



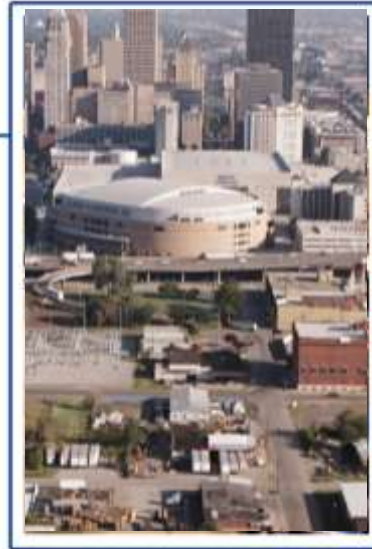
ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS

JACOBS

**Advisory Committee
Meeting No. 3**

Tier 2 Site Evaluation

April 20, 2011



Intermodal Transportation Hub Study

for Central Oklahoma

Agenda



- Team Introductions
- Recap of Tier 1 Site Analysis
- Capacity & Operations Analysis
- Facility Program
- Review of Tier 2 Sites
 - Site A (1 & 2)
 - Site B (3,5 &6)
 - Site C (8)
- Tier 2 Site Evaluation Criteria and Scoring
- Recommended Site
- Discussion and Next Steps

Project Vision

“Create a plan for a new transportation center and gateway for Oklahoma City and the Region that promotes mobility, enhances the image of public transportation, and creates a catalyst for economic development”

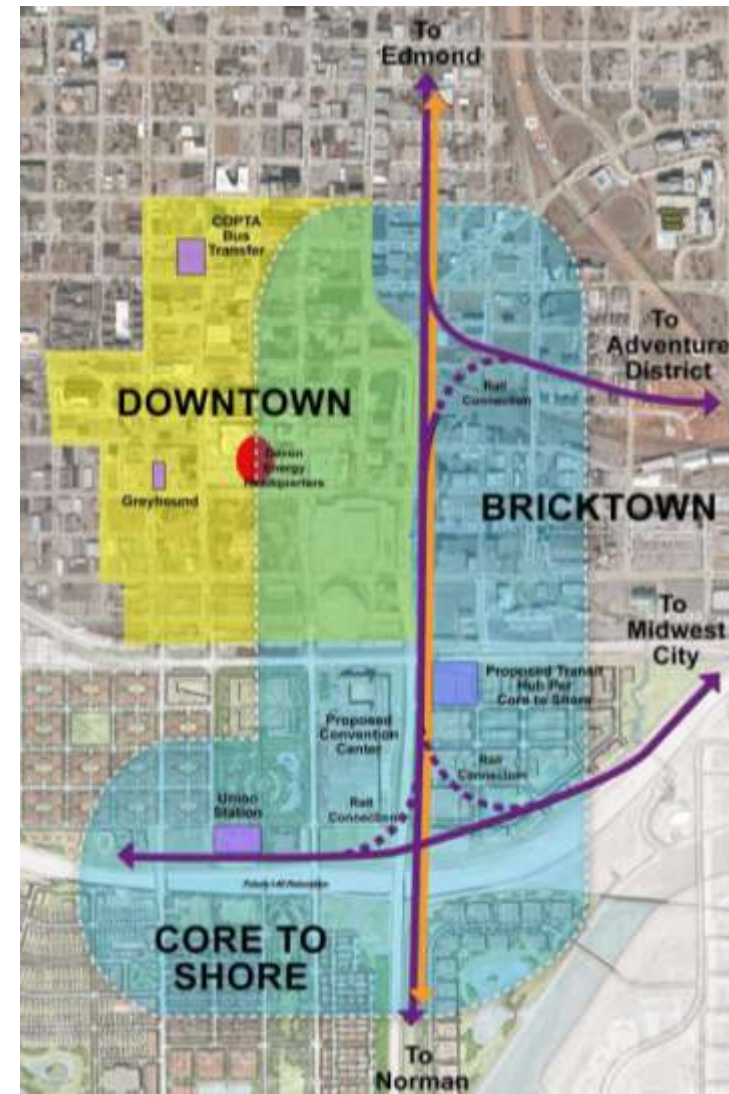
- Creation of Regional Transit Connections
- Interface of Transportation Modes
- Enhancement of Urban Development
- Gateway to the City and Region
- Catalyst for Revitalization



Project Vision

- Provide Regional Connections
- Link Transit to Community
- Enhancing Economic Development

The downtown transit hub will become the single identifiable project that links all transportation modes and will become the marketable vision of the transit system.



Opportunities and Constraints



- **Grade Separations**
- **Elevated Track Structures**
- **Connectivity**
 - Convention Center
 - Downtown/Bricktown
 - Core to Shore
 - Streetcar
- **Joint Development / TOD Opportunities**
- **Passenger Rail & Freight Operations**



Why an Intermodal Center



- Interconnectivity Between Transit Modes
 - Commuter Rail
 - Streetcar
 - Local and Intercity Bus
 - Local Shuttle Services / Taxi
 - Future High Speed Rail
 - Pedestrians / Bicycles
 - Improved Access
- Improved Passenger Service / Amenities
- “Last Mile” Distribution System
- Office / Event Space
- Community Services
- Transit Related Retail
- Mixed Use Development



Tier 1 Site Analysis

Tier 1 Site Locations

A

1. North Bricktown Parking Lot
2. "Buffalo Statue" site

B

3. Santa Fe Station
4. Cox Convention Center (redevelop east "end")
5. Parking Lot in Bricktown North of Reno at RR
6. Parking Lot in Bricktown South of Reno at RR
7. East Side of "Central Park" (OGE Substation)

