

# CENTRAL CORRIDOR HIGH-CAPACITY TRANSIT STUDY

Step 5 Briefing

March 2014



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## Agenda

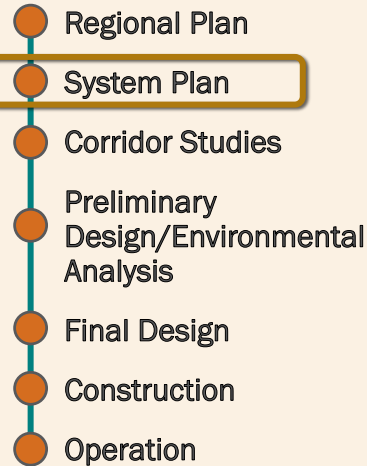
- 1) Introduction
- 2) Central Corridor Study Overview
- 3) Project Purpose & Service Profile
- 4) Mode Screening
- 5) Alignment Screening
- 6) Recommended Final Alternatives
- 7) Next Steps



## 1

## Project Connect

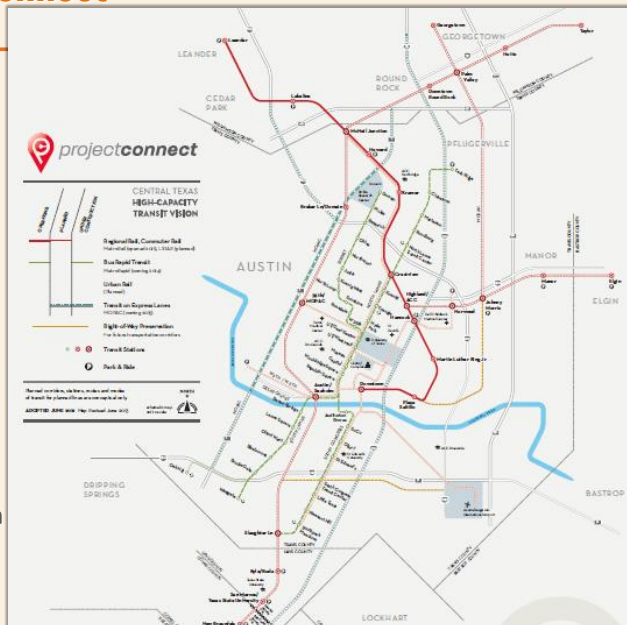
- A **partnership** between Central Texas transportation agencies
- A regional, long-range high-capacity transit **system plan** for Central Texas



## 1

## Project Connect Vision

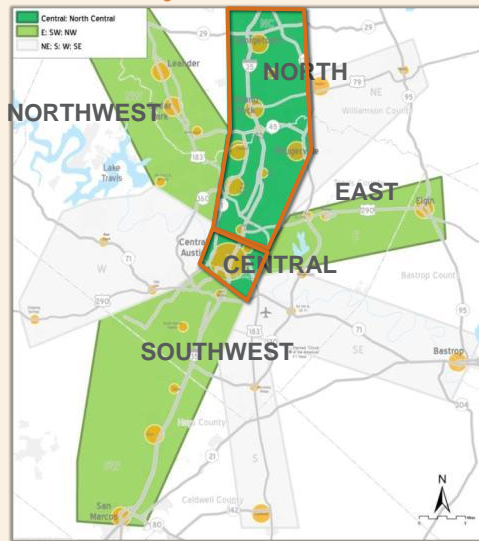
- System
  - 25 Centers & ABIA
  - 4 Counties/13 Cities
- Funding
  - \$4B Total Capital
  - Can Fund:
    - \$1.9B (49%) Capital
    - \$82M O&M
- Organization
  - ILA for Early Project Development
  - Framework for Regional Organization and 'Single System' Integration



## 1

## Project Connect Corridors

- 9 Project Connect Corridors
- 5 High Priority:
  - North
  - East
  - Southwest
  - Northwest
  - Central



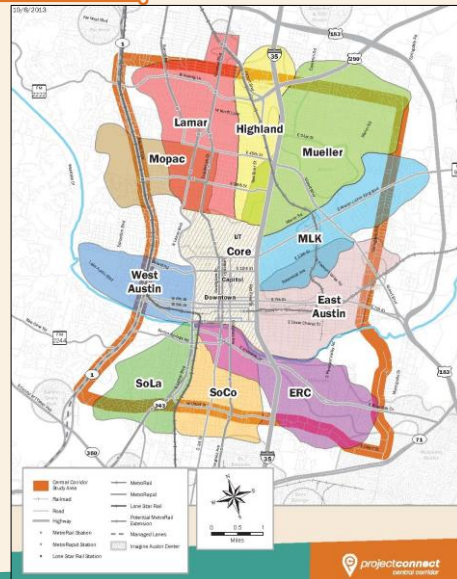
## 2

# Central Corridor Study Overview

## 2

## Phase 1 Evaluation Approach

- 10 sub-corridors identified + Core
- Comparison of sub-corridors for high-capacity transit (HCT) suitability
- No single factor tells the whole story



