



DART 2040 Transit System Plan

Transit Finance Learning Exchange
Fall 2017 Workshop

October 30, 2017

Kay Shelton, Capital Planning



Agenda

- Transit System Plan Background
- Comprehensive Operations Analysis
- Priority Capital Expansion Program
- Long Range Opportunities
- Highlights of Draft 2040 Transit System Plan



Transit System Plan Background

What is the Transit System Plan?

- Long-range element of DART Service Plan
- Guide for future capital and operating programs
- Programming tool that feeds into 20-Year Financial Plan
- Policy guidance
- Vision for future – our message to the region



2030 Transit System Plan (2006)



Rail

- Rail Line & Station (Existing/Committed)
- Express Rail
- Rapid Rail



Bus

- Express Bus
- Enhanced Bus
- Rapid Bus



Managed HOV Lanes

- DART Participation
- No DART Participation



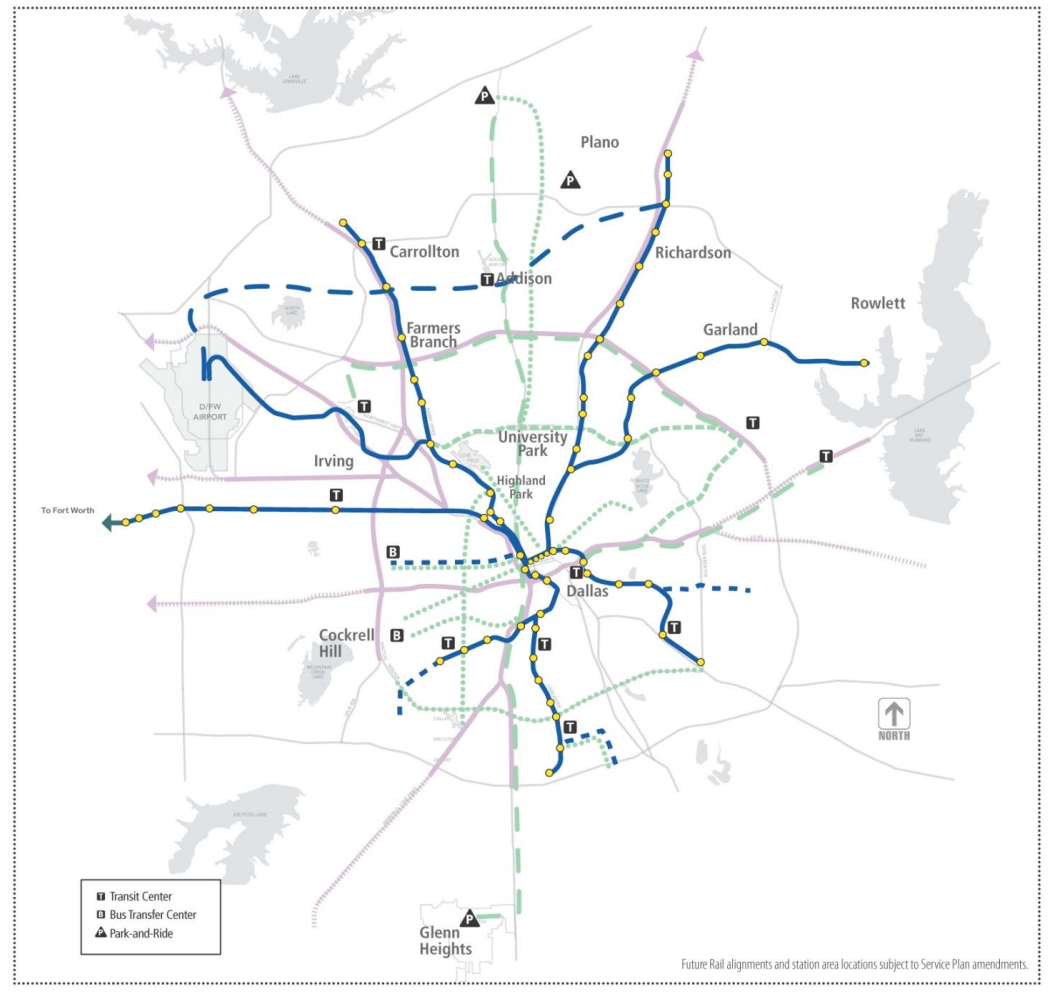
Paratransit

(service provided systemwide)



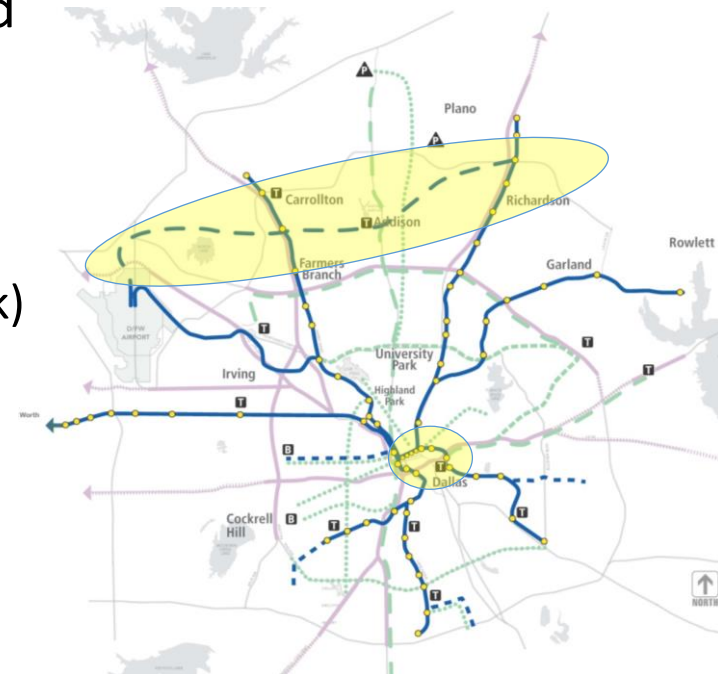
Systemwide Mobility

- Intelligent Transportation Systems
- Transportation System Management
- Travel Demand Management
- Safety and Security
- Passenger Facilities
- Bicycle/Pedestrian Integration
- System Accessibility



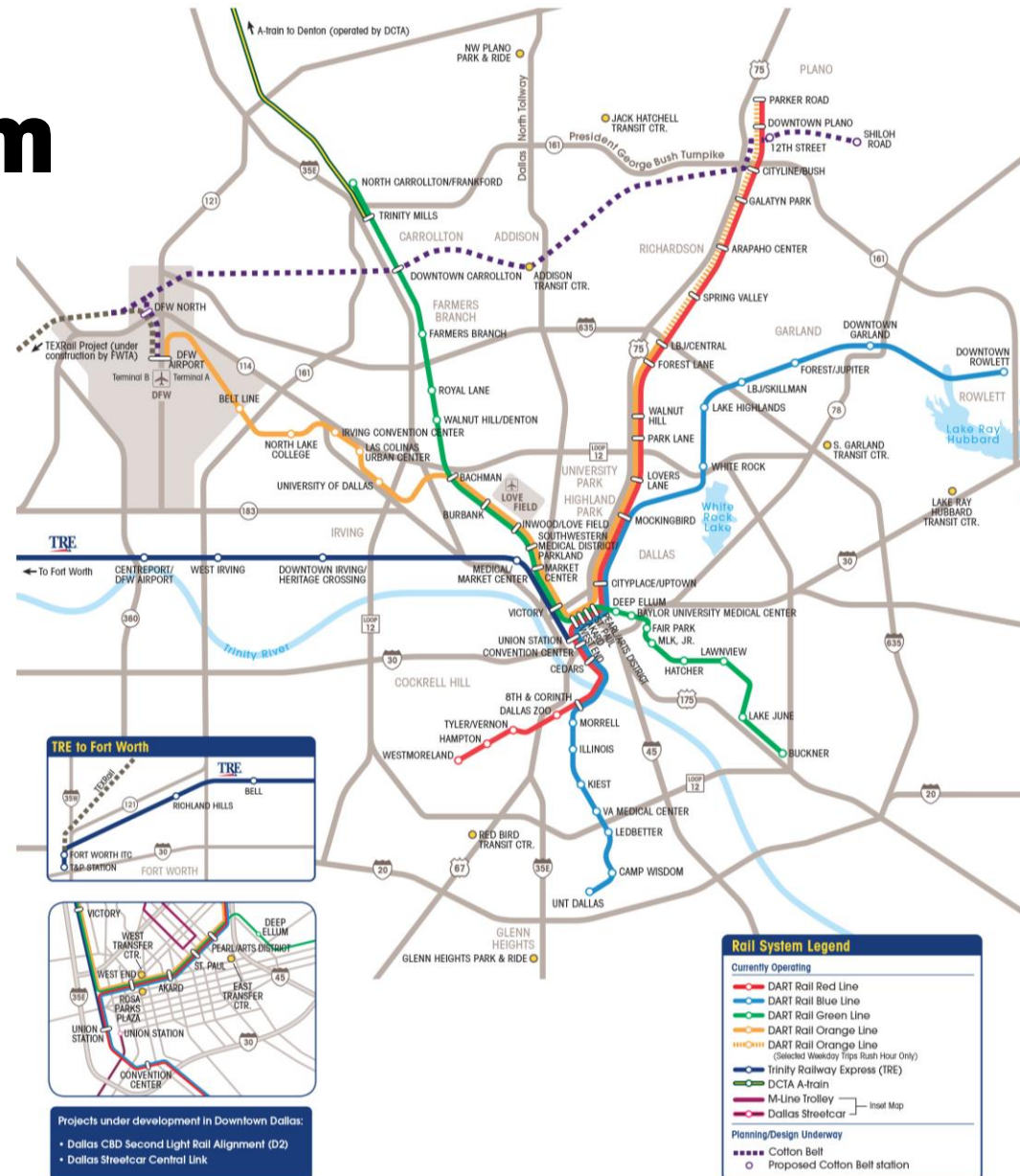
Changes after 2030 Plan Approval

- The recession led to deferral of all new 2030 bus/rail corridors, including D2 and Cotton Belt
- By FY15, some added to Financial Plan
 - Core Capacity Program of Projects (D2, Red/Blue Platforms, Streetcar Central Link)
 - Cotton Belt Corridor for year 2035
- FY17 included two major changes:
 - Redefine D2 as a subway
 - Move Cotton Belt from 2035 to 2022
- 2040 Plan reflects these changes and reassessed remaining 2030 corridors



Current System

- 93 miles Light Rail
- 64 Stations
- 34 mile TRE
- 150+ Bus Routes



Overview of Planning Process

PHASE 1



PHASE 2



- Phase 1 COA is complete
- Draft Bus Service Plan
- Implementation initiated
- Bus Service Plan is “living process”
- Longer range capital projects
- Regional opportunities
- Policy/Program areas
- Draft 2040 Transit System Plan

A yellow and white bus is parked on a city street. The bus has a large advertisement on its side featuring a woman's face. The number 41041 is visible on the front of the bus. In the background, there are several tall, modern skyscrapers with glass facades. The sky is blue with some clouds. The entire image has a yellow tint.