C

8. "Lumber Yard" site
9. Union Station
10. "Pull-A-Part" site



Capacity and Operations Analysis



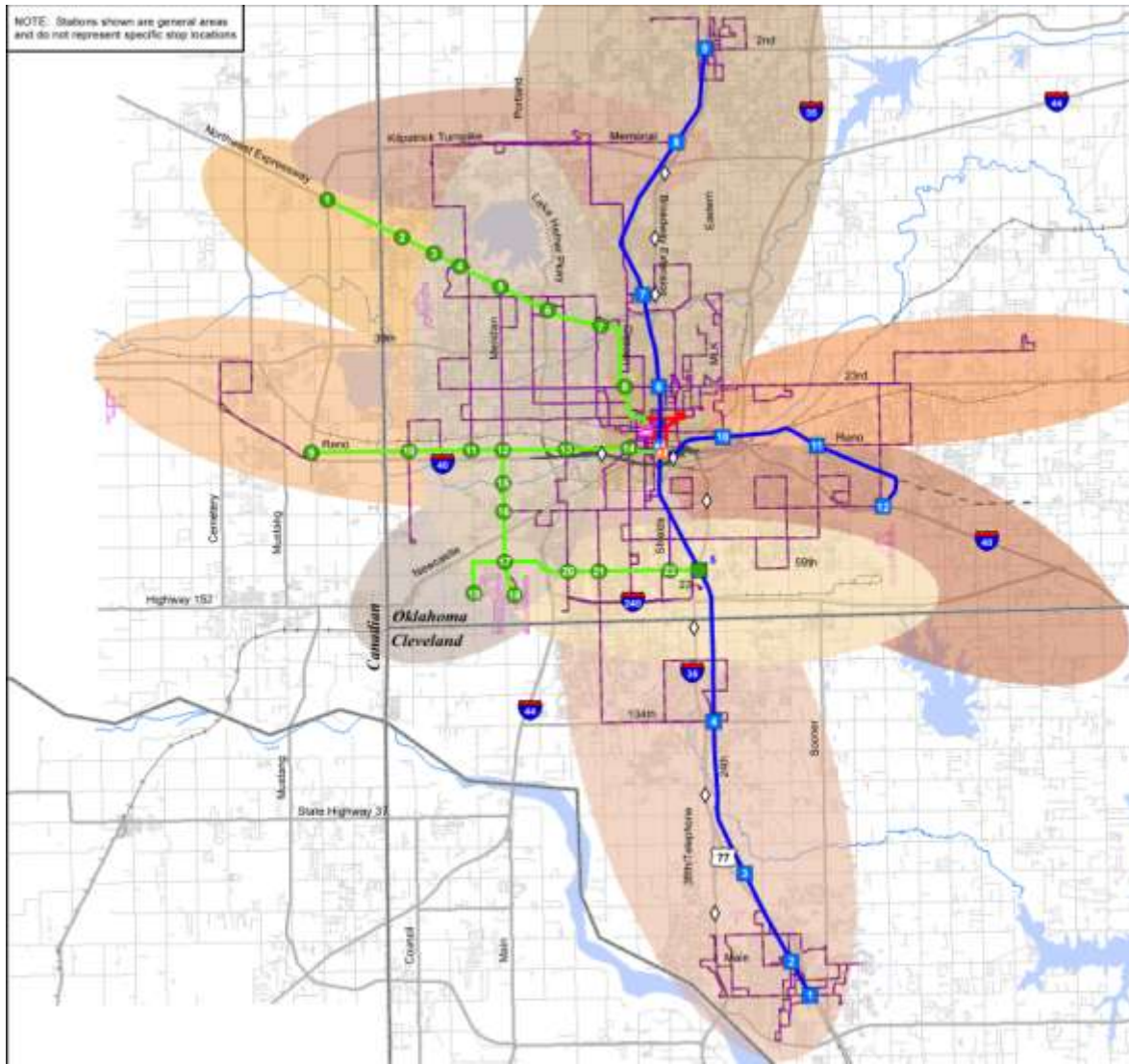
Key Factors Impacting Capacity & Operations

- Transit ridership forecasts
- How ridership translates into Hub patrons/users
- How rail transit operations affect the Hub's program and facility requirements

Capacity and Operations Analysis



2035 Transit System Plan



Proposed Corridors

Commuter Rail

- Edmond / Norman
- Edmond / Midwest City
- Norman / Midwest City
- Edmond / Yukon (Future)

