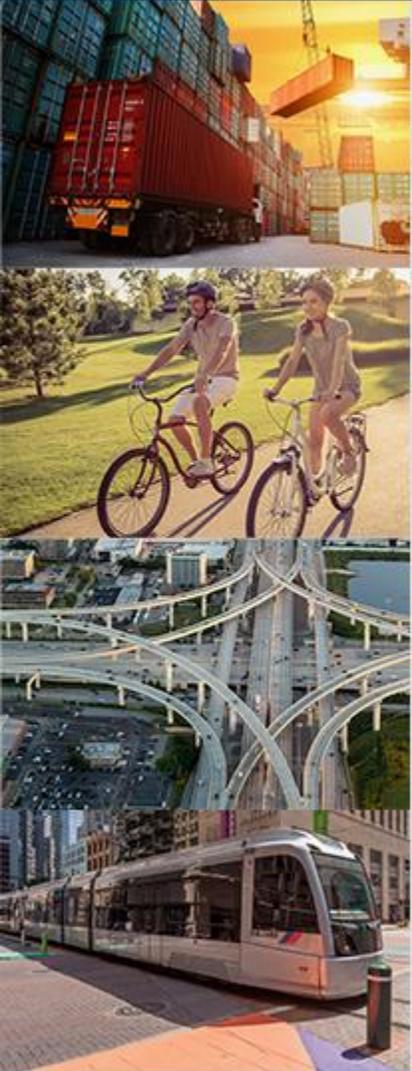
- Generally uses Electronic Fare Payment System (EFPS) to collect, track, and distribute fare revenue
- In use in several other major regions (Los Angeles, Atlanta, D/FW)
- Requires regional coordination re: fare policies, management, structure (the technology is the easy part!)

General Principles: Regional Cooperation



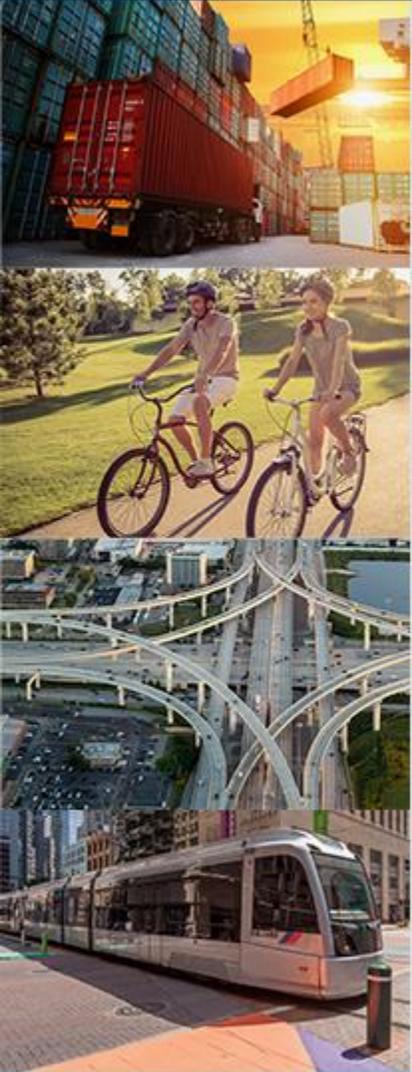
- Connectivity between providers
- Cooperative use of resources
 - Shared facilities
 - Shared contracting/purchasing
- Single Point of Information

General Principles: Regional Marketing



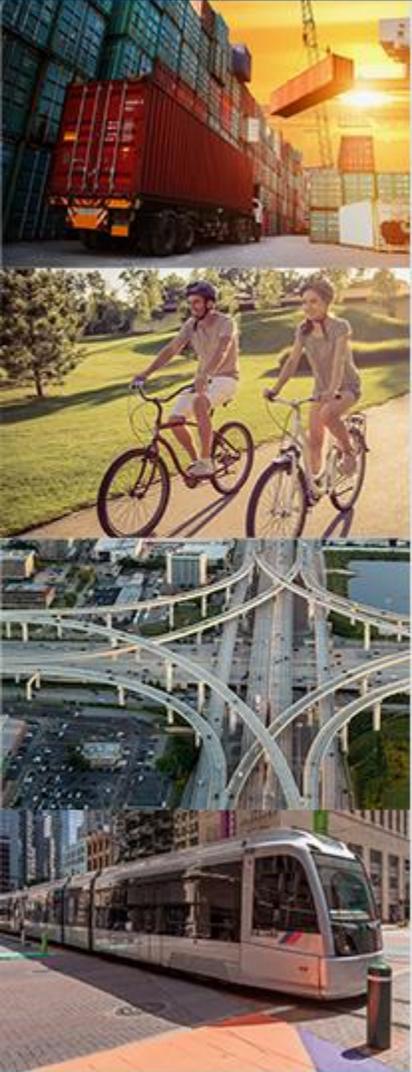
- Creation of regional “brand”
- Marketing
 - Benefits of regional transit
 - Target message to markets
- Education
 - “How to Ride,” Travel training