Overview of COA

Phase 1 – COA Overview

- The Comprehensive Operations Analysis was initiated in FY15 as Phase 1 of the 2040 Transit System Plan
- The process included extensive customer outreach to identify common themes to support COA Service Plan development

COA GOALS

- Increase route and system efficiency
- Better serve existing and emerging transit markets
- Improve ridership and productivity
- Ensure services are equitable
- Develop support through public and stakeholder input

Common Themes during COA

- Bus Network Design (simplify routes)
- Increase Frequency
- Late Night / Weekend Service
- Express Service (Bus and Rail)
- Crosstown Service (Bus, Cotton Belt)
- Specific Bus Route Ideas
- Service Area Expansion

COA Bus Service Plan Key Elements

- Core Frequent Route network
 - To strengthen local and crosstown routes
- High-frequency Rapid Ride network
- Crosstown / Airport Express network
- Other bus service improvements:
 - More consistent service headways (bus-rail connections)
 - Improved weekend service
 - More direct routing
 - Improved Uptown service
 - Expansion of On-Call Zones



COA Draft Bus Service Plan Executive Summary is on www.DART.org/2040

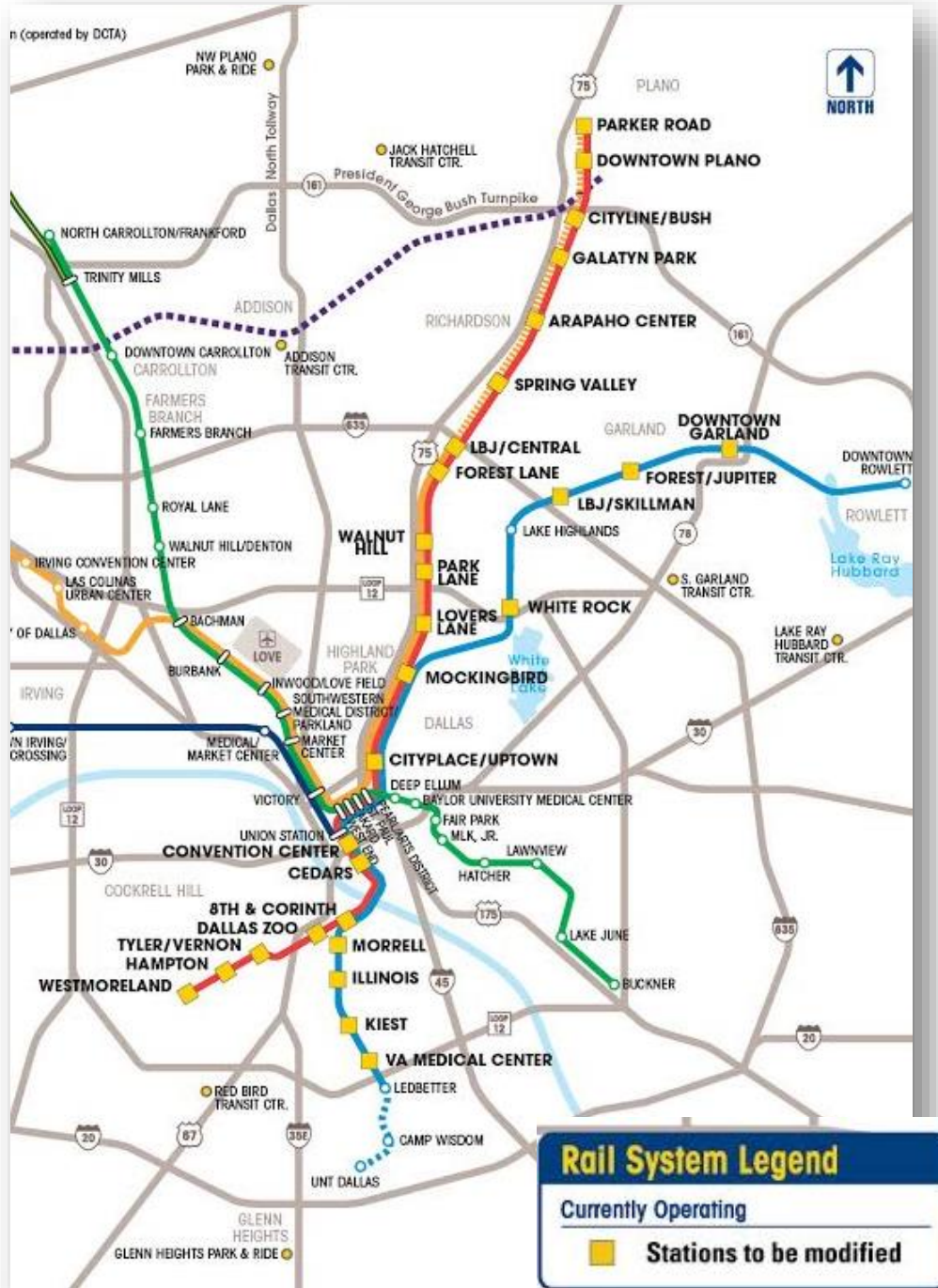
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Priority Capital Expansion Program

2040 Transit System Plan

Key Priorities through 2025

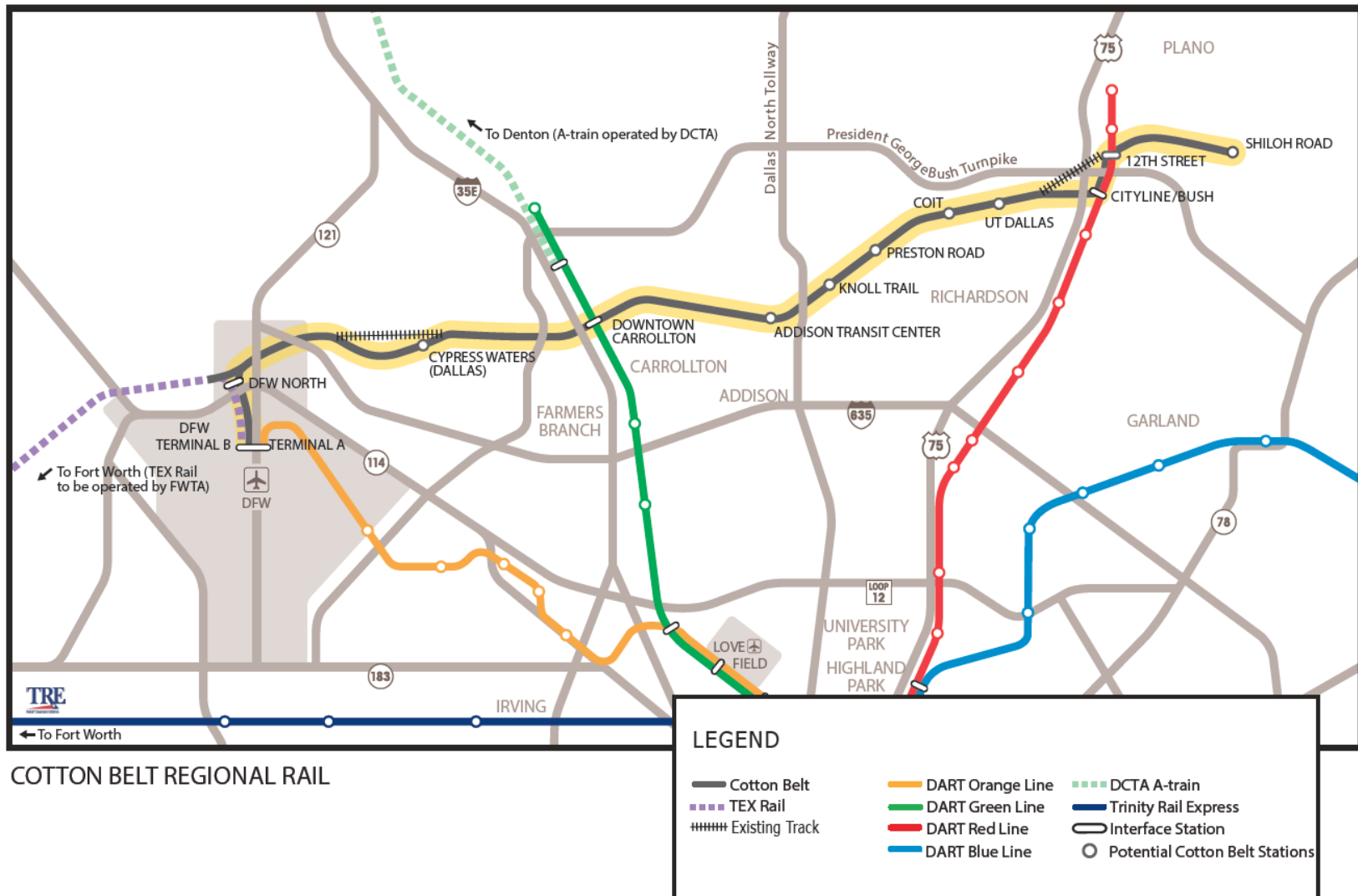
- Key priorities identified in FY18 20-Year Financial Plan
 - Red and Blue Line Platform Extensions
 - Cotton Belt
 - D2 Subway
 - Dallas Streetcar Central Link



Platform Extensions

- 28 Red & Blue stations can only accommodate 2-car trains
- Newer stations can accommodate 3-car trains
- CBD stations modified in 2008 - 2009
- \$120 M Project Estimate
 - \$60 M Texas Mobility Funds
 - \$58 M FTA Grant budgeted

Cotton Belt Corridor



Regional Rail Vehicle

- Regional Rail Vehicle
- Environmentally and Community Friendly
 - Tier 4 EPA Emissions Standards
- Meets FRA Standards
- Compatible with TEX Rail (FLIRT)
- Self-propelled



Funding Sources

Cotton Belt Potential Funding Sources

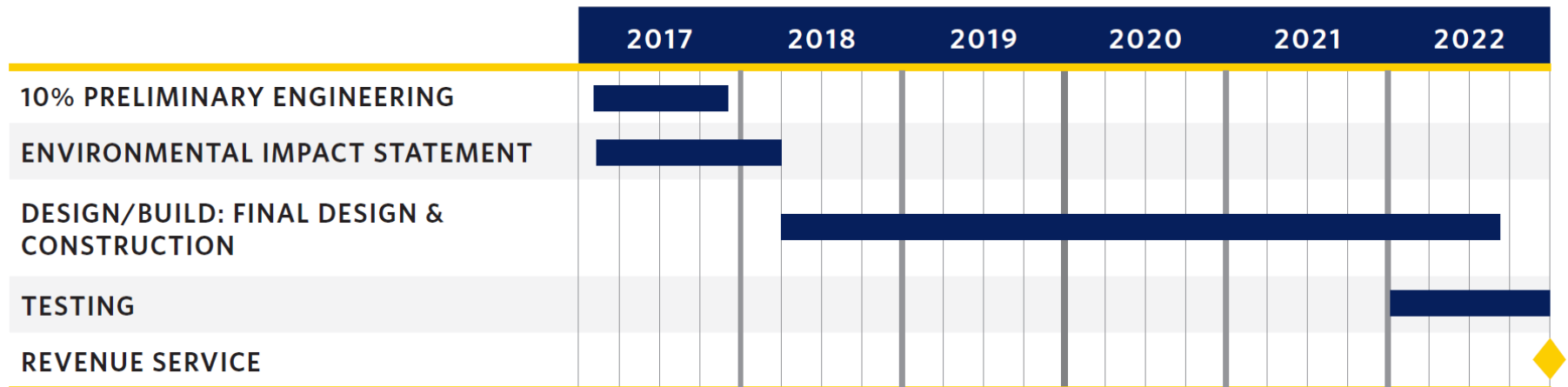
Source	Funding (000s)
RRIF Loan	\$908,000
FTA (CMAQ or STPMM)	100,000
FTA (Formula)	3,300
FTA (CMAQ)	36,000
Local *	<u>87,700</u>
Total	<u>\$1,135,000</u>