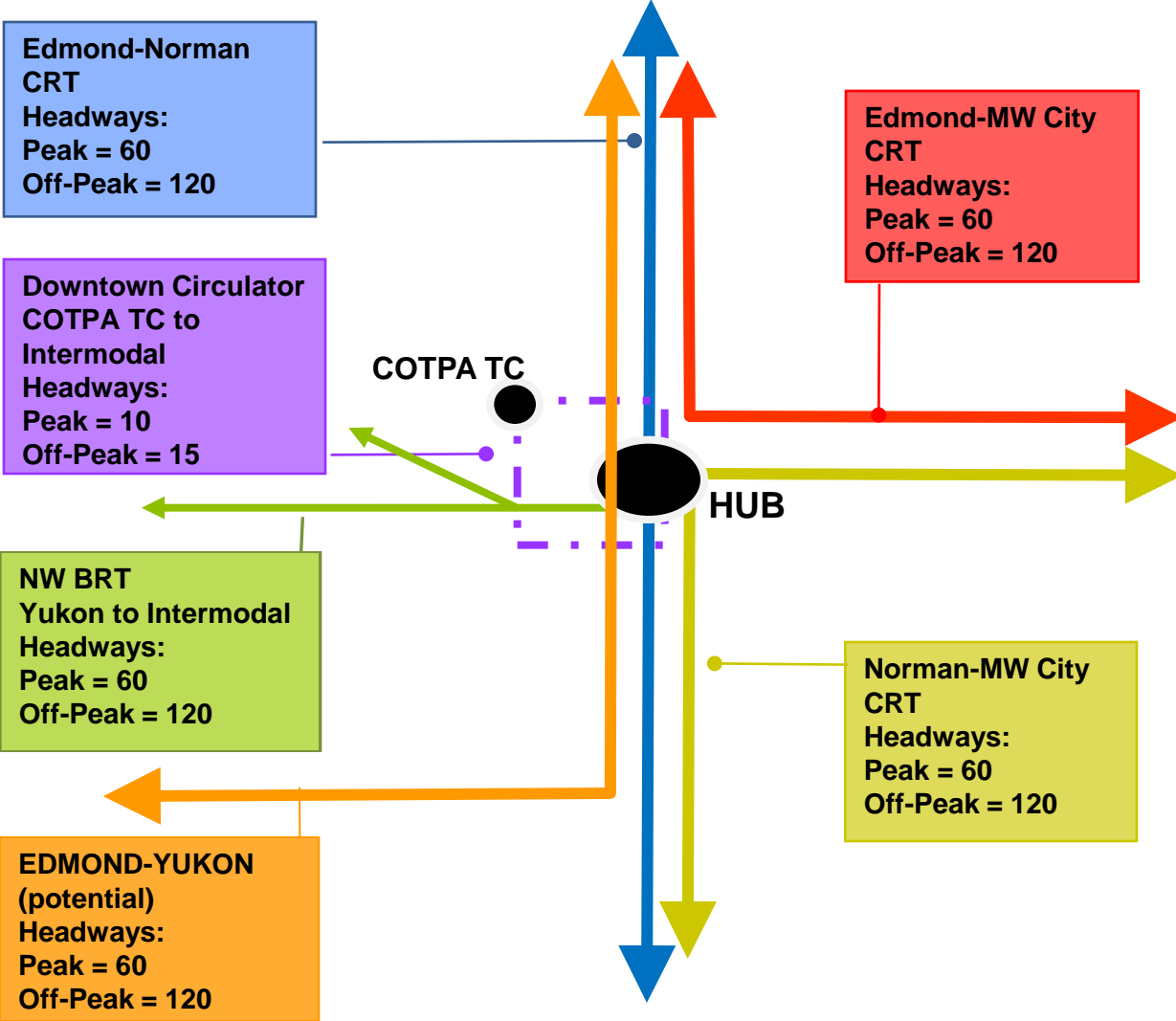
Bus Rapid Transit

- Reno / Downtown (Hub)
- Northwest / Downtown (Hub)
- Will Rogers Airport
- 54th Street

Capacity and Operations Analysis



2035 Commuter Rail Operations Plan



Capacity and Operations Analysis



How many riders can we expect with the future commuter rail system?

Peak Corridor (Line) Load

2035 Daily Corridor Riders (Line Load)	6400 PAX
Edmond / Norman	2650 PAX
Edmond / Midwest City	1500 PAX
Norman / Midwest City	2250 PAX
Maximum Passengers per Train per Hour	125 PAX
Based on Peak 5.5 hour Peak Period	

Capacity and Operations Analysis



U.S Commuter Rail Ridership by Location

Rank	System	Major Cities Served	Ridership (average weekday)	Date	Route miles	Opened
1	Long Island Rail Road	New York	330,500	Q3 2010	700	1836
2	Metra	Chicago	306,400	Q3 2010	495	1984
3	New Jersey Transit Rail	New York / Philadelphia	291,428	FY 2009	951	1983
4	MTA Metro-North Railroad	New York	283,500	Q3 2010	384	1983
5	MBTA Commuter Rail	Boston	128,500	Q3 2010	368	1973
6	SEPTA Regional Rail	Philadelphia	120,700	Q3 2010	289	1983
7	Caltrain	San Francisco / San Jose	45,000	Q2 2010	77	1987
8	Metrolink	Los Angeles	42,000	Q3 2010	512	1992
9	MARC Train	Baltimore / Washington, D.C.	32,100	Q3 2010	187	1984
10	Virginia Railway Express	Washington, D.C.	17,300	Q3 2010	90	1992
11	NICTD South Shore Line	Chicago	13,300	Q3 2010	90	1903
12	SERTA Tri-Rail	Miami	11,800	Q3 2010	72	1987
13	<i>Sounder Commuter Rail</i>	<i>Seattle/Tacoma</i>	<i>8,700</i>	<i>Q3 2010</i>	<i>80</i>	<i>2000</i>
14	<i>Trinity Railway Express</i>	<i>Dallas / Fort Worth</i>	<i>8,100</i>	<i>Q3 2010</i>	<i>34</i>	<i>1998</i>
15	<i>UTA FrontRunner</i>	<i>Salt Lake City</i>	<i>6,400</i>	<i>Q3 2010</i>	<i>44</i>	<i>2008</i>
16	Capitol Corridor	Sacramento / San Jose	5,300	Q2 2010	168	1998
17	NCTD Coaster	San Diego	5,100	Q3 2010	41.1	1995
18	New Mexico Rail Runner	Albuquerque	4,100	Q3 2010	97	2006
19	Northstar Line	Minneapolis	2,600	Q3 2010	40	2009
20	Altamont Commuter Express	San Jose	2,500[3]	Q4 2009	86	1998
21	Shore Line East	New Haven	2,200	Q3 2010	59	1990
22	Westside Express Service	Beaverton	1,400	Q3 2010	15	2010
23	Music City Star	Nashville	900	Q3 2010	32	2006
24	Capital MetroRail	Austin	800	Q3 2010	32	2010

Source: American Public Transportation Association's Ridership Reports Statistics
Third quarter of 2010, unless otherwise noted.