General Principles: Accessibility



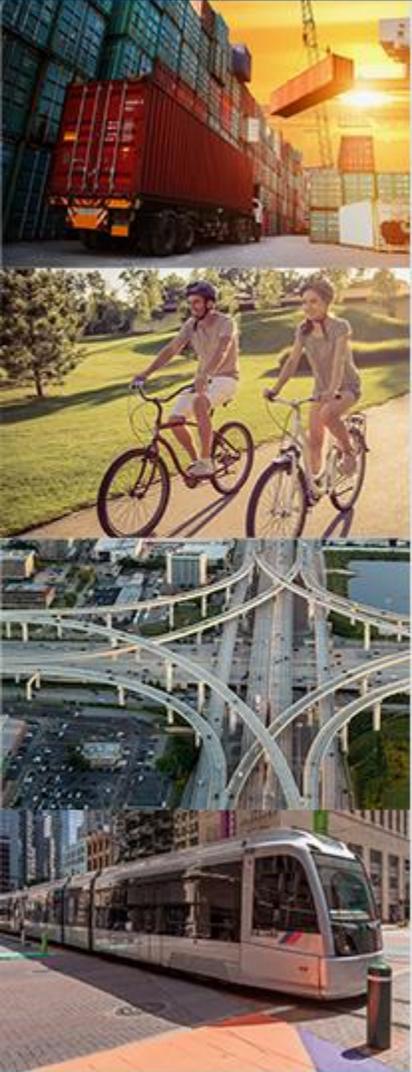
- “People can’t use transit if they can’t get to it”
- No new service without access
 - Safe, barrier-free path to transit
 - Compliant with ADA
 - Bicycle routes, paths, racks

General Principles: First Mile/Last Mile



- Access between transit hub and origin/destination
- “Flex Zones” around stations
 - Used by other transit agencies
 - Opportunities for TNCs (e.g. Uber, Lyft) or autonomous vehicles
- Sidewalks = “low-cost” solution; should always be a priority

General Principles: Land Use



- Walkable, transit-friendly spaces
- Complete Streets/Transit Streets
- Regulations that encourage transit-friendly development (“make it easy to do”)
- Transit-Oriented Development

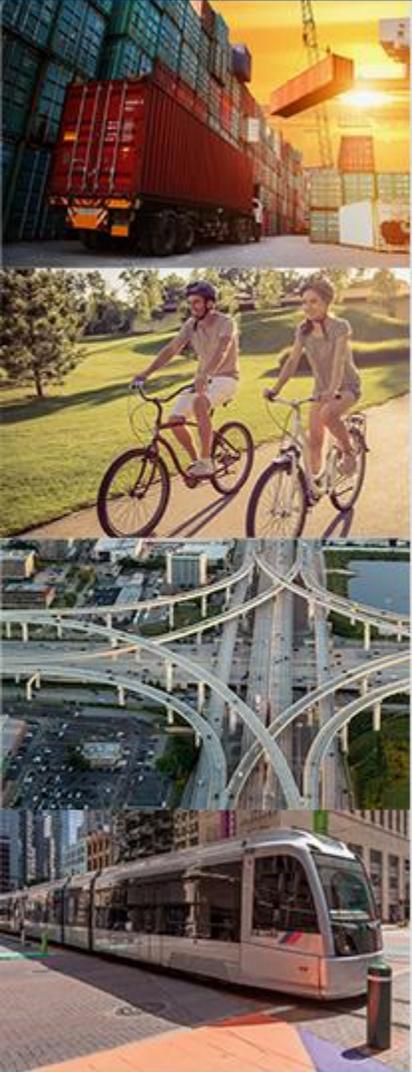
General Principles: Streets

34th Street, Manhattan



College Street, Toronto

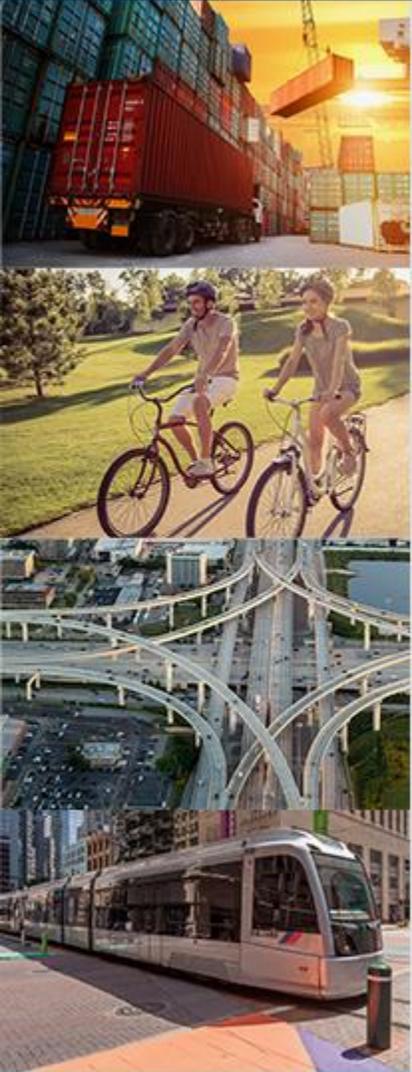
General Principles: Parking



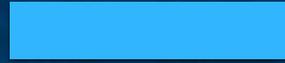
- “Free parking is the enemy of transit use”
- Hide, minimize, share
- Parking cash-out policies
- Re-think parking minimums