## 2

## Phase 1 Evaluation Results

								Current Focus	Future Focus
Project Team		CCAG		Public*		Equal Weight		Serving Criteria Only	Shaping Criteria Only
ERC	70	ERC	58	ERC	72	ERC	60	ERC	55
Highland	61	Highland	58	Highland	65	Highland	57	East Austin	53
Lamar	53	Mueller	51	Mueller	56	Mueller	51	Lamar	53
Mueller	52	Lamar	48	Lamar	51	Lamar	50	West Austin	52
East Austin	50	East Austin	45	East Austin	49	East Austin	47	Highland	47
SoCo	44	SoCo	41	SoCo	46	SoCo	43	Mueller	45
West Austin	33	West Austin	32	West Austin	42	West Austin	32	SoCo	37
MLK	27	SoLa	22	MLK	30	MLK	25	Mopac	36
Mopac	27	MLK	22	Mopac	29	SoLa	22	MLK	31
SoLa	24	Mopac	18	SoLa	28	Mopac	21	SoLa	16

## Key Findings

- ERC & Highland are top performers
  - From various perspectives
- Weightings do not change the overall results
- All sub-corridors could support HCT

Evaluation scores can only be compared within each column.

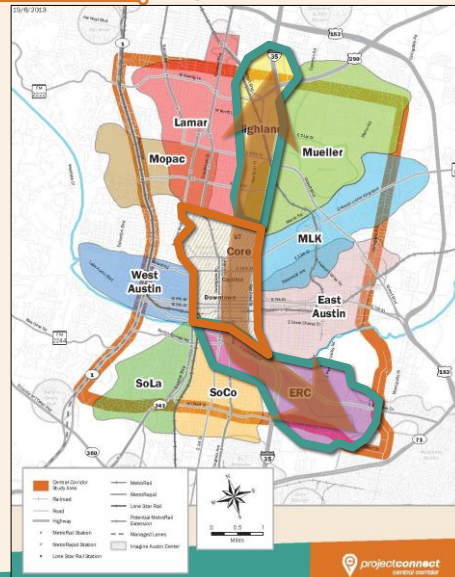
\*Three public workshops input.

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## Phase 1 Central Corridor Priority Area

### East Riverside & Highland

- East Riverside (ERC) and Highland are consistently in the top two
- Advance both into Phase 2
  - Develop best project
- Balanced recommendation
  - System Development
  - Shaping Characteristics
  - Serving Characteristics
- Continue system planning and project definition for next tier



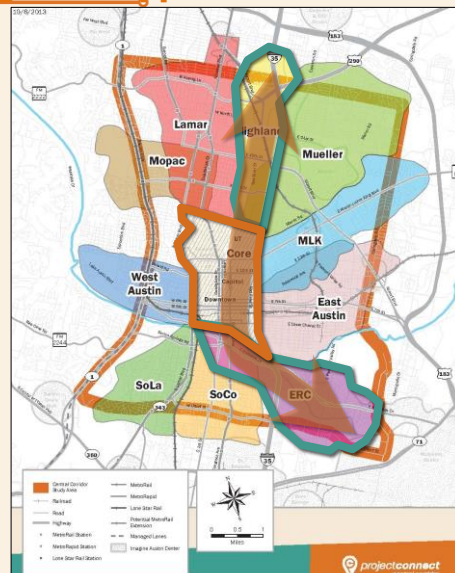
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## East Riverside & Highland Opportunities

- Link East Riverside and Central Austin residential densities to:
  - Downtown employment destinations
  - New Dell Medical School and Innovation District
  - New 'heart' of UT Austin campus
  - New ACC Highland flagship campus and 80 acre TOD with UT co-enrollment program and workforce training
- Provide alternative to I-35 congestion thru Central Austin
- Provide additional capacity across Lady Bird Lake
- Build HCT system, linking Red Line, MetroRapid, Express Bus, North Corridor Connectors, LSTAR, etc.



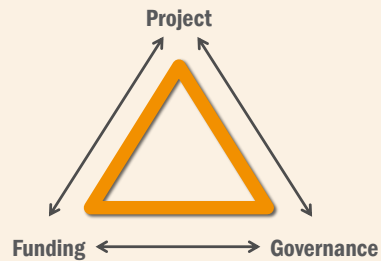
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## 2

## Phase 2 Objectives

- Project Definition
  - Service, mode, alignment, stops
- Funding Plan
  - Capital and O&M costs, funding sources
  - *Within* overall Project Connect Plan
- Governance Structure