Indicates Comparable Cities by Population / Mileage

OKC Fixed Guideway Distance
Norman to Edmond
Oklahoma City to MW City

35 miles

8 miles

43 miles

Capacity and Operations Analysis



How many of those future commuter rail riders will utilize the hub?

Service Frequency

Peak Hours (7AM - 9AM / 4PM – 6 PM)

60 Minutes

Off-Peak Hours (9AM - 4PM / 6 PM – 10PM)

120 Minutes

2035 Daily Boardings / Alighting at OKC Hub

1910 PAX

**BUS / BRT / Streetcar / Walkup
(Transfers to Rail)**

Bus / Streetcar Daily Transfers

300

Walk

1550

Drive

60

Total

1910 PAX

Facility Program



How do the ridership forecasts and potential patrons at the Hub translate into a Facility Program (i.e. Hub building and rail yard)?

Factors influencing the program include:

- Potential rail vehicles and their capacity
- Potential train schedules
- Anticipated passengers at Hub during peak hours
- Platform Requirements
- Parking Requirements
- Miscellaneous Modes Requirements

Facility Program



Potential Commuter Rail Vehicles

**Push-Pull (Locomotive Powered)
Bi-Level Coach**

Manufacturer: Bombardier

Capacity: 150 (Seated)

Coach Length: 85'

Power Equipment Length: 65'

Currently in Use at:

Los Angeles Metrolink

DFW Trinity Railway Express

New Mexico Rail Runner

Seattle Sounder

Toronto Go Transit



Facility Program



Potential Commuter Rail Vehicles

**Diesel Multiple Unit (DMU)
Bi-level Coach**

**Manufacturer: US Railcar
(formerly Colorado Railcar)**

Capacity: 188 (Seated)

Coach Length: 89'

Currently in Use at:

Florida TriRail

Alaska Railroad

Westside Express, Beaverton, OR

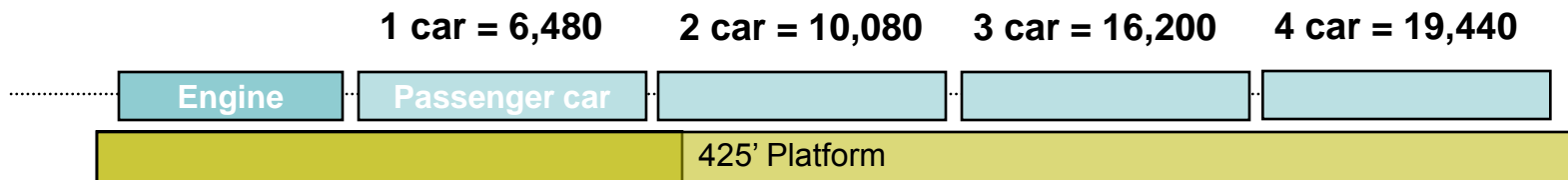


Facility Program

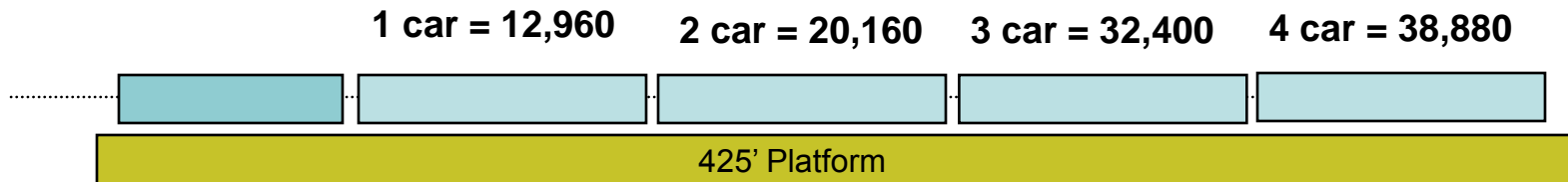


Ridership Capacity Study

Daily Line Capacity @ 60 Minute Peak / 120 Minute Off-peak



Daily Line Capacity @ 30 Minute Peak / 60 Minute Off-peak



Includes Peak and Off Peak Load Factors
2,3 and 4 cars at Peak Period only

Program Requirements



Weekday Train Schedules (Departure Times)

Amtrak

1 Train per Day.	8:25 AM
Additional Train per Day 2013	5:25 PM

High Speed Rail

6 Trains per Day	6:00 AM	6 Trains per Day	7:15 AM
Departures	9:30 AM	Arrivals	10:45 AM
	1:30 PM		2:45 PM
	3:50 PM		5:05 PM
	6:40 PM		6:30 PM
	10:00 PM		9:50 PM

Commuter Rail

60 min peak - 120 min off-peak - 11 Trips per day

Edmond / Norman	Norman / Midwest City	Edmond / Midwest City	Edmond / Yukon (potential)
7:00 AM	HSR @ 7:15	7:25 AM	7:40 AM
8:00 AM		8:15 AM	8:30 AM
9:00 AM		9:15 AM	9:45 AM
11:00AM		11:15 AM	11:30 AM
1:00 PM		1:15 AM	1:45 AM
3:00 PM		3:15 PM	3:30 PM
4:00 PM		4:15 PM	4:30 PM
4:55 PM	HSR @ 5:05	5:15 PM	5:30 PM
6:00 PM		6:15 PM	6:50 PM
8:00 PM		8:15 PM	8:30 PM
10:10 PM	HSR @ 10:00	10:20 PM	10:30 PM
			10:45 AM
			10:00 AM
			11:45 AM
			2:00 PM
			4:00 PM
			4:45 PM
			5:45 PM
			7:00 PM
			8:45 PM
			10:45 PM