Economic Development



- Phase I Draft Economic Development Deliverable (in packet)
- METRO MAX Express Bus
- Next Steps for Economic Analysis



METRO MAX

Regional Express Bus Service

March 8, 2018

Critical Characteristics

- **Legible**
- **Convenient**
- **Reliable**
- **Comfortable**

MAX Opportunities

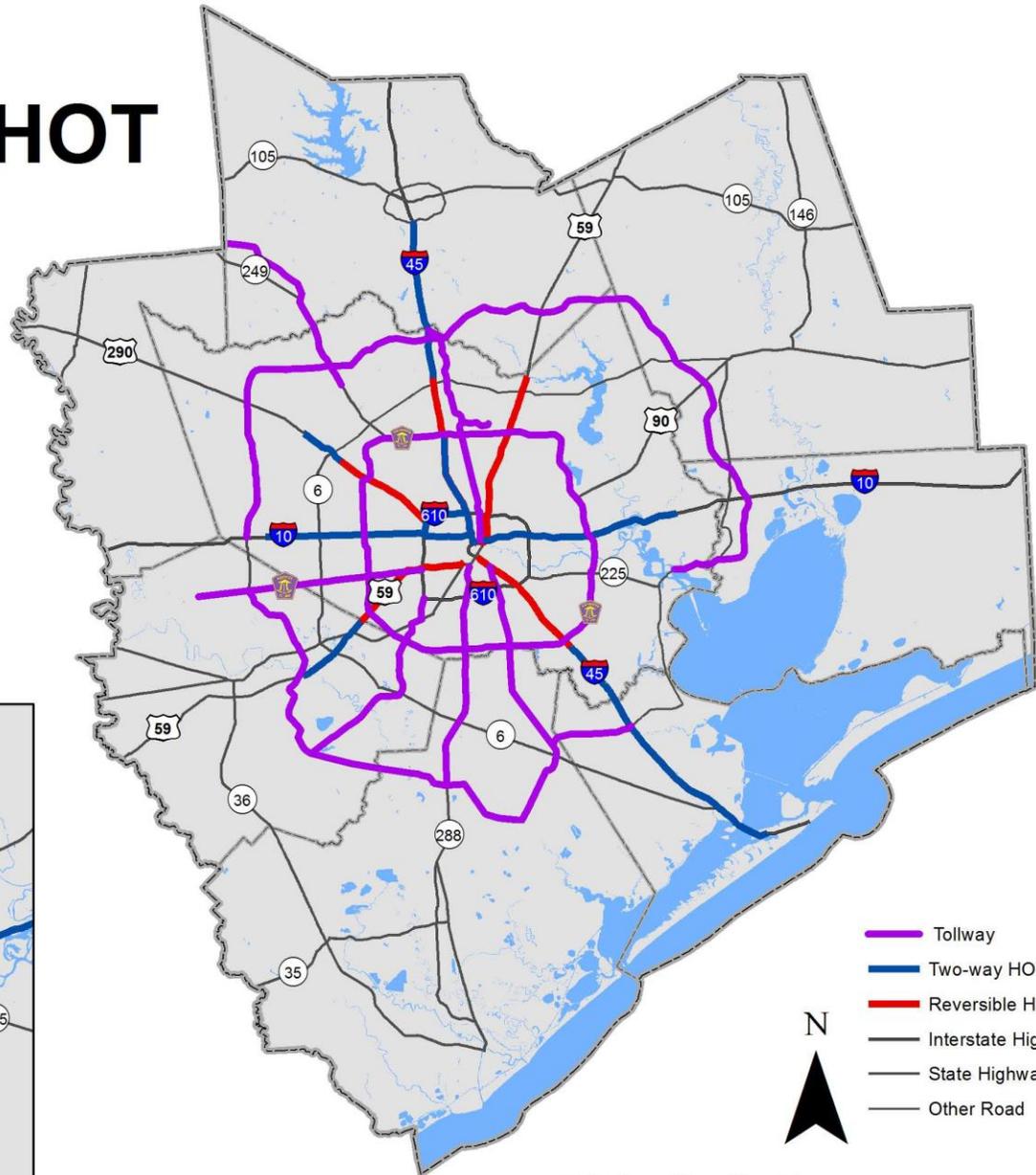
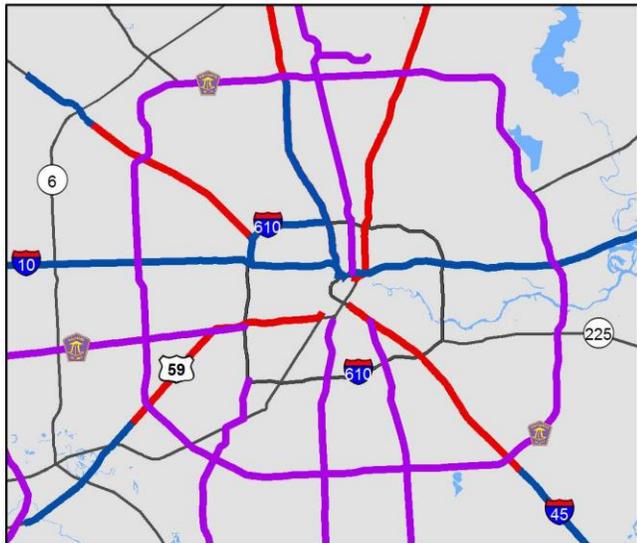
- **Scalable**
- **Affordable**
- **Regional Connections**
- **Inclusive**
- **Adaptable**