* Anticipated local sources may include a combination of the following:

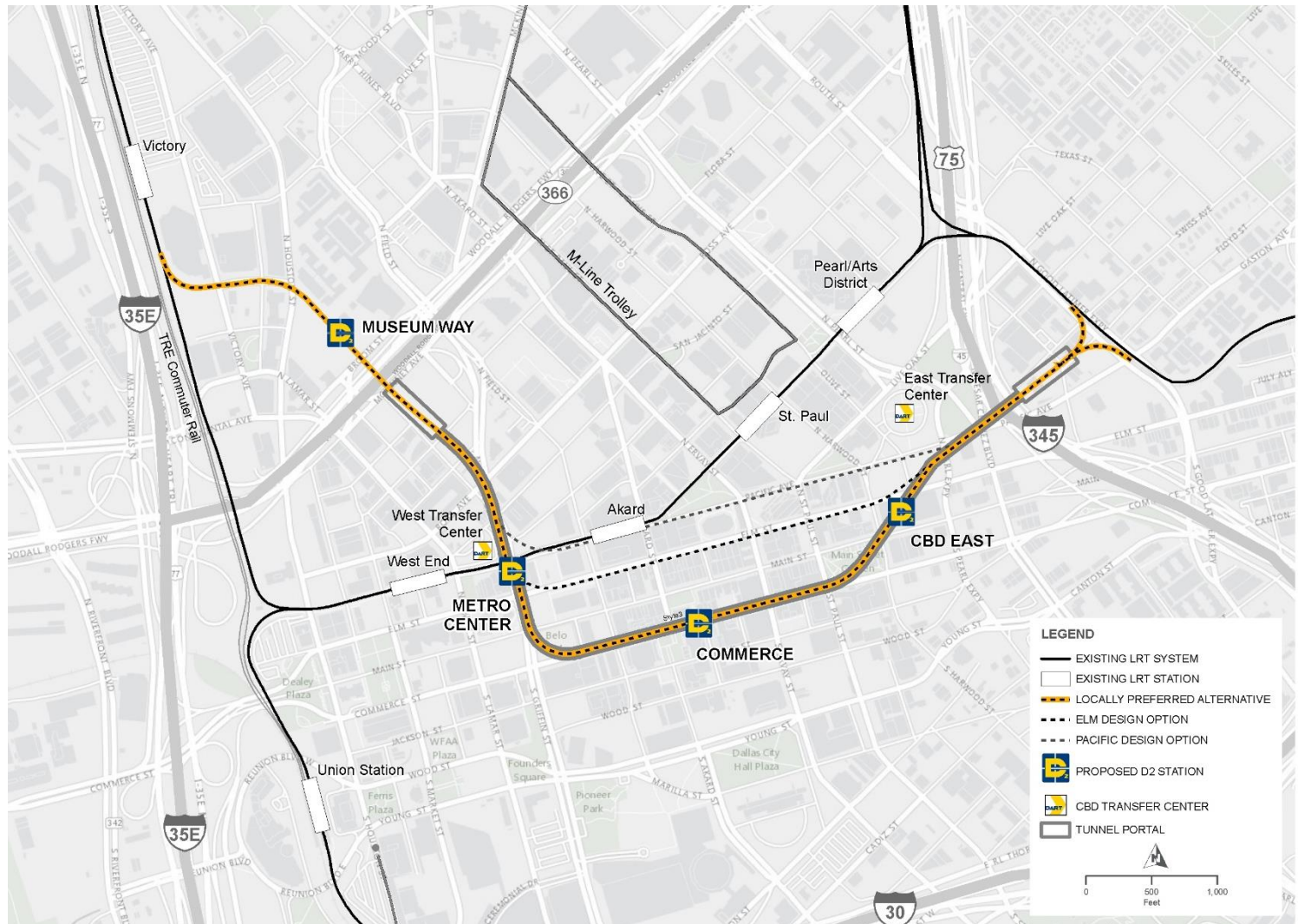
- DART cash contribution
- City of Plano (tax increment financing)
- City of Richardson (tax increment financing)
- City of Addison (cash contribution)
- City of Coppell (equivalent of 3/8 cent sales tax)
- Fare revenue
- Naming rights, advertising
- Other value capture sources