Facility Program



Peak Hour Ridership (Determines Facility Space Needs)

Commuter Rail

Daily Boardings (1910 use 2000)	2000 PAX
2035 Peak Hour Boardings / Alighting at OKC Hub (2000 X 25%)	500 PAX
Peak Boardings per Train (500 PAX Peak Hr / 3 Trains / 3 per Hour)	56 PAX

Amtrak

2035 Daily Boardings	340 PAX
Boardings per Train (2 per day / AM Peak)	170 PAX

High Speed Rail

2035 Daily Boardings	2880 PAX
Boardings per Train (6 per day / AM Peak)	<u>480 PAX</u>

Total Peak Boardings at OKC Hub

706 PAX

Facility Program



Platform and Facility Requirements

Commuter Rail

350' x 26' Platform (3 car train)

Amtrak

1200' x 20' Platform (Existing)

High Speed Rail

900' x 26' Platform (Possibly Shared with Commuter Rail)

Facility

34,000 SF (Operations, Ticketing, Waiting, Amenities, Retail)

Facility Program



Parking Requirements

Commuter Rail (Per Ridership Model)	60
Amtrak Based on 50% of Daily Riders (340 x .50)	170
High Speed Rail Based on 20% of Daily Riders	586
Facility Parking	<u>4</u>
Total Parking Requirement	873 Spaces

Facility Program



Bus / Streetcar / Taxi Requirements

BRT / Local Bus

Buses Per Hour	15
Bus Bays Needed:	6

Intercity / Private Bus

Bus Bays Needed:	?
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Streetcar

Stops per Hour	6
Streetcar Bays Needed	1

Taxi / Shuttles (spaces)	2
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Tier 2 Site Evaluation



With this understanding of how many riders and patrons will pass through the Hub on a daily basis, which of the three shortlisted sites rank best in accommodating the physical, functional and urban design needs and goals of the Hub?

- Site A (North Bricktown Parking Lot, sites 1 & 2)
- Site B (Santa Fe Station and Reno Parking lots, sites 3, 5 and 6)
- Site C (Lumber Yard, site 8)

Tier 2 Site Evaluation



Evaluation Criteria

- **Multimodal Access:** ability to provide a balance of access by all modes including streetcar, bus, bike, and commuter and high speed regional rail
- **Site Configuration:** ability to accommodate program components including platforms, facility requirements, parking and access
- **Economic Development:** ability to provide a combination of development potential on vacant or underutilized parcels in a desirable, walkable location
- **Urban Form:** appropriate density, walkable environment and transit supportive zoning
- **Environmental:** minimizes displacements, noise impacts and historic property impacts

Tier 2 Site Evaluation



Intermodal Transportation Hub Study			
Evaluation Matrix		Tier 2 Framework Components	
Site No. _____			
Blank	Evaluation Criteria	Notes	Ranking
Multimodal Access	Proximity to Rail Modes	Restricted by track curvature	
	Accessibility by Streetcar	One to two blocks way	
	Proximity to Major Thoroughfares	Good access via Sheridan	
	Proximity to Primary Destinations	Disconnected from Downtown	
	Pedestrian / Bicycle Accessibility	Removed from primary downtown street grid	
Site Configuration	Transit Program Accommodation	Requires modification to existing guideway structure	
	Parking / Access	Potential use of Santa Fe Garage. Access restricted from north	
	Thoroughfare/Traffic Impacts	Current infrastructure sufficient	
	Visibility / Image	Limited visibility from primary thoroughfares	
Economic Development	Transit Supportive Land Uses	Limited by railroad ROW and residential development	
	Redevelopment Potential	Potential infill development	
	Civic Presence	Location not prominent	
Urban Form	Neighborhood Compatibility	Compatible w/ existing - current railroad uses	
	Land Use Plan Compatibility	Mixed use and multifamily	
	Appropriate Density	Density limited by current residential development	
	Walkable Environment	Street grid not complete	
	Transit Supportive Zoning	Current mixed use zoning compatible but not transit specific	
Environmental	Displacement of Businesses	Primarily public property	
	Historic Property Impacts	None anticipated	
	Noise Sensitivity	Current railroad use	
	Property Availability	Primarily public property	

Tier 2 Site Evaluation



Evaluation Criteria Scoring Methodology

Scoring Methodology:

- (1) Poor:** Does not meet minimum requirements for respective framework component without significant infrastructure modifications
- (2)**
- (3) Good:** Meets minimum requirements or allows for future accommodation of framework component with minor modifications
- (4)**
- (5) Excellent:** Provides current accommodation of framework component without need for significant alterations or improvements

Each component is assigned a ranking and the resulting average score is determined for each location.