MaX Lanes

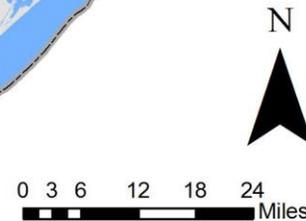


INVESTMENTS

2040 Freeway Tollway, HOV/HOT System



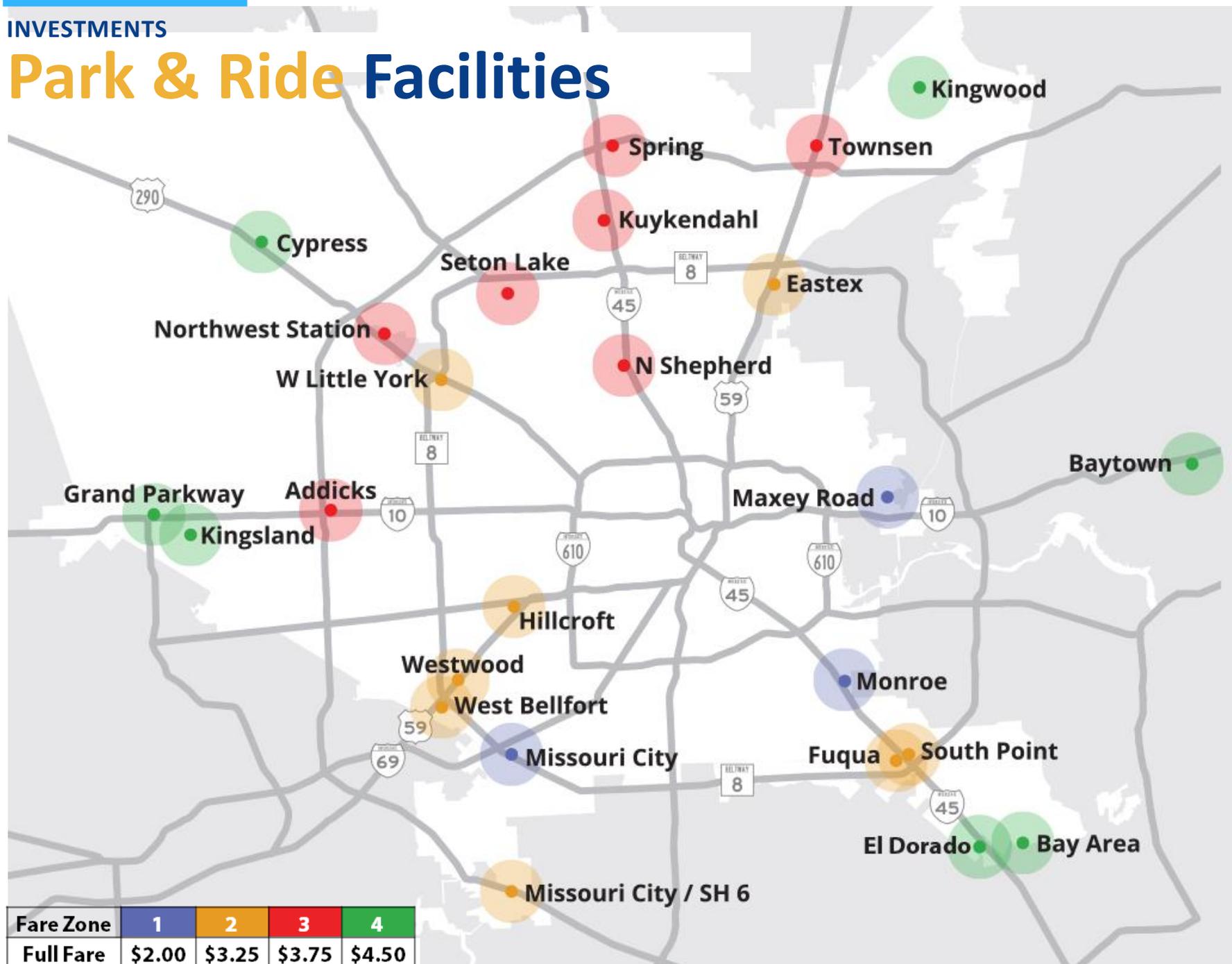
- Tollway
- Two-way HOV/HOT
- Reversible HOV/HOT
- Interstate Highway
- State Highway
- Other Road