## 2

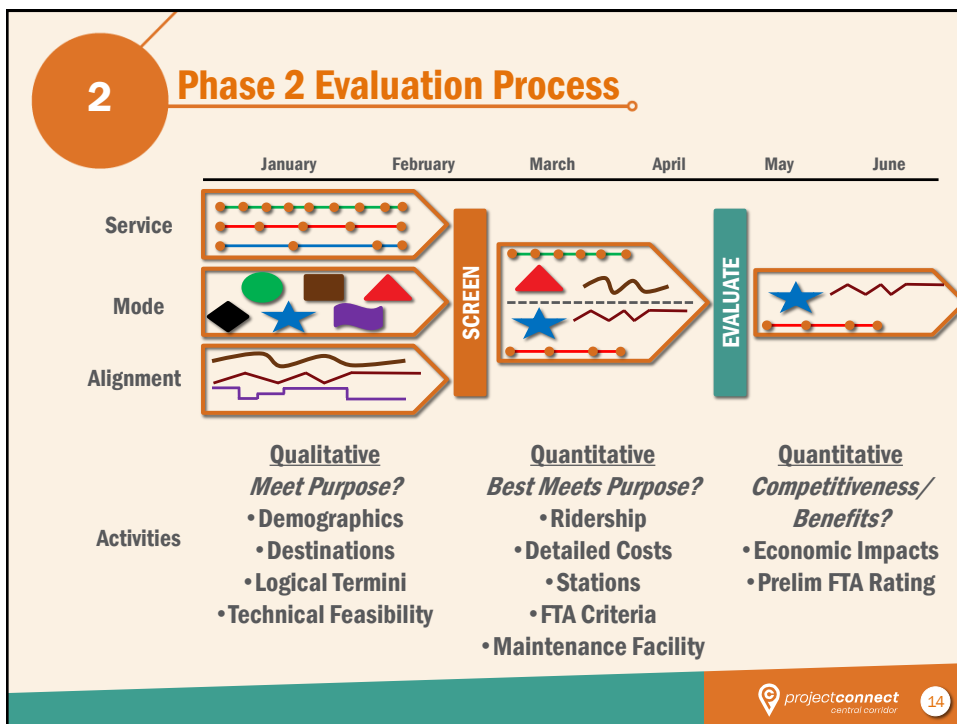
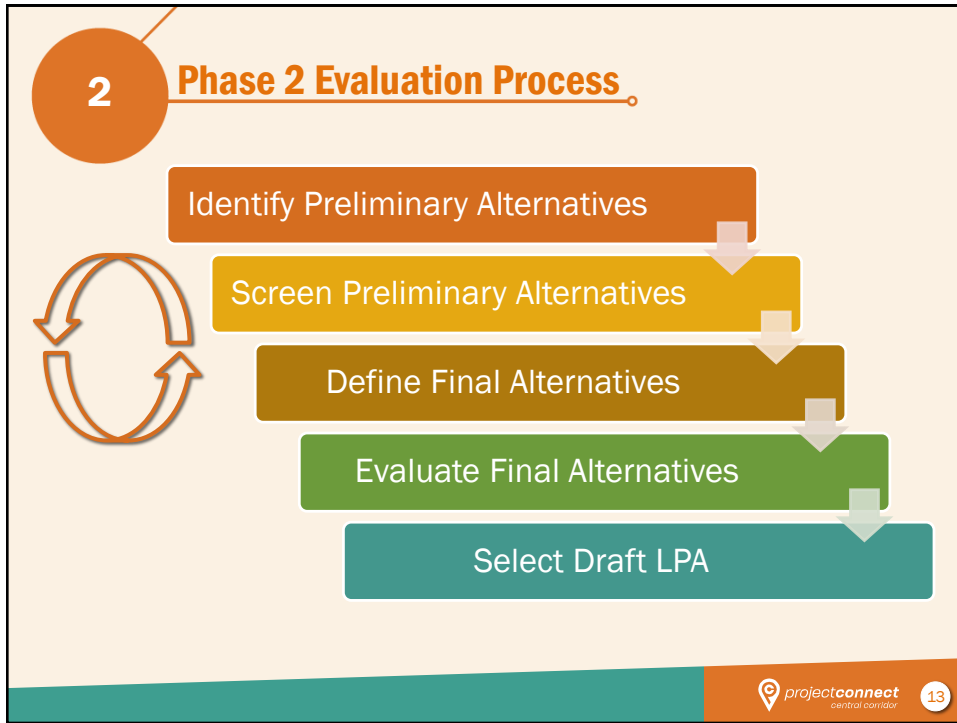
## Phase 2 Work Plan &amp; Schedule

## Decision-Making Process

- Phase 2: Select Locally Preferred Alternative (LPA)

Current  
Progress

Central Corridor High-Capacity Transit Study Work Plan											
				2013				2014			
				6 Dec	7 Jan	8 Feb	9 Mar	10 Apr	11 May	12 Jun	
Phase 2 Select Draft Locally Preferred Alternative (LPA)	Step 4: Identify Preliminary Alternatives	Task 9	Project Purpose								
		Task 10	Process – Methodology & Criteria								
		Task 11	Identify & Screen Preliminary Alternatives – Service, Mode & Alignment								
	Step 5: Define Final Alternatives	Task 12	Define Final Alternatives – Mode & Alignment								
	Step 6: Evaluate Alternatives	Task 13	Evaluate Final Alternatives								
	Step 7: Select LPA	Task 14	Select Draft Locally Preferred Alternative (LPA)								
			Decision								*