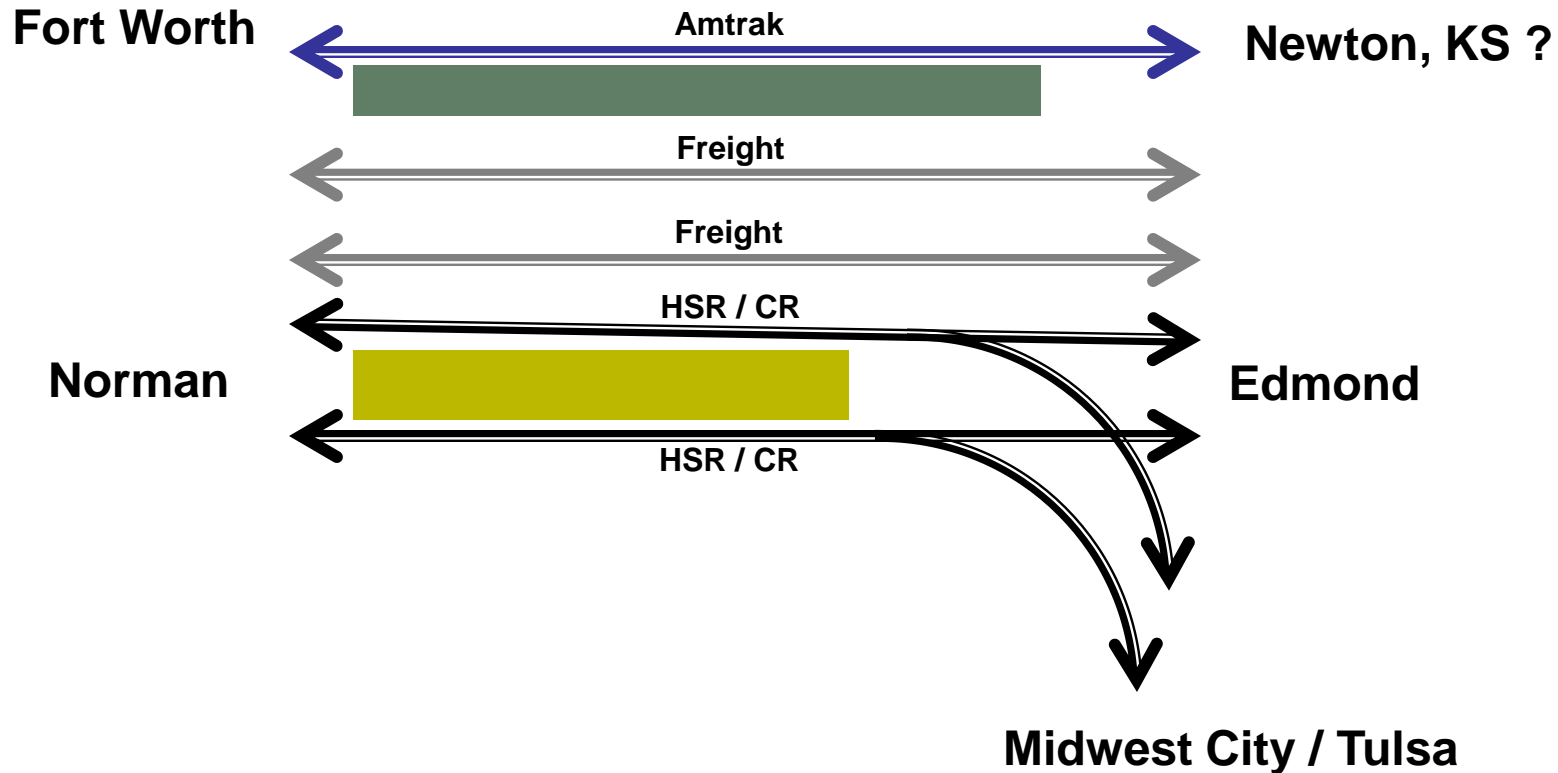
Tier 2 Site Evaluation

Site A (1 & 2) Evaluation



Tier 2 Site Evaluation

2035 Transit Operations Model



Tier 2 Site Evaluation



Site A – Evaluation of Rail Conflicts



Tier 2 Site Evaluation

Site A – Scoring Evaluation



Evaluation Criteria		Notes	Ranking
Multimodal Access	Proximity to Rail Modes	Restricted by track curvature	1
	Accessibility by Streetcar	One to two blocks way	2
	Proximity to Major Thoroughfares	Good access via Sheridan	2
	Proximity to Primary Destinations	Disconnected from Downtown	3
	Pedestrian / Bicycle Accessibility	Removed from primary downtown street grid	3
Site Configuration	Transit Program Accommodation	Requires modification to existing guideway structure	1
	Parking / Access	Potential use of Sante Fe Garage. Access restricted from north	3
	Thoroughfare/Traffic Impacts	Current infrastructure sufficient	2
	Visibility / Image	Limited visibility from primary thoroughfares	1
Economic Development	Transit Supportive Land Uses	Limited by railroad ROW and residential development	2
	Redevelopment Potential	Potential infill development	2
	Civic Presence	Location not prominent	1
Urban Form	Neighborhood Compatibility	Compatible w/ existing - current railroad uses	2
	Land Use Plan Compatibility	Mixed use and multifamily	4
	Appropriate Density	Density limited by current residential development	3
	Walkable Environment	Street grid not complete	2
	Transit Supportive Zoning	Current mixed use zoning compatible but not transit specific	4
Environmental	Displacement of Businesses	Primarily public property	4
	Historic Property Impacts	None anticipated	5
	Noise Sensitivity	Current railroad use	3
	Property Availability	Primarily public property	5
Total			55