Project Schedule

COTTON BELT CORRIDOR Project Implementation Schedule

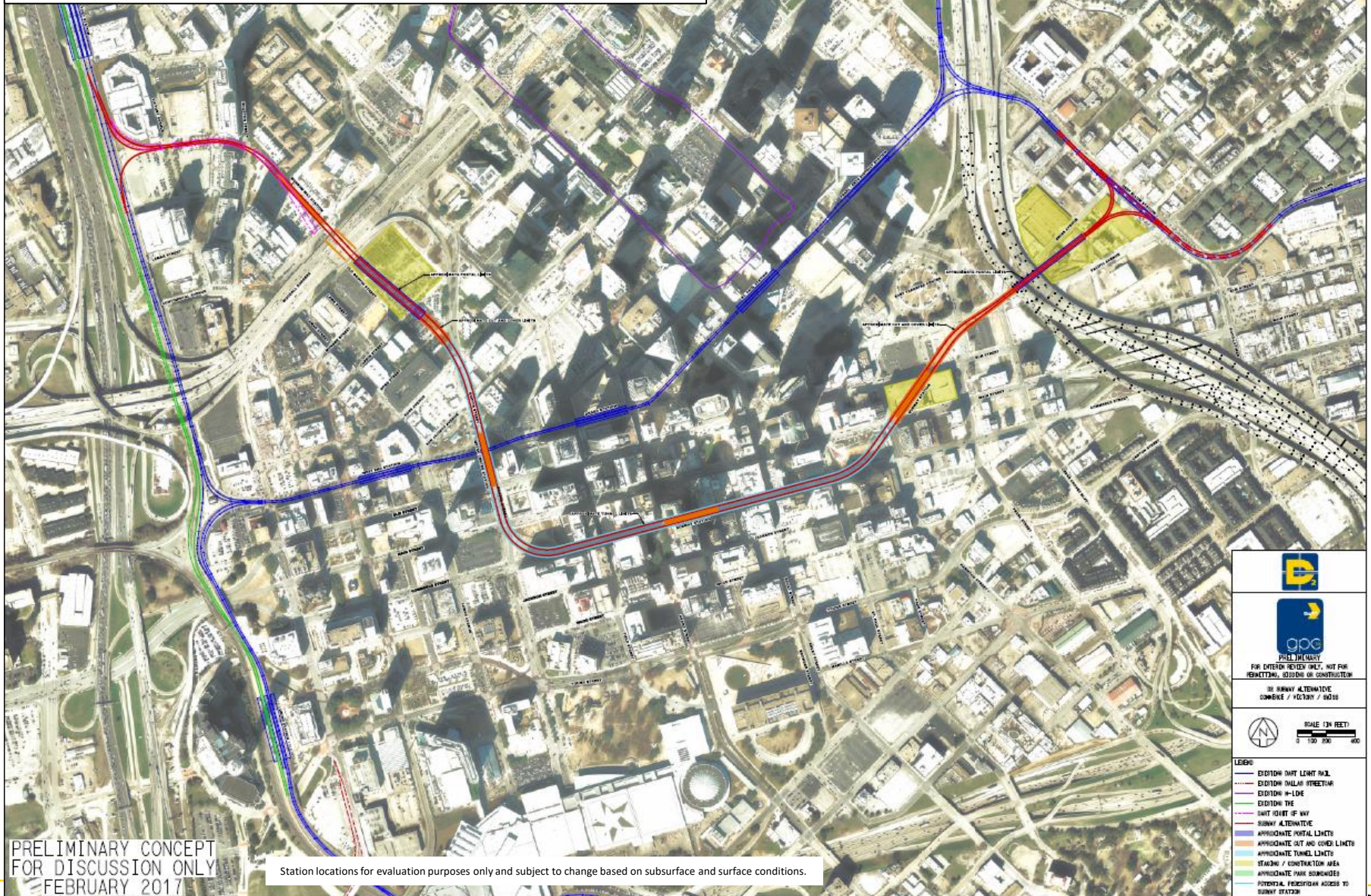


D2 Locally Preferred Alternative

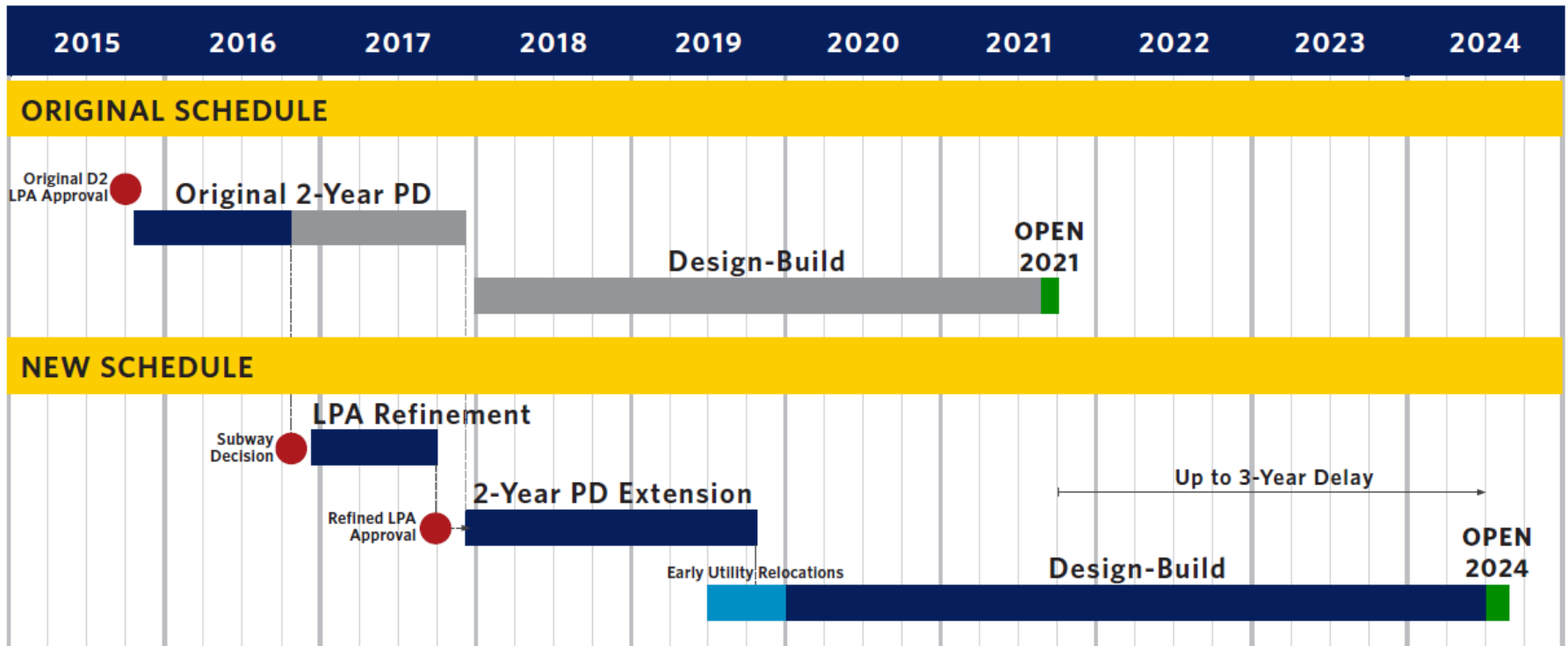


Commerce via Victory-Swiss

D2 SUBWAY ALTERNATIVE - COMMERCE / VICTORY / SWISS



Proposed D2 Schedule



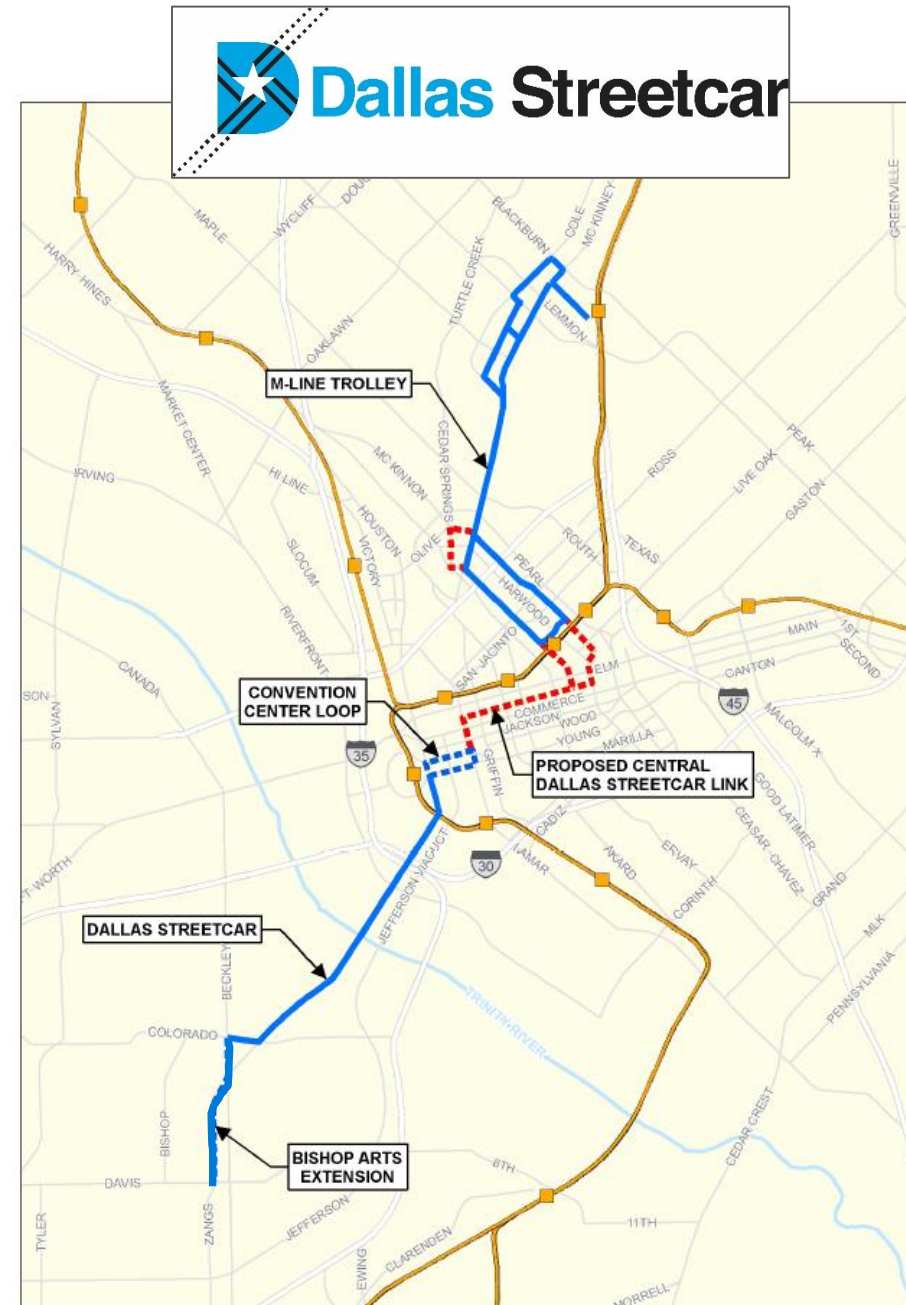
Preliminary Schedule subject to determination of subway alignment and construction methods

D2 Subway Funding

- Project budget \$1.3 Billion
- Will request approximately 50% FTA Core Capacity grant
- FY18 Financial Plan assumes a more conservative funding approach given uncertainty of Federal Capital Investment Grant program
 - Ensure ability to fund both Cotton Belt and D2 Subway if no grant available

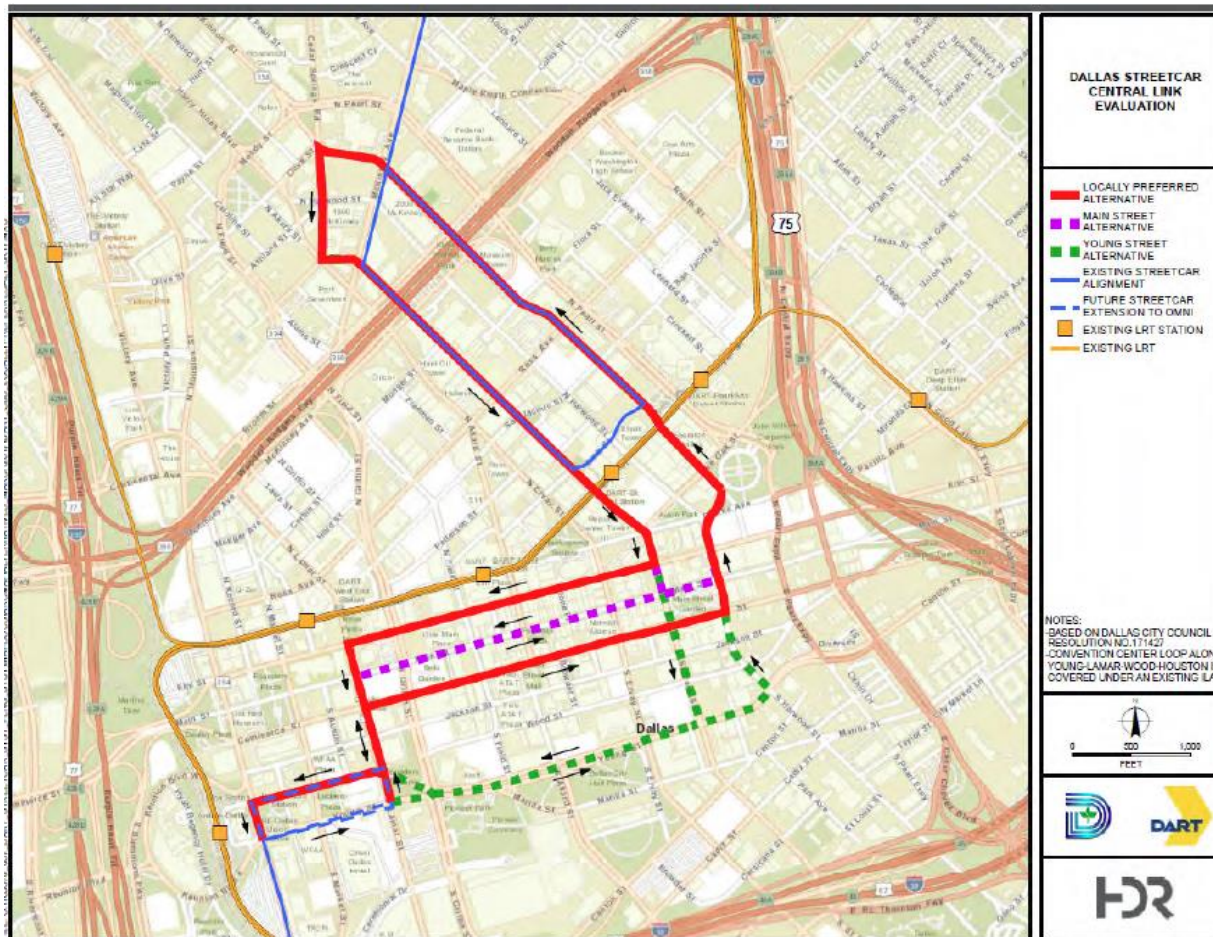
Dallas Streetcar Central Link

- City-owned system
- DART operates and maintain through Interlocal Agreement
- Streetcar Central Link
 - DART, City of Dallas, DDI conducted supplemental Alternatives Analysis on 4 route alternatives



Dallas Streetcar Central Link Locally Preferred Alternative

- Dallas City Council approved preferred alternative on September 13, 2017



Dallas Streetcar Central Link Funding

- Project budget \$92 Million
- DART local funding included in FY18 Financial Plan as part of core capacity program of projects
- Will request FTA Small Starts grant
- FY18 Financial Plan assumes approximately 50% grant share
- Next steps include interlocal agreement(s) and then request to enter FTA Project Development





Long Range Opportunities

2040 Transit System Plan

Longer Term Opportunities

- Additional long-term opportunities were evaluated as part of 2040 Transit System Plan process:
 - Potential transit corridors
 - Regional opportunities
 - Policy/Program areas such as:
 - First/Last Mile connections
 - Transit Oriented Development
 - ITS/TSM/TDM
 - Paratransit