Park & Ride Facilities

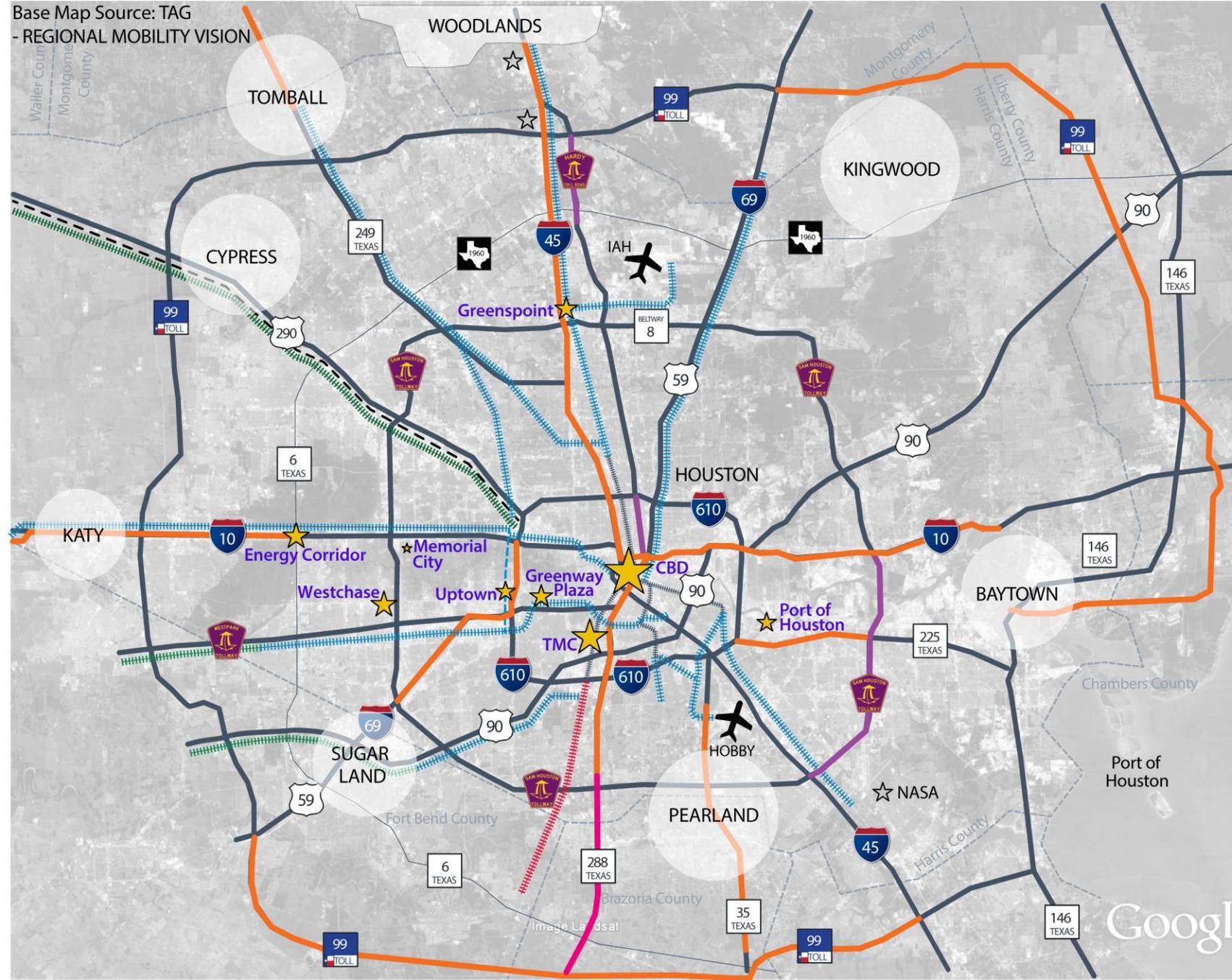


Park & Ride Facilities