**3 Project Purpose & Service Profile**

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**3 Project Purpose**

Congestion  
**1**

Core  
**3**

Centers

Constraints

Growth

System  
**2**

Funding

**Congestion is the number one citizen priority by a wide margin.**

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## 3

## Recommended Service Profile

*Project Purpose used to define Service Profile*



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## 3

## Recommended Service Profile

## Reliability

Mostly Dedicated

Mixed Traffic    Transit Priority/  
Pre-emption    Dedicated  
Guideway    Separated  
Guideway    Fully Separated  
Guideway

## Frequency

10 - 15

5 minutes

60 minutes

## Stop Spacing

 $\frac{1}{2}$  - 1 mile<  $\frac{1}{4}$  mile

&gt; 5 miles

## Speed

20-30 avg.

10 mph

55 mph maximum (including stops)

60 mph

Recommended  
Service Profile


Medium  
Reliability  
Medium-High  
Frequency  
Medium-High  
Stop Spacing  
Medium  
Speed

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Mode Screening

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Mode Screening

JanuaryFebruaryMarchAprilMayJune

Preliminary Alternatives

Service Alternatives

Mode Alternatives


Route Alternatives

SCREEN

Final Alternatives





































EVALUATE

Locally Preferred Alternative (LPA)

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## 4

## Mode Screening

What are our high-capacity options for transit?	What is it, where does it go, and when do we use it?	How many people can it carry per hour during rush hour?	How fast does it go on average?	How often does it stop?	When can I get on?	Real World Example
 High-Speed Rail	 High-Speed Rail uses specialized vehicles to travel at high speeds on fully dedicated and grade-separated tracks or guideways. Typically used to travel quickly between major urban centers.	 Carries 600 - 1,200 passengers	 Average speed 200 - 220 mph	 Stops are 60 miles to 100 miles apart	 Rail runs every 30 min. rush hour, and every 60 min. at other times	Amtrak Acela
 Regional Rail	 Regional Rail service connects different cities and regions, typically using existing railroad lines. Typically used to travel longer distances between large cities.	 Carries 600 - 2,400 passengers	 Average speed 60 - 75 mph	 Stops are 3 miles to 15 miles apart	 Rail runs every 30 min. during rush hour and every 1 - 3 hours at other times	The Capitol Corridor between San Jose and Sacramento in Northern California is an example of regional rail. Locally, the Lone Star Rail District is planning the LSTAR regional rail line between Georgetown and San Antonio, with nine stops in our Region.
 Commuter Rail	 Commuter Rail trains operate on railroad tracks that carry riders to and from work in a region. Typically used to travel from suburbs to central cities.	 Carries 400 - 1,400 passengers	 Average speed 30 - 50 mph	 Stops are 1 mile to 5 miles apart	 Rail runs every 30 min. during rush hour and every hour at other times	Capital Metro's MetroRail Red Line between Leander and downtown Austin is a local example of commuter rail.
 Transit on Express Lanes	 Express, or managed, lanes are highway lanes that are free to registered van pools and transit vehicles, and tolled for all other vehicles. The toll rate changes throughout the day based on how much traffic is on the managed lanes in order to keep the lanes fully used without being too busy. Typically used to travel within a city and between close-in suburbs and the city.	 Carries 400 - 900 passengers	 Varies. Typically toll rate adjusted to maintain a minimum average speed of 50 mph	 Multiple stops within close proximity near tollways with 5 miles to 20 miles of non-stop service in between	 Buses run every 10 min. during rush hour and every 30 min. at other times	Katy Managed Lanes are operated by the Harris County Toll Road Authority in Houston, TX. Locally, the Central Texas Regional Mobility Authority is currently planning express lanes along Mopac Expressway in Austin.
 Heavy Rail Transit	 Heavy Rail Transit uses specialized high-capacity electric vehicles on fully-dedicated and grade-separated tracks or guideways. Typically used to travel within very dense urban areas and corridors.	 Carries 10,000 - 30,000	 Average speed 40 - 60 mph	 Stops are 1 mile to 2 miles apart	 Rail runs every 3-5 min. rush hour and every 10 - 15 min. at other times	DC Metrorail
 Gondola Aerial	 Gondolas use small specialized vehicles propelled by a cable suspended from tall masts. Typically used in the US in mountainous, tourism-oriented areas at short distances.	 Carries 10 - 20 passengers	 Average speed 10 - 20 mph	 Stops are 100 - 200 feet apart	 Runs every 10 - 15 min. at all times	Portland Aerial Tram