Tier 2 Site Evaluation



Site C (8) Evaluation



Tier 2 Site Evaluation

Site C – Scoring Evaluation



Evaluation Criteria		Notes	Ranking
Multimodal Access	Proximity to Rail Modes	Requires expansion of elevated ROW	3
	Accessibility by Streetcar	Pogntnetially across street at New Boulevard)	3
	Proximity to Major Thoroughfares	Good access via Sheridan	4
	Proximity to Primary Destinations	Disconnected from Downtown	3
	Pedestrian / Bicycle Accessibility	Removed from primary downtown street grid. Depressed roadway not ideal	2
Site Configuration	Transit Program Accommodation	Requires modification to existing guideway structure	2
	Parking / Access	Access fron New Boulevard at Oklahoma	3
	Thoroughfare/Traffic Impacts	Proposed infrastructure sufficient	4
	Visibility / Image	Limited visibility from primary thoroughfares. Hidden from Downtown & Gaylord	2
Economic Development	Transit Supportive Land Uses	Current industrial uses (Lunberyarde / Cotton Gin)	2
	Redevelopment Potential	Potential infill development @ Cotton Gim but potential limited by	4
	Civic Presence	Location not prominent	2
Urban Form	Neighborhood Compatibility	Compatible w/ existing - current railroad uses / industrial	5
	Land Use Plan Compatibility	Prim arilyh industrial	3
	Appropriate Density	Density limited by current indusgtrial uses	2
	Walkable Environment	Street grid not complete. Limited by depressed roadway	1
	Transit Supportive Zoning	Current mixed use zoning compatible but not transit specific	4
Environmental	Displacement of Businesses	Lumberyard displacement	4
	Historic Property Impacts	None anticipated	5
	Noise Sensitivity	Current railroad / industrial use	5
	Property Availability	Requires purchase of lumber yard (available)	4
Total			67

Tier 2 Site Evaluation



Site B (3, 5 & 6) Evaluation



Tier 2 Site Evaluation



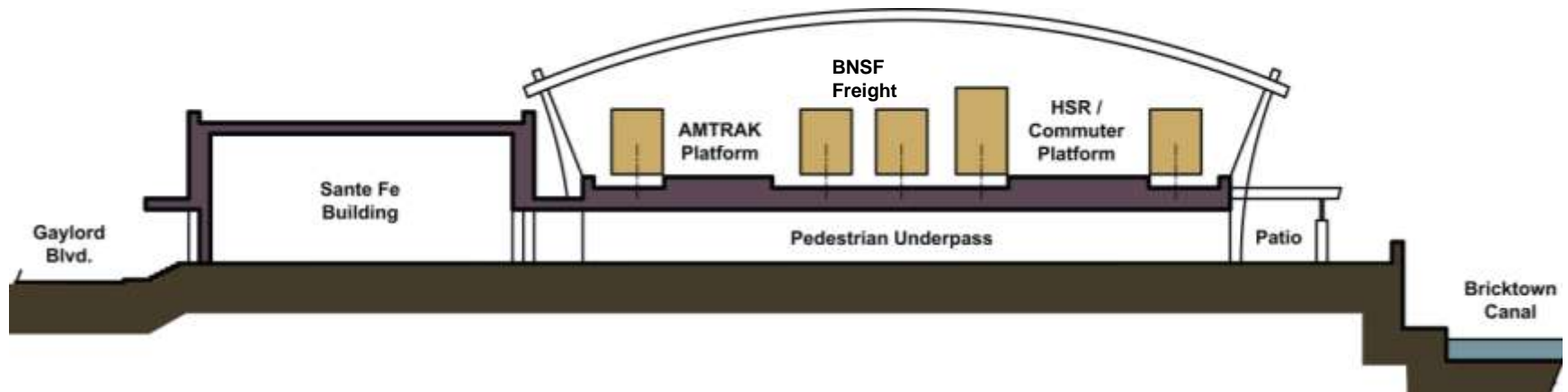
Site B – Concept Plan



Tier 2 Site Evaluation



Site B – Conceptual Cross Section



Tier 2 Site Evaluation



Site B – Overall Context Plan



Tier 2 Site Evaluation



Site B – Rail Expansion Capabilities



Tier 2 Site Evaluation

Site B – Scoring Evaluation

Evaluation Criteria		Notes	Ranking
Multimodal Access	Proximity to Rail Modes	Immediately adjacent to current station	5
	Accessibility by Streetcar	Immediately adjacent at Sheridan	4
	Proximity to Major Thoroughfares	Good access via Reno, Sheridan and Gaylord	5
	Proximity to Primary Destinations	Immediate proximity to downtown and Bricktown	5
	Pedestrian / Bicycle Accessibility	Good access via streetgrid	5
Site Configuration	Transit Program Accommodation	Meets requirements	4
	Parking / Access	Good access via Sheridan, Reno and Gaylord	4
	Thoroughfare/Traffic Impacts	Current infrastructure sufficient	5
	Visibility / Image	Limited by Current Cox Center	4
Economic Development	Transit Supportive Land Uses	Mixed use / office / entertainment	4
	Redevelopment Potential	Good infill potential	5
	Civic Presence	Good axial relationship to downtown and Bricktown	5
Urban Form	Neighborhood Compatibility	Current railroad use	5
	Land Use Plan Compatibility	Compatible with current planning	4
	Appropriate Density	Medium to high density but with vacant lots	4
	Walkable Environment	Good via streetgrid	5
	Transit Supportive Zoning	Current mixed use zoning compatible but not transit specific	4
Environmental	Displacement of Businesses	Existing Sante Fe Retail displaced	4
	Historic Property Impacts	Coordination with SHPO required for Santa Fe redevelopment	4
	Noise Sensitivity	Current railroad use	5
	Property Availability	Requires purchase of Santa Fe terminal	4
Total			94