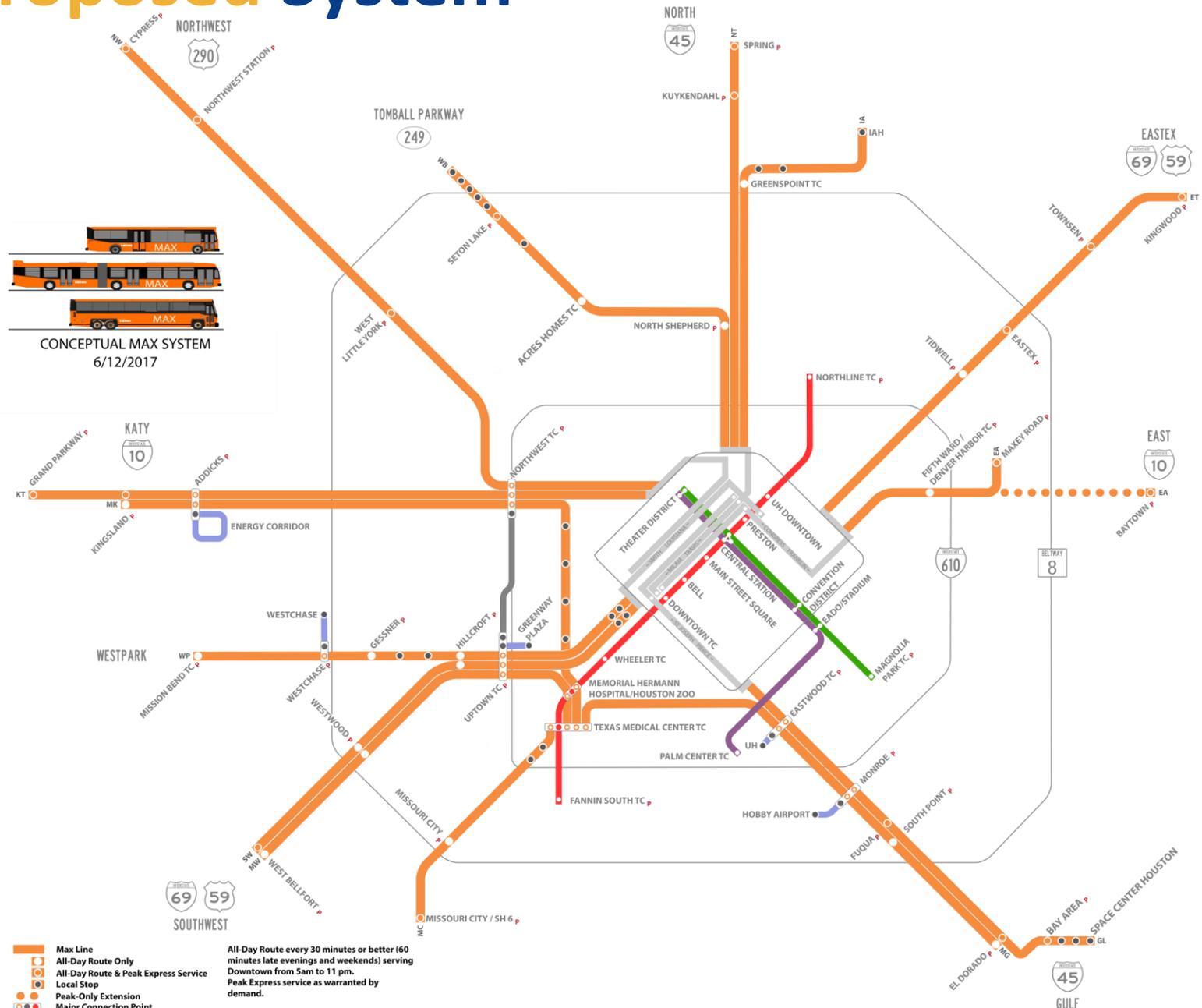
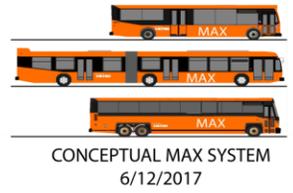