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## 4

## Mode Screening Process

- Public Input
  - Preliminary mode alternatives a function of public input (e.g. gondola)
  - General agreement on modes considered
  - Added evaluation of Personal Rapid Transit (as part of automated guideway)
- Two Tier Screening Process
  1. Service Profile
  2. Mode Characteristics

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## 4

## Mode Screening Tier 1

## Screen for Service Characteristics

Preliminary Modes		High-Speed Rail	Regional Rail	Commuter Rail	Transit on Express Lanes	Heavy Rail Transit	Aerial Cable Propelled Transit	Monorail	Light Rail	Urban Rail	Bus Rapid Transit (dedicated)	Automated Guideway	Bus Rapid Transit (shared)	Streetcar
Service Profile	Reliability "Medium"													
	Frequency "Medium-High"													
	Stop Spacing "Medium-High"													
	Speed "Medium"													
Screened Preliminary Modes						Heavy Rail Transit		Monorail	Light Rail	Urban Rail	Bus Rapid Transit (dedicated)			

## 4

## Mode Screening Tier 1: Results

## Eliminated

- High Speed Rail
- Inter-city Rail
- Regional Rail
- Commuter Rail
- Transit on Expressway
- Gondola
- Automated Guideway
- BRT (shared)
- Streetcar
- Local Bus

## Passed

- Heavy Rail
- Monorail
- Light Rail
- Urban Rail
- BRT (dedicated)

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## Tier 2 Recommended Mode Characteristics

### Peak Hour Demand

1,800 to 2,400

Local Bus  
~200Heavy Rail  
>25,000

### Technology

Unproven  
Not Buy America CompliantProven  
Buy America Compliant

### Energy

Fossil Fuel Based

Alternative or Renewable Based

### Compatibility (with Existing Urban Setting/Infrastructure)

Less Flexible

More Flexible



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## Mode Screening Tier 2

### Screen for Mode Characteristics

Preliminary Mode Alternatives	High-Speed Rail	Regional Rail	Commuter Rail	Transit on Express Lanes	Heavy Rail Transit	Aerial Cable Propelled Transit	Mono-rail	Light Rail	Urban Rail	Bus Rapid Transit (dedicated)	Automated Guide-way	Bus Rapid Transit (shared)	Street-car	Local Bus
Demand														
Technology														
Energy														
Compatibility														
Final Mode Alternatives														



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## 4

## Mode Screening Tier 2: Results

## Eliminated

- Heavy Rail
- Monorail

## Passed

- Light Rail
- Urban Rail
- BRT (dedicated)