Tier 2 Site Evaluation



Site Evaluation Summary

Site Location	A	B	C
Multimodal Access	11	24	15
Site Configuration	7	17	11
Economic Development	5	14	8
Urban Form	15	22	15
Environmental	17	17	18
Total	55	94	67

Tier 2 Site Evaluation Recommendation



Site B provides:



- Adequate transit capacity through 2035 and beyond
- Economic development opportunities that can link Downtown to Bricktown
- Civic presence and high visibility to promote rail transit across the region
- A new pedestrian and urban linkage from Downtown to Bricktown

Next Steps



- **Refine the facility program and transit provider participation and requirements**
- **Develop image and character of the facility through architectural and urban design studies**
- **Develop anticipated capital costs of the facility**
- **Develop a phasing plan**
- **Develop strategies for implementation and funding**

Imagery - Canopies



Imagery - Canopies



Imagery – Urban Plaza



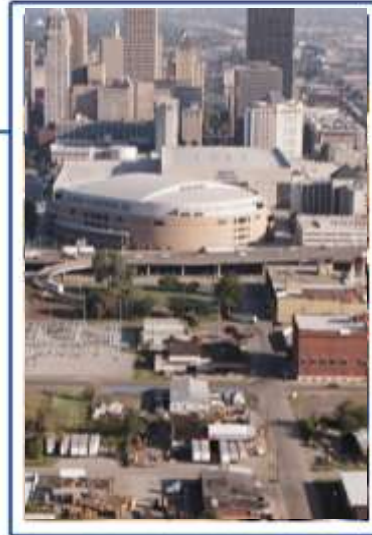
Imagery – Transit Hall





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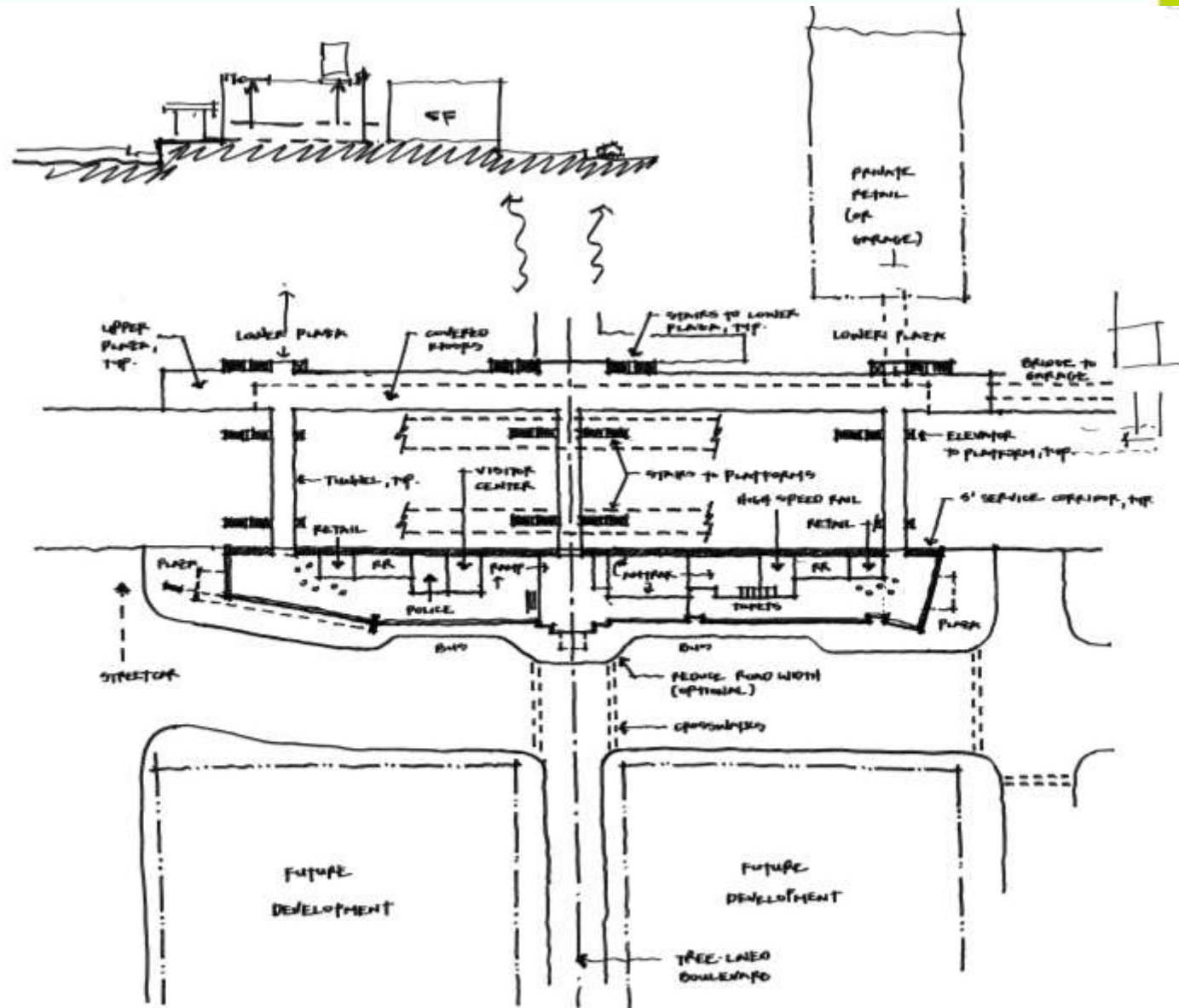


Intermodal Transportation Hub Study

for Central Oklahoma

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Site B – Transit Hall Floor Plan Concept



Site C – Transit Hall Floor Plan Concept