CONNECT ACTIVITY CENTERS

Base Map Source: TAG
- REGIONAL MOBILITY VISION



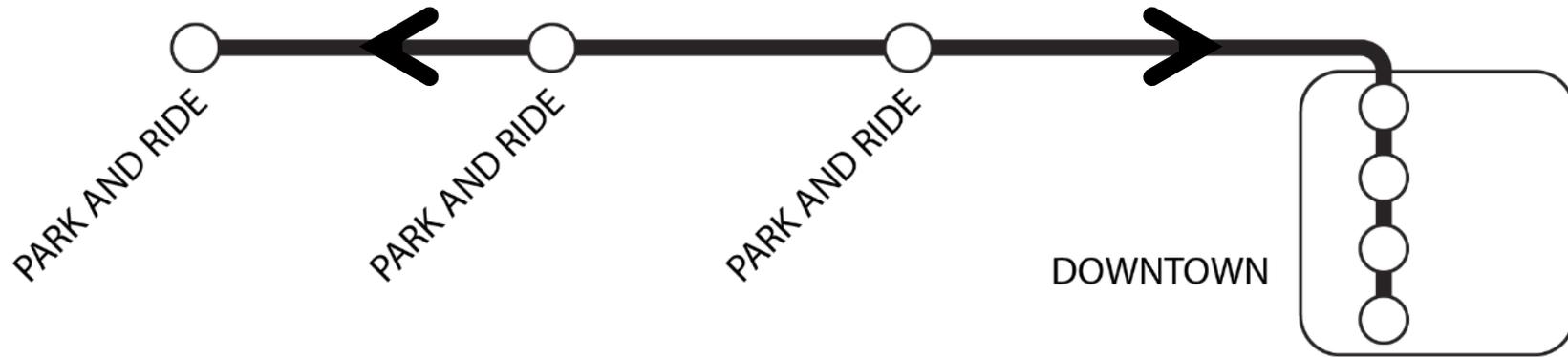
Proposed System



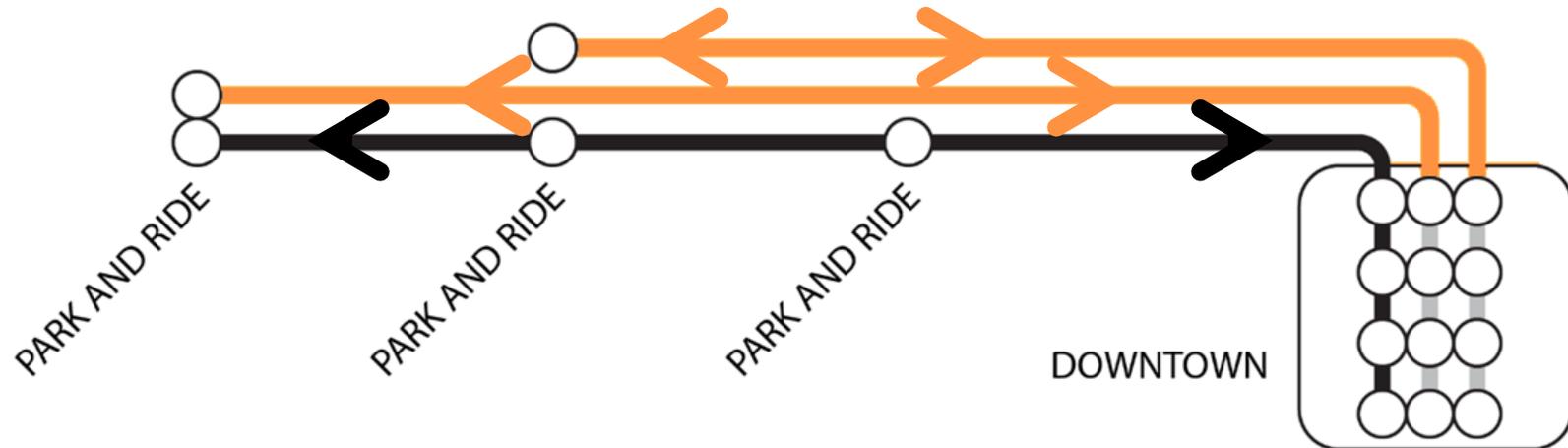
- Max Line
- ◻ All-Day Route Only
- ◉ All-Day Route & Peak Express Service
- Local Stop
- ▲ Peak-Only Extension
- ◆ Major Connection Point
- Connecting Service
- Light Rail/BRT & Stations
- P Stop with Parking

All-Day Route every 30 minutes or better (60 minutes late evenings and weekends) serving Downtown from 5am to 11 pm. Peak Express service as warranted by demand.