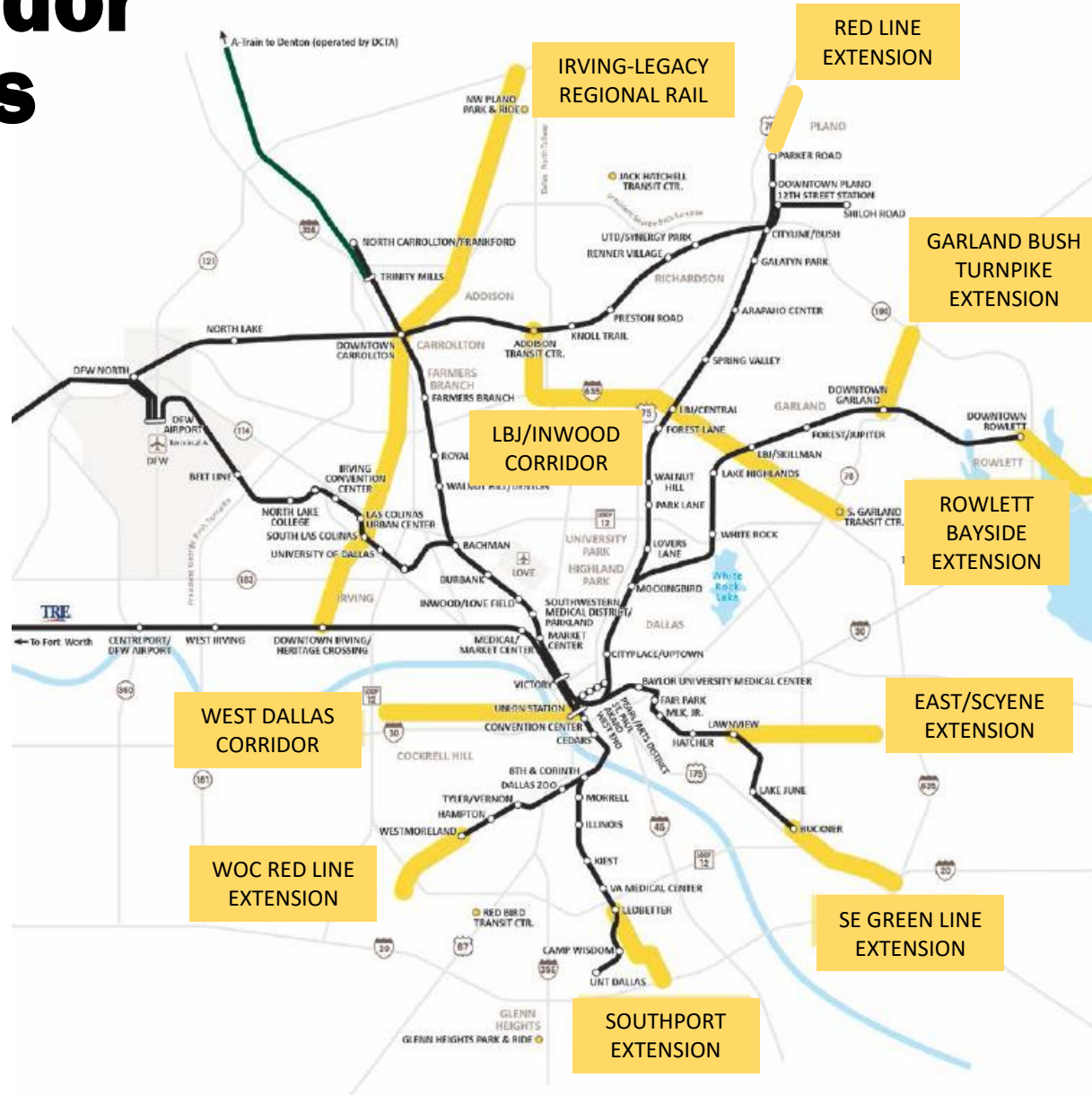
Long Range Opportunities

- Several opportunities evaluated
- Most identified in DART and NCTCOG Plans
 - DART 2030 Transit System Plan
 - DART 2030 Vision Element
 - NCTCOG Mobility 2040 Recommendations



Initial Corridor Alternatives

- Deferred 2030 Transit System Plan corridors
- 2030 Vision corridors
- New corridors



Corridor Fact Sheets

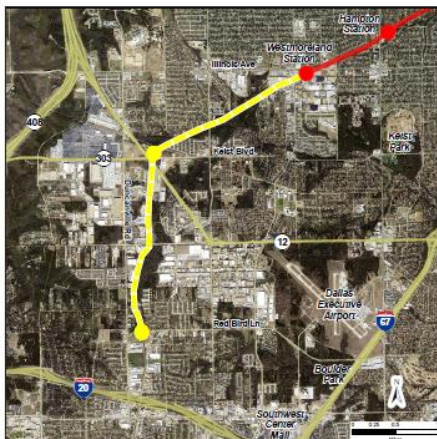
(available on www.DART.org/2040)



INITIAL ALTERNATIVES CORRIDOR EVALUATION

WEST OAK CLIFF RED LINE EXTENSION

DART 2040 TRANSIT SYSTEM PLAN



CORRIDOR INFORMATION	
LIMITS	Westmoreland Station to Red Bird Lane
LENGTH (MILES)	4.3
MODE	Light Rail
HEADWAYS	15/20
RIGHT-OF-WAY TYPE	BNSF Railroad Corridor with DART Easement
POTENTIAL NEW STATIONS	2
2040 RIDERSHIP POTENTIAL	TBD
CAPITAL COST ESTIMATE (M\$)	TBD
COST/RIDER	TBD

Note: Alignment and Proposed Stations are Conceptual and For Evaluation Purposes Only

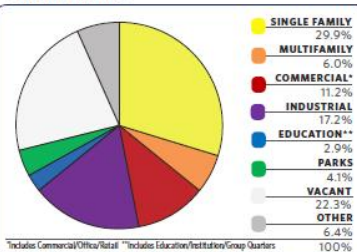
PROJECT DESCRIPTION

This corridor would operate as an extension of the existing Red Line, and was recommended in prior Transit System Plans to serve growing residential and employment areas in this part of the Service Area. A regional rail connection to the south toward Cedar Hill and Midlothian is identified in the NCTCOG Metropolitan Transportation Plan (Mobility 2040) which could influence the terminus point.

DEMOGRAPHIC INFORMATION WITHIN 1/2 MILE OF CORRIDOR

DEMOGRAPHIC PROFILE	2014	2040
EMPLOYMENT	17,474	37,918
POPULATION	44,443	56,590
HOUSEHOLDS	12,559	15,937
POPULATION BELOW POVERTY	3.7%	N/A
MINORITY POPULATION	89.8%	N/A
POPULATION OVER 65	27.7%	N/A
POPULATION 19 AND UNDER	39.2%	N/A

EXISTING LAND USE



INITIAL ALTERNATIVES CORRIDOR EVALUATION

LBJ/INWOOD CORRIDOR

DART 2040 TRANSIT SYSTEM PLAN



CORRIDOR INFORMATION	
LIMITS	South Garland Transit Center to Addison Transit Center
LENGTH (MILES)	12.9
MODE	Light Rail
HEADWAYS	15/20
RIGHT-OF-WAY TYPE	KCS RR, TxDOT, UP RR, Other Private
POTENTIAL NEW STATIONS	5
2040 RIDERSHIP POTENTIAL	TBD
CAPITAL COST ESTIMATE (M\$)	TBD
COST/RIDER	TBD

Note: Alignment and Proposed Stations are Conceptual and For Evaluation Purposes Only

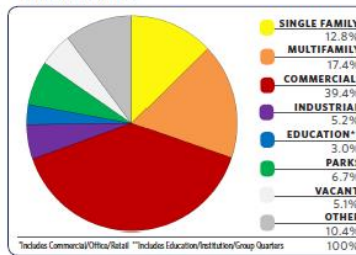
PROJECT DESCRIPTION

The LBJ/Inwood Corridor was included in the 2030 Transit System Plan as a vision corridor. This corridor had high ridership potential, especially between the Red Line and Addison Transit Center. The 2040 effort will reassess this corridor as an east-west line from the South Garland Transit Center to Addison where it would interface with the Cotton Belt regional rail line. As such, it would operate as a stand-alone light rail line linking northeast Dallas/Garland to major employment centers in north Dallas and Addison and providing transfer opportunities with the Blue, Red and Cotton Belt rail lines. Given right-of-way constraints, significant portions of this corridor would be below- and/or above-grade.

DEMOGRAPHIC INFORMATION WITHIN 1/2 MILE OF CORRIDOR

DEMOGRAPHIC PROFILE	2014	2040
EMPLOYMENT	271,030	408,212
POPULATION	136,298	166,815
HOUSEHOLDS	58,000	66,220
POPULATION BELOW POVERTY	0.50%	N/A
MINORITY POPULATION	63.3%	N/A
POPULATION OVER 65	0.32%	N/A
POPULATION 19 AND UNDER	0.31%	N/A

EXISTING LAND USE



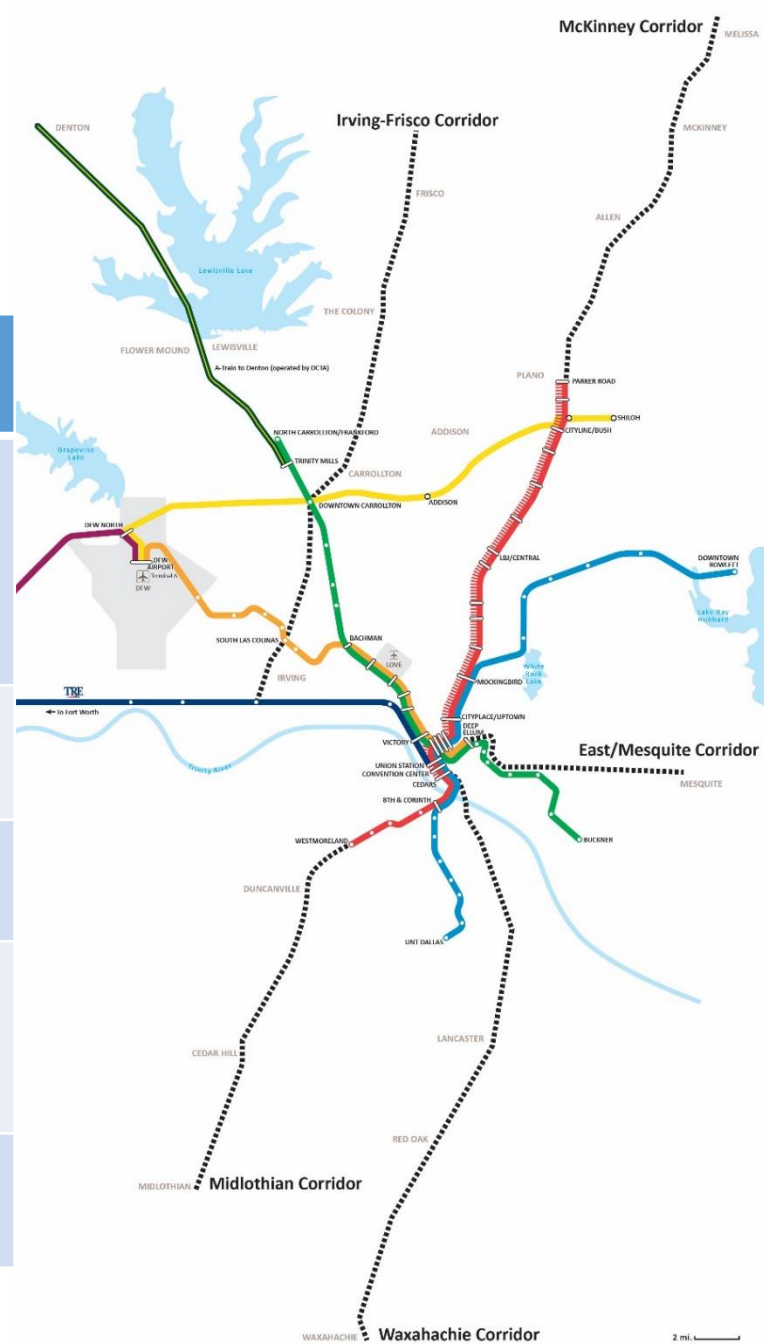
Screening Evaluation

Evaluation Category	Tier 1		Tier 2				Tier 3		
	LBJ/Inwood	West Dallas	West Oak Cliff Line Extension	East/Scyene Extension	Irving-Legacy	Rowlett Bayside	Garland/Bush Turnpike	Southport Extension	Southeast Green Line Extension
Station Ridership	 18,000	 7,000	 3,600	 2,700	 10,000	 1,750	 1,200	 1,500	 700
Capital Cost (Million \$)	\$1,600	\$520	\$310	\$340	\$760	\$240	\$220	\$240	\$250
Cost Effectiveness (Annual Costs/Annual Riders)	 \$11.54	 \$10.38	 \$12.87	 \$23.58	 \$12.73	 \$17.71	 \$34.17	 \$40.22	 \$57.62
Transit Competitiveness (Number of Competitive Destinations)	 3	 9	 1	 4	 3	 1	 2	 3	 4
2040 Population Density (per acre)	 9.3	 8.2	 8.3	 6.6	 7.3	 25	 7.0	 2.2	 4.5
2040 Employment Density (per acre)	 29.2	 12.1	 6.1	 2.2	 7.5	 8.0	 4.5	 1.0	 1.5
Right-of-Way	 	 	 	 	 	 	 	 	
Engineering Complexity	 	 	 	 	 	 	 	 	
Land Use/TOD Potential	 	 	 	 	 	 	 	 	
Environment/Community	 	 	 	 	 	 	 	 	
Public Agency Support*	 	 	 	 	 	 	 	 	
Summary Rating	 	 	 	 	 	 	 	 	

Ratings: High      Low

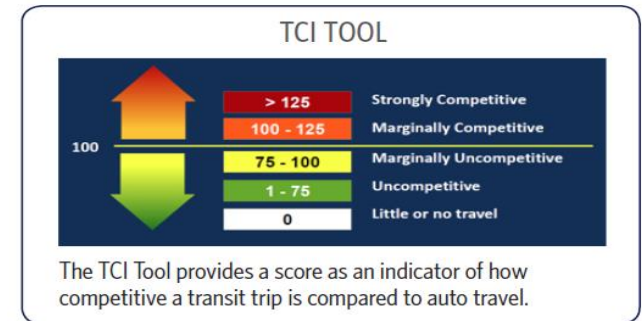
Regional Analysis

Corridor	Length (Miles)	Cities on/near Corridor
Irving-Frisco	29	Irving, Dallas, Farmers Branch, Carrollton, Plano, The Colony, Frisco, Prosper
McKinney	18	Allen, Fairview, McKinney
East-Mesquite (from Lawnview)	7.5	Mesquite, Sunnyvale
Waxahachie	31	Dallas, Lancaster, Red Oak, Waxahachie, Hutchins, Wilmer
Midlothian	14	Duncanville, Cedar Hill, Midlothian, DeSoto



Midlothian Corridor Observations

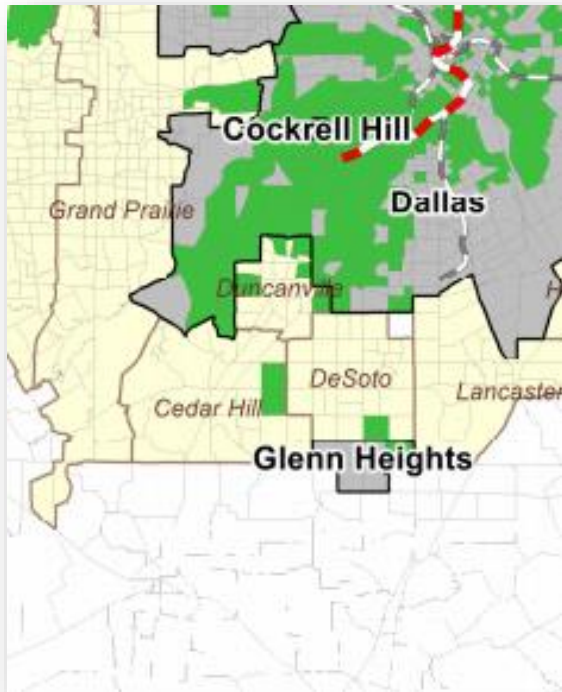
- Corridor has about 5,000 daily riders
 - Most activity in north Cedar Hill
 - Strong feeder bus ridership
- Transit Competitiveness Index (TCI) high to downtown Dallas
- 2,000 rail transfers to Red Line at Red Bird Station
- Southernmost Red Line stations have strong drive access
 - Most riders at these stations are retained even with a regional rail connection to Midlothian
 - Continue to drive to Red Bird rather than transfer



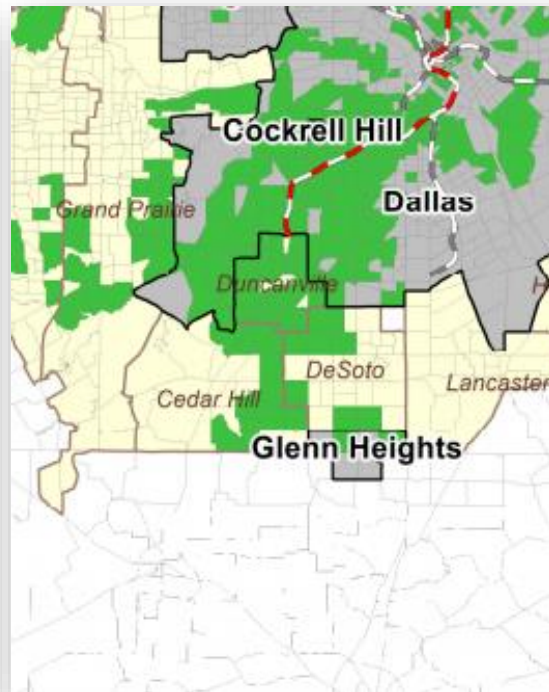
Ridership and Travel Patterns

- Where do Red Line riders come from if Red Line ends at...