## 4

## Evolution of Urban Rail

## Technology/Operations Continuum

- Mixed traffic
- Small vehicles
- Close stops
- Slow



Streetcar

## Urban Rail



- Exclusive guideway
- Large vehicles
- Far stops
- Fast



Light Rail

## 4

## Final Mode Alternatives

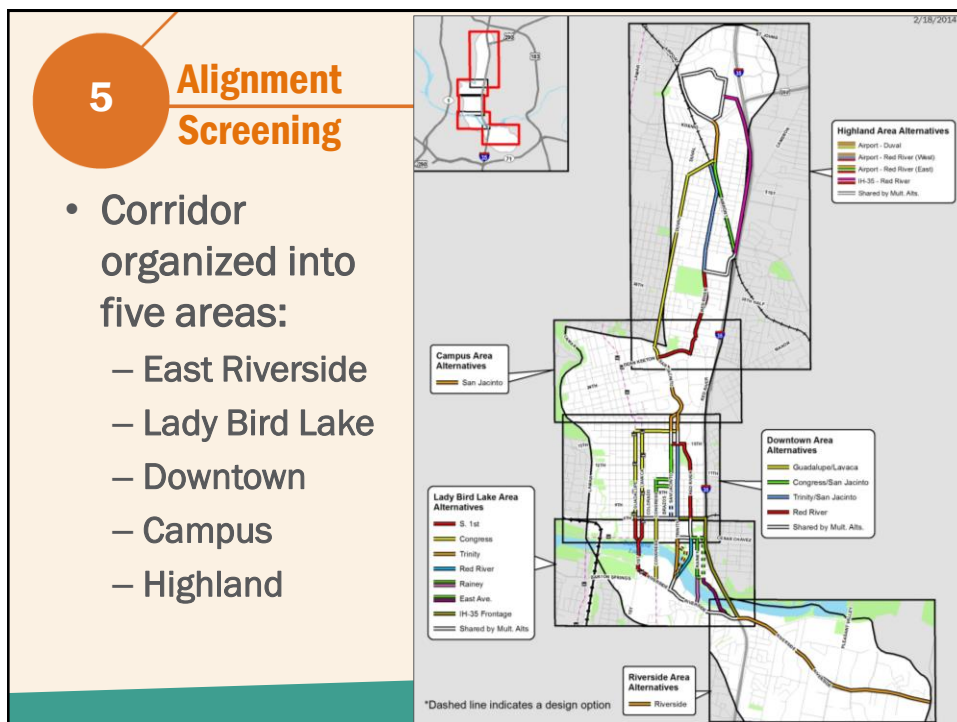
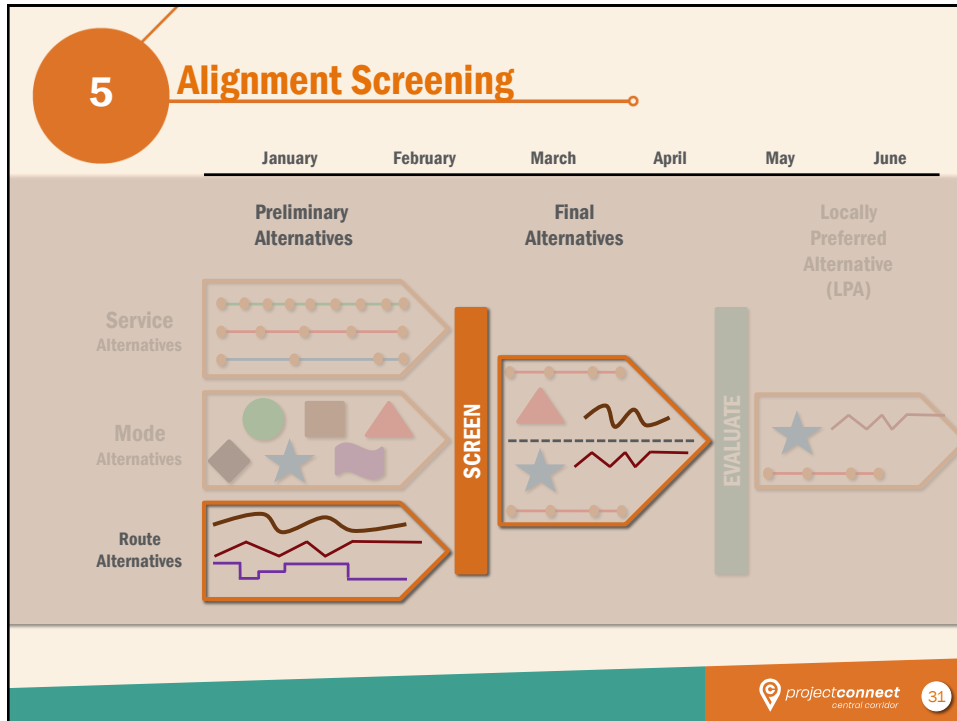


Urban Rail

Bus Rapid Transit  
(dedicated)

## 5

## Alignment Screening





## 5

## Alignment Screening Process

- Public Input
  - Preliminary alignment alternatives a function of public input (e.g. Rainey)
  - Added evaluation of I-35 between Hancock and Highland
- Three Tier Screening Process
  1. Service Characteristics
  2. Alignment Criteria
    - Mobility and Connectivity
    - Compatibility with Plans
    - Technical Feasibility
  3. Logical Connections

## 5

## East Riverside Area



- Consistent with East Riverside Corridor Master Plan
- East Riverside Drive scores high in most criteria

## 5

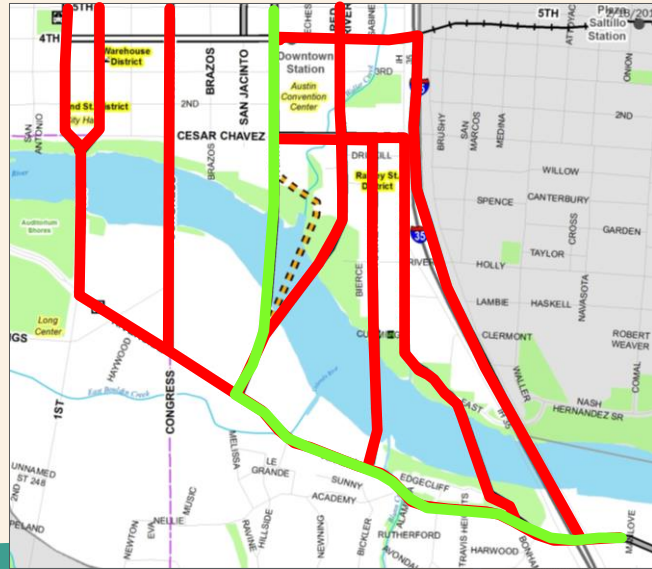
## Lady Bird Lake Area

## Eliminated:

- Congress, South 1st and I-35 Frontage
  - Reliability and Speed
- Red River
  - ROW
- Rainey and East Avenue
  - ROW and Traffic

## Passed:

- Trinity
  - Ranks highest in most criteria
  - Tunnel and bridge options to be considered