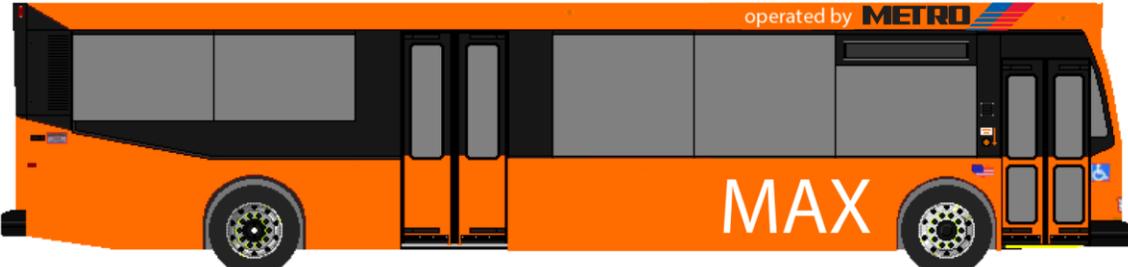
All-Day Base Service - Local Fare



Peak Commuter Service - Premium Fare



Distinctive Branding



Distinctive Branding



Distinct Signage

Distinct Stops

METRO MAX

KT GRAND PARKWAY/KINGSLAND/
ADDICKS/ NORTHWEST TC
Inbound

KT1 ADDICKS P&R
Inbound

KT2 KINGSLAND P&R
Inbound

KT3 GRAND PARKWAY P&R
Inbound

? Information / Informacion
713-635-4000
www.ridemetro.org



METRO MAX

KT GRAND PARKWAY/KINGSLAND/
ADDICKS/ NORTHWEST TC
Inbound

KT1 ADDICKS P&R
Inbound

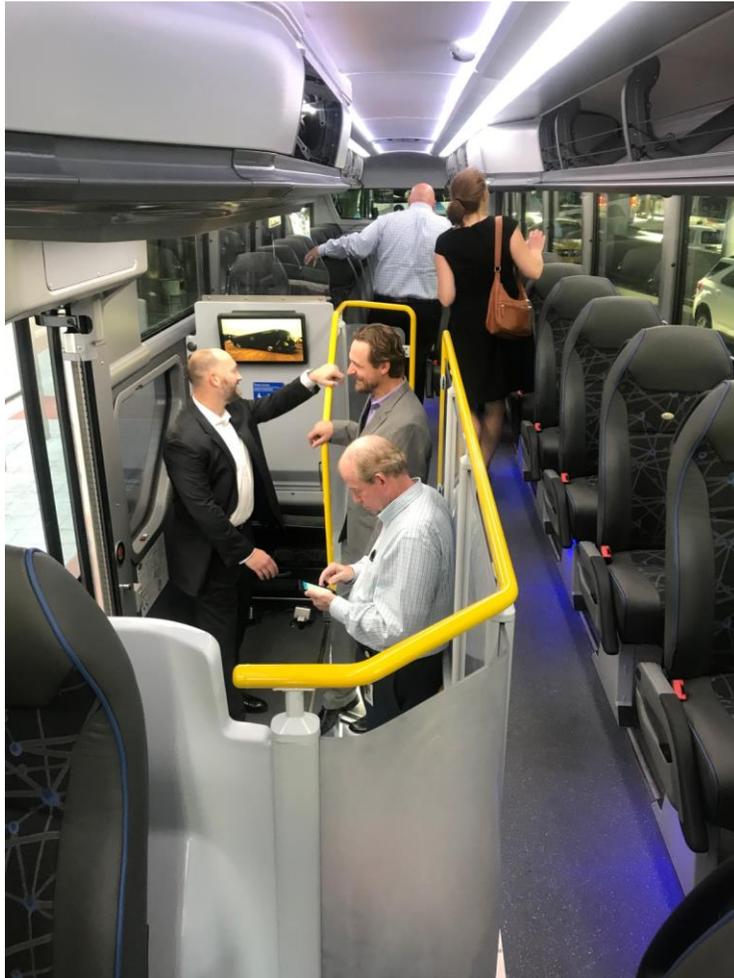
KT2 KINGSLAND P&R
Inbound

KT3 GRAND PARKWAY P&R
Inbound

? Information / Informacion
713-635-4000
www.ridemetro.org

Run Like Rail

A bus can provide the same quality of ride



Excellent Service

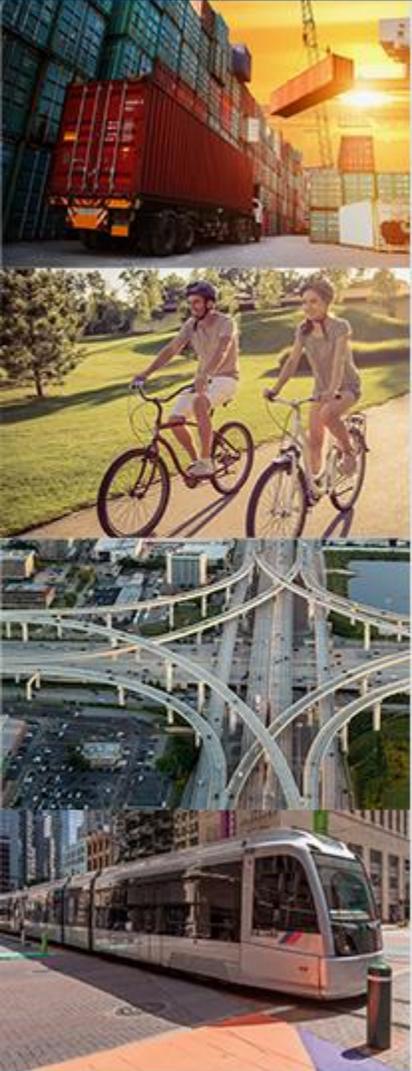
- Legible
- Convenient
- Reliable
- Comfortable

Thank you!



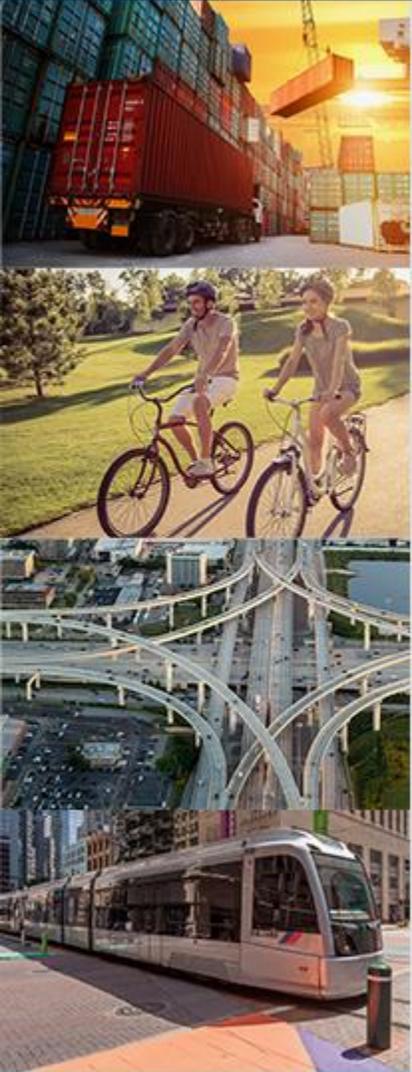
Central Houston

Next Steps for Economic Analysis



- Main Areas of Analysis
 - Mobility Improvements
 - Input/Output Analysis
 - Growth and Productivity
- Selection and Procurement Process

Next Steps



- Finalize Phase I Deliverables
- Finalize Network Map
- Economic Impact Analysis
- Update to TPC
- Rail-Volution?