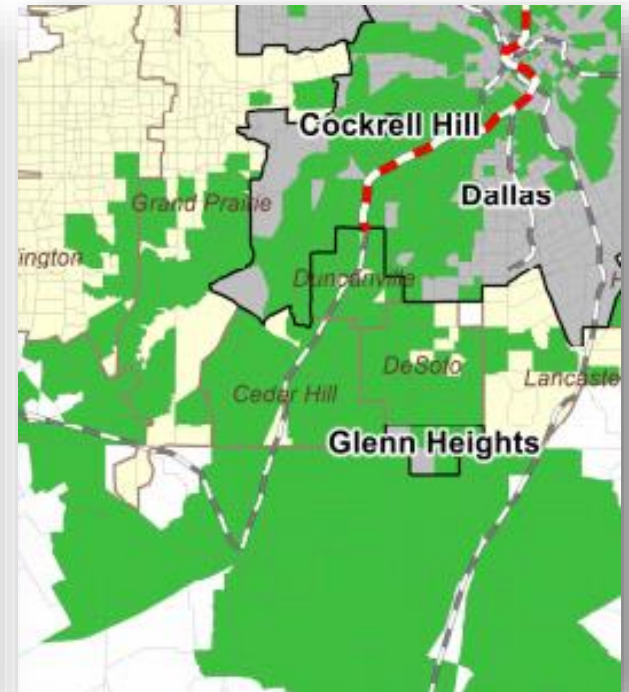
Westmoreland



Red Bird

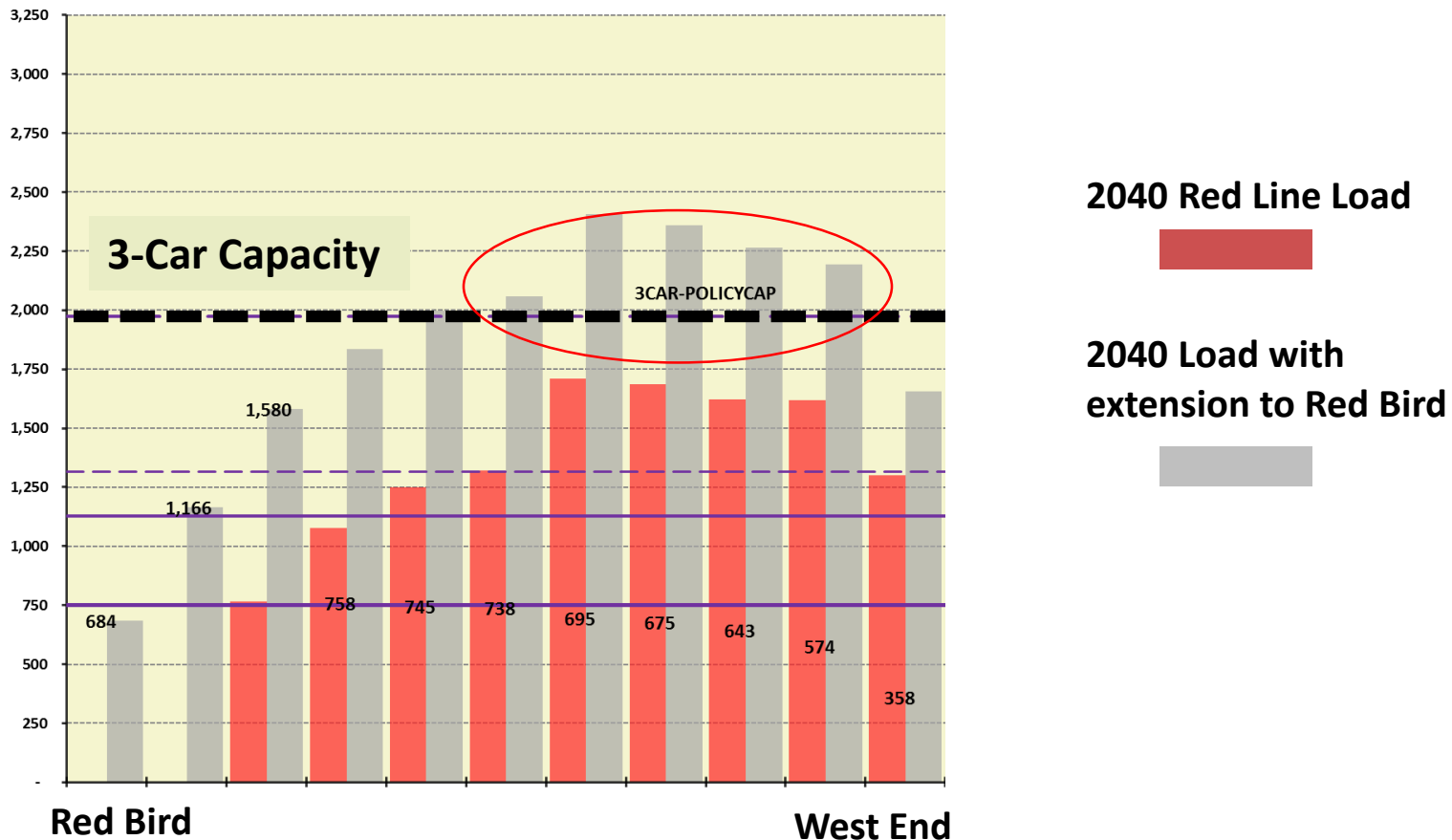


Red Bird with Regional Rail



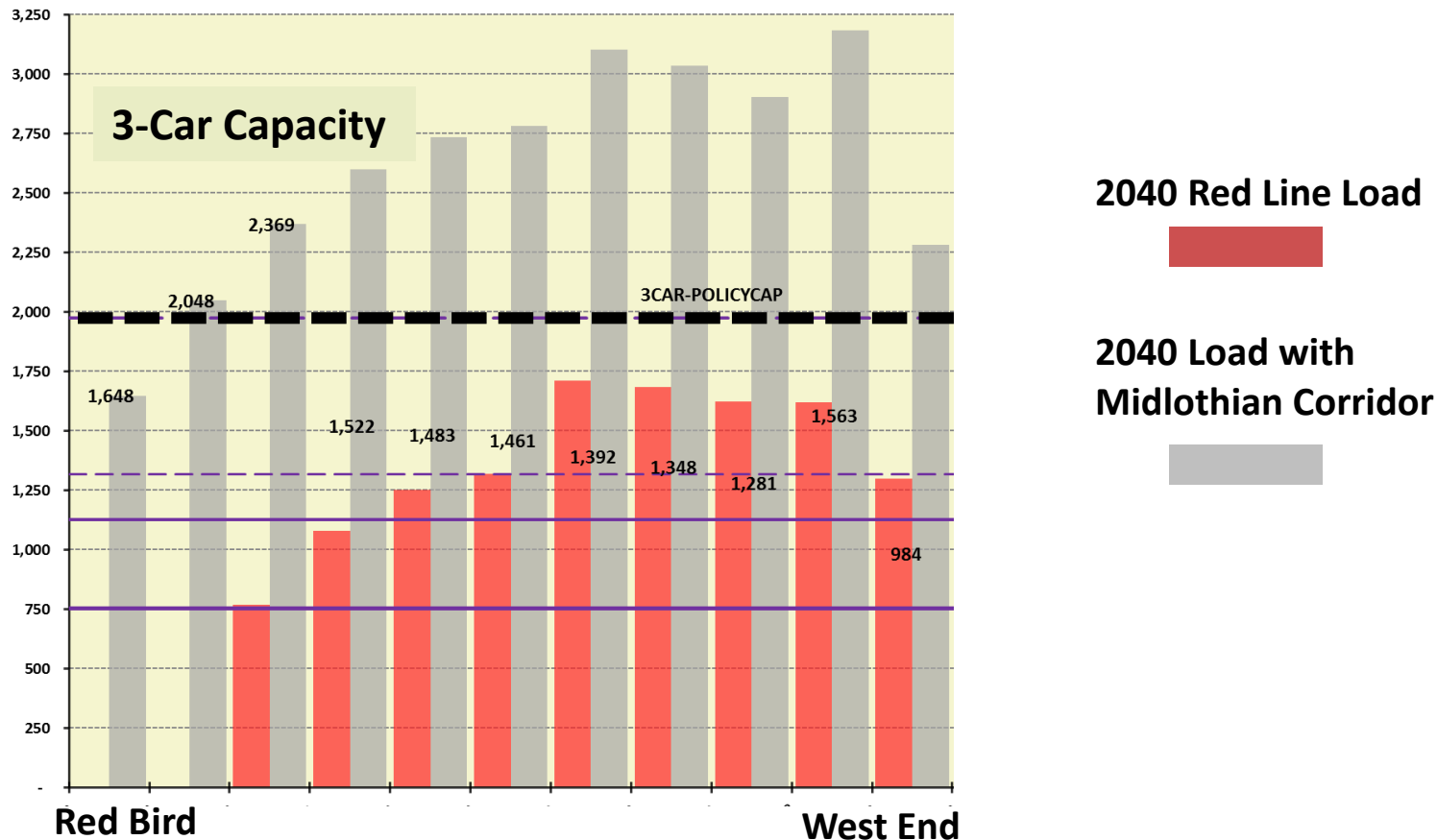
Ridership and Rail Transfer Activity

- Red Line extension to Red Bird adds ridership so that we exceed 3-car train capacity by 2040



Ridership and Rail Transfer Activity

- Regional rail increases the loads even more



Policy Considerations

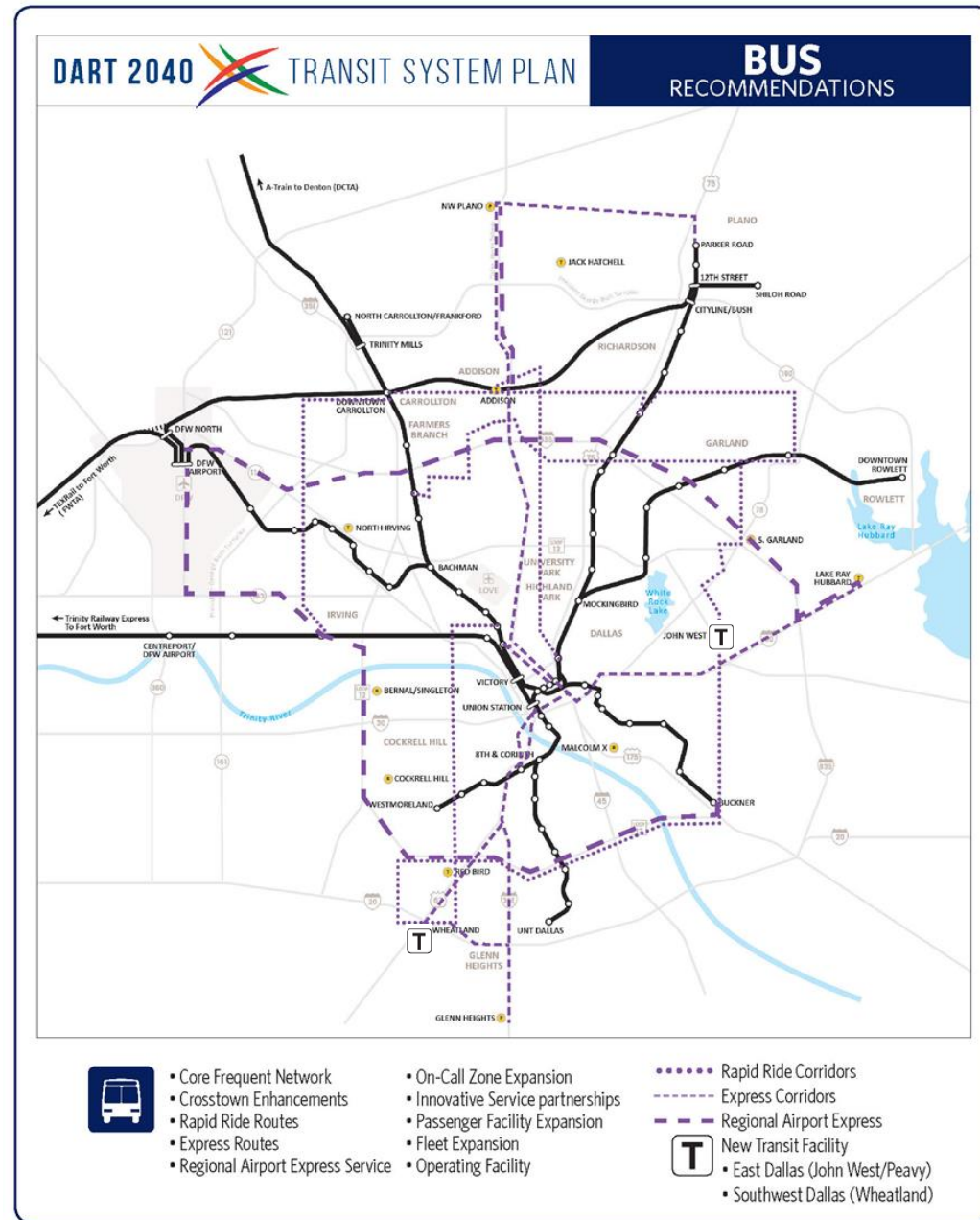
- Policy III.07 – DART Services Outside the DART Service Area Boundary
- Policy IV.14 – Access by Non-DART Shuttle Services from Outside of the Service Area
- Consider right-of-way preservation opportunities
- Funding/Operations of new projects



Draft Plan Highlights

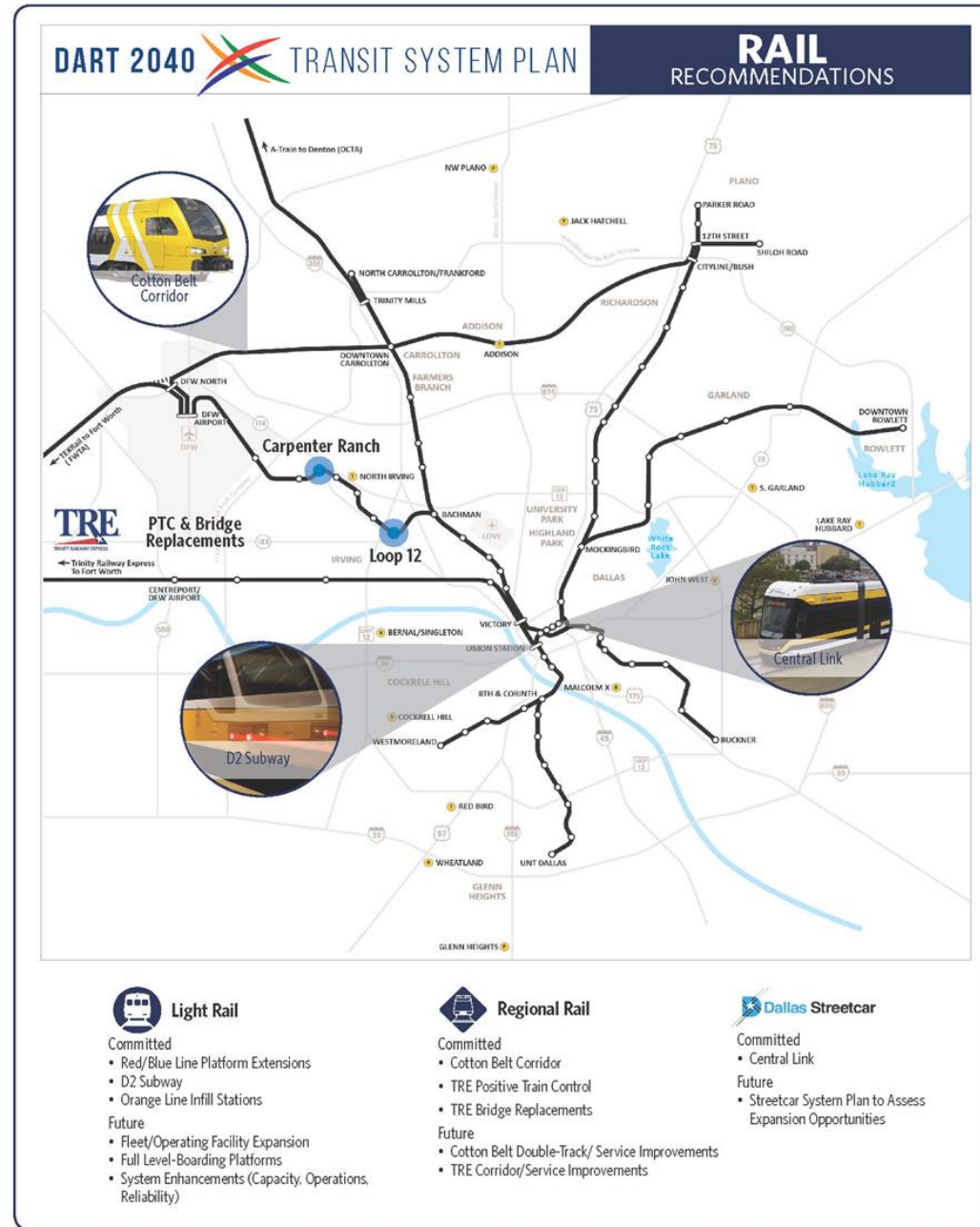
Bus Element

- Reflects COA Bus Service Plan recommendations
- Bus Plan subject to refinement as “living” process
- Focus on frequency and crosstown routing enhancements in near term
- Pilot programs
 - On-Call/Mobility on Demand
 - Regional Airport Express route
 - Transit center innovation
- Two new transfer locations
- Rapid Ride network