## 5

## Downtown Area

## Eliminated:

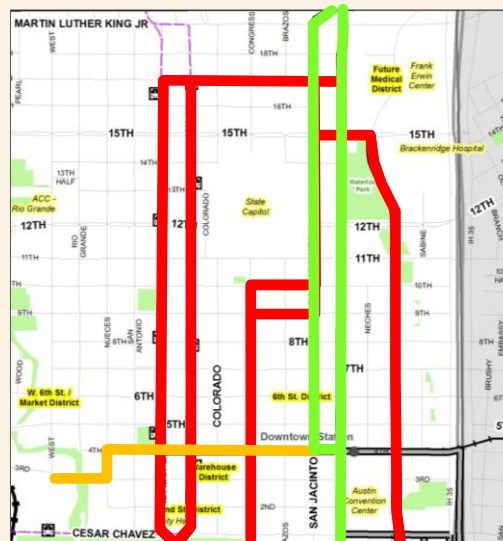
- Guadalupe-Lavaca and Congress-San Jacinto
  - Reliability
  - Speed
- Red River
  - Eliminated in crossing of Lady Bird Lake area; scores much lower than Trinity-San Jacinto

## Passed:

- Trinity-San Jacinto
  - Ranks highest in most criteria
  - Strong in jobs per route mile

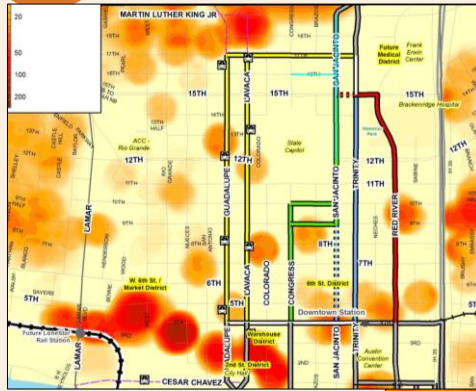
## Future Consideration:

- Seaholm connection

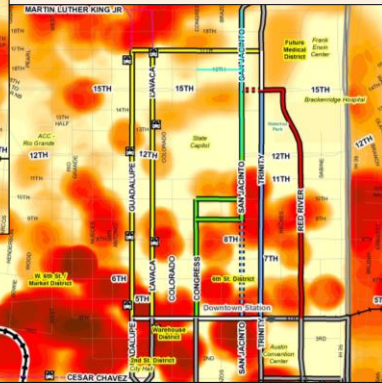


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## Population Density Maps



2010



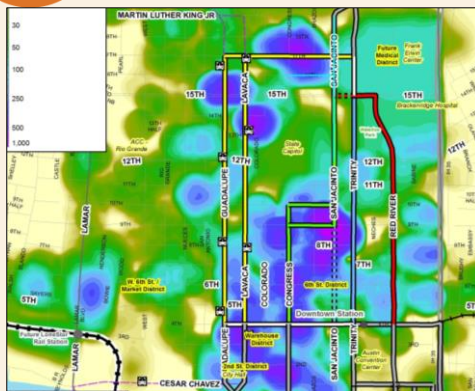
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project corridor  
central corridor

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## Employment Density Map



2010



2030

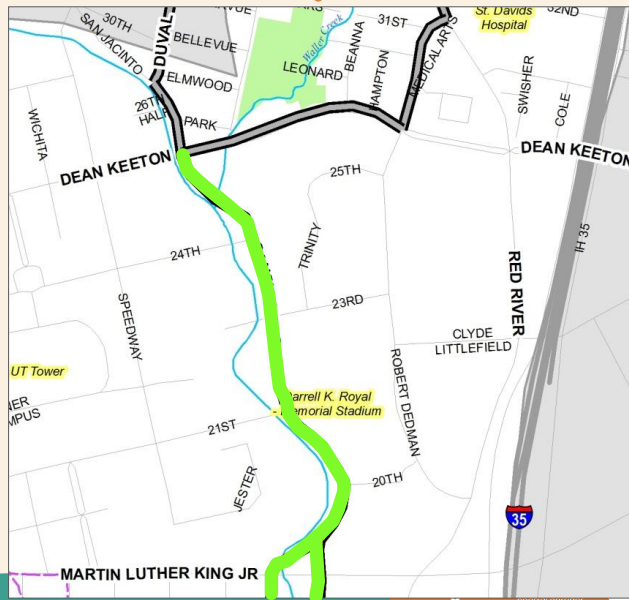
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## 5

## Campus Area

- San Jacinto scores very well in most criteria
- Consistent with UT Campus Master Plan



## 5

## Highland Area

## Eliminated:

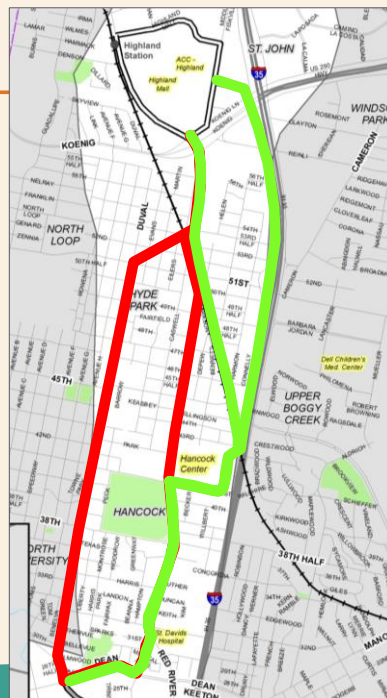
- Airport-Duval and Airport-Red River (West)
  - Reliability
  - Speed
  - Neighborhood/ROW impacts