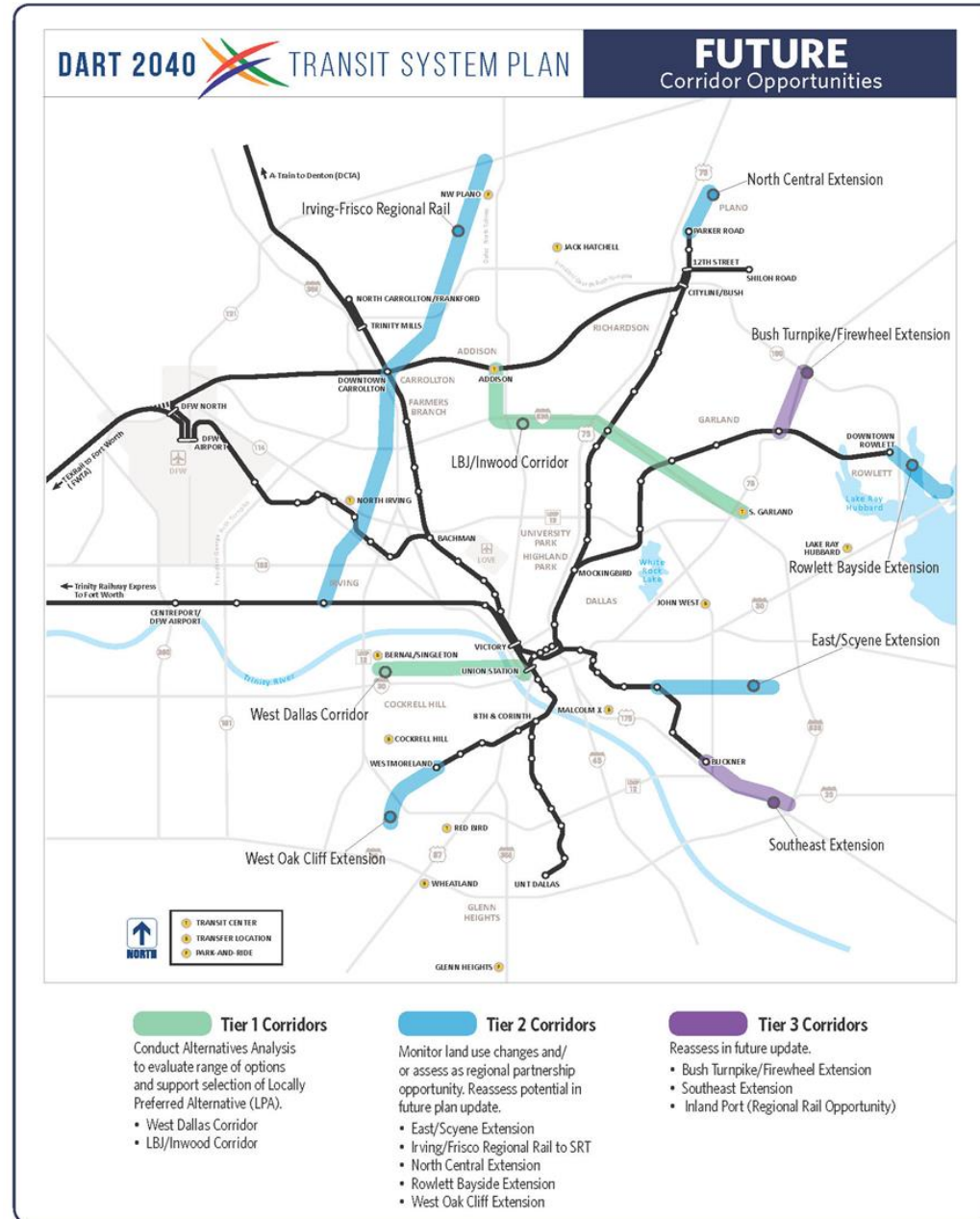
Rail Element

- Focus on committed program
 - Core Capacity (platform extensions, D2 Subway)
 - Cotton Belt
 - TRE Program
 - Dallas Streetcar Central Link
 - Infill stations
- Future projects to enhance and sustain system:
 - Fleet/facility expansion
 - Cotton Belt corridor improvements
 - TRE corridor improvements
 - Streetcar system plan



Future Potential Corridors

- Range of future corridors with transit potential
- Tiered recommendations
- Recommend Alternatives Analysis in FY2020-22 for Tier 1 corridors
 - Select LPA
 - Refine cost
 - Amend System Plan and Financial Plan to reflect LPA
- Monitor and focus on regional discussion for Tier 2 corridors



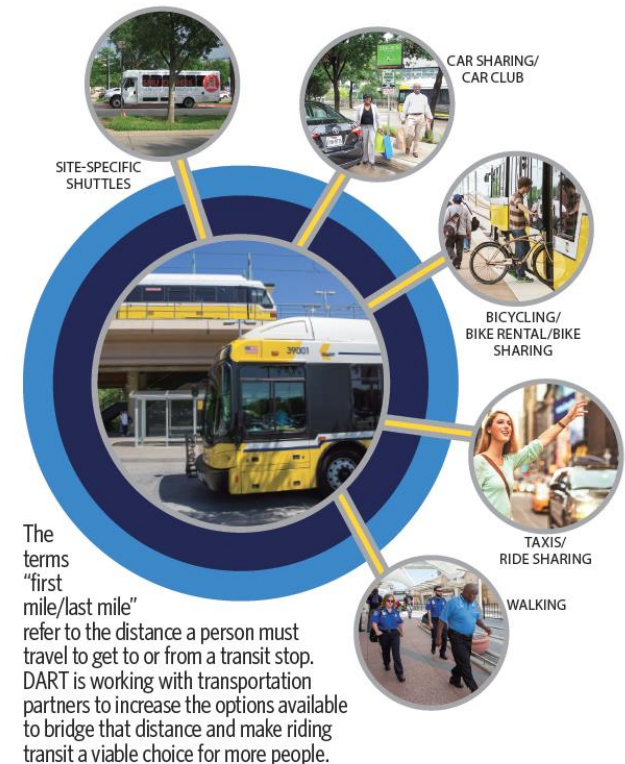
Mobility Management/Paratransit

- Continue to enhance **accessibility** for all customers, including sidewalk connectivity and other initiatives that make it easier for riders with disabilities to use and navigate the system
- Support **customer independence** through travel training and continued coordination with transportation resources agencies
- Continue to use **technology** to improve performance and increase customer satisfaction
- Explore partnerships, pilot programs and new funding sources to supplement existing service or provide more cost-effective **service delivery solutions**



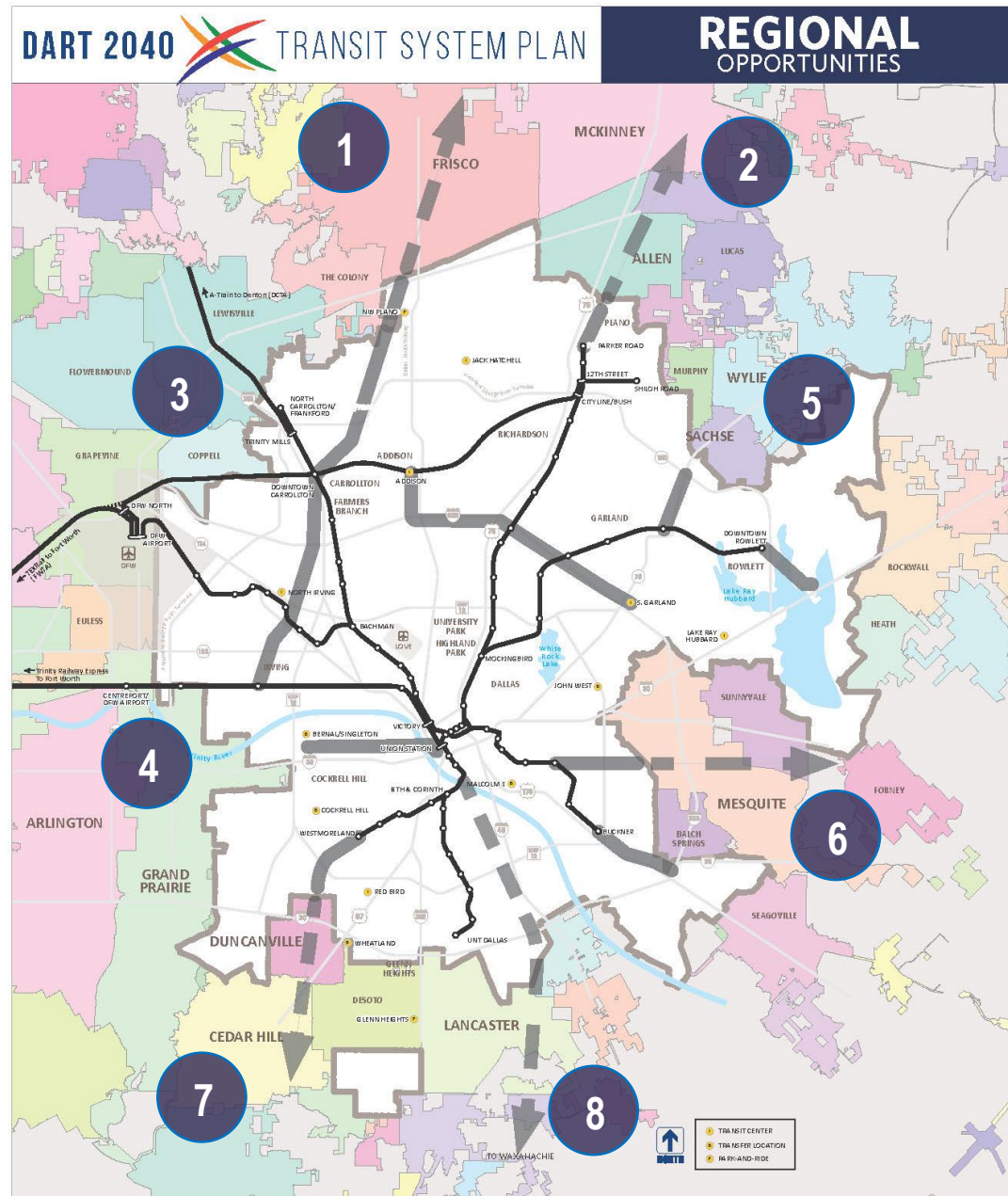
Systemwide Programs

- First and Last Mile Connections
- Intelligent Transportation Systems/ Transportation System Management (ITS/TSM)
- Travel Demand Management (TDM)
- Emerging Technologies
- State of Good Repair/System Enhancements
- Safety and Security