## Passed:

- Airport-Red River (East) and I-35-Red River
  - Ranks highest in most criteria

## Other Considerations:

- Potential Grade Separations
  - Hancock Center
  - Red Line
  - I-35



## 5

## Alignment Screening

		Riverside Area	Lady Bird Lake Area							Downtown Area			Campus Area	Highland Area			
Preliminary Alignments		Riverside	S. 1st	Congress	Trinity	Red River	Rainey	East Avenue	IH-35 Frontage	Guadalupe - Lavaca	Congress - San Jacinto	Trinity - San Jacinto	Red River	San Jacinto	Airport - Duval	Airport - Red River (West)	Airport - Red River (East)
Service Characteristics	Reliability "Medium"																
	Frequency "Medium-High"																
	Stop Spacing "Medium-High"																
	Speed "Medium"																
Alignments after Tier 1 Screening		Riverside			Trinity	Red River	Rainey	East Avenue			Trinity - San Jacinto		Red River	San Jacinto		Airport - Red River (East)	

Tier 1 Example

## 5

## Alignment Screening Results

## Eliminated

## Lady Bird Lake

- South 1<sup>st</sup>
- Congress
- Red River
- Rainey
- East Avenue
- I-35 Frontage

## Downtown

- Guadalupe/Lavaca
- Congress/San Jacinto
- Red River

## Highland

- Duval/Airport
- Red River/Airport (west)

## Passed

## East Riverside

- East Riverside

## Lady Bird Lake

- Trinity

## Downtown

- Trinity/San Jacinto

## Campus

- San Jacinto

## Highland

- Red River/Airport (east)
- Red River/I-35

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Final Alternatives

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Final Alternatives

JanuaryFebruaryMarchAprilMayJune

Preliminary Alternatives

Service Alternatives

Mode Alternatives


Route Alternatives

SCREEN

Final Alternatives

EVALUATE

Locally Preferred Alternative (LPA)

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## Final Service Profile

Recommended  
Service Profile

Medium  
Reliability  
Medium-High  
Frequency  
Medium-High  
Stop Spacing  
Medium  
Speed

### Reliability

Mostly Dedicated

Mixed Traffic

Transit Priority/  
Pre-emption

Dedicated  
Guideway

Separated  
Guideway

Fully Separated  
Guideway

### Frequency

10 - 15

5 minutes

60 minutes

### Stop Spacing

½ - 1 mile

< ¼ mile

> 5 miles

### Speed

20-30 avg.

10 mph

55 mph maximum (including stops)

60 mph

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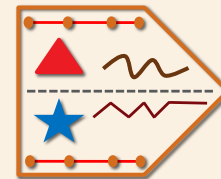
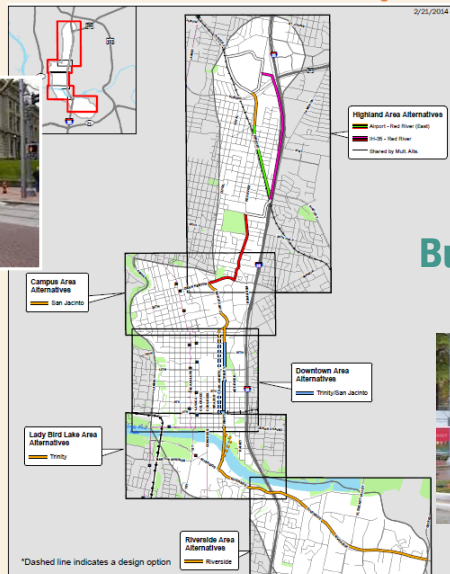
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## Final Alternatives



Urban Rail



Bus Rapid Transit  
(dedicated)



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# 7 Next Steps



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## 7 Next Steps

- Define Final Alternatives
  - Typical Sections (side vs center), Stop Locations, Grade Separation needs
  - Quantities/Cost Estimates
  - Operating Plan – peak/off-peak frequencies, hours/days of operation, fleet size
  - Maintenance Facility Needs
- Develop Evaluation Methodology
- Begin Evaluation of Final Alternatives



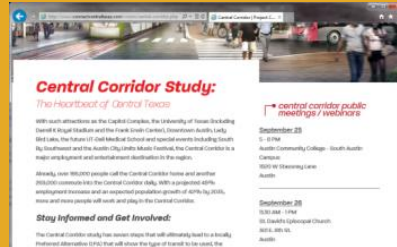
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# THANK YOU

**More Information:**

**Project Connect &  
Central Corridor HCT Study**  
[projectconnect.com](http://projectconnect.com)



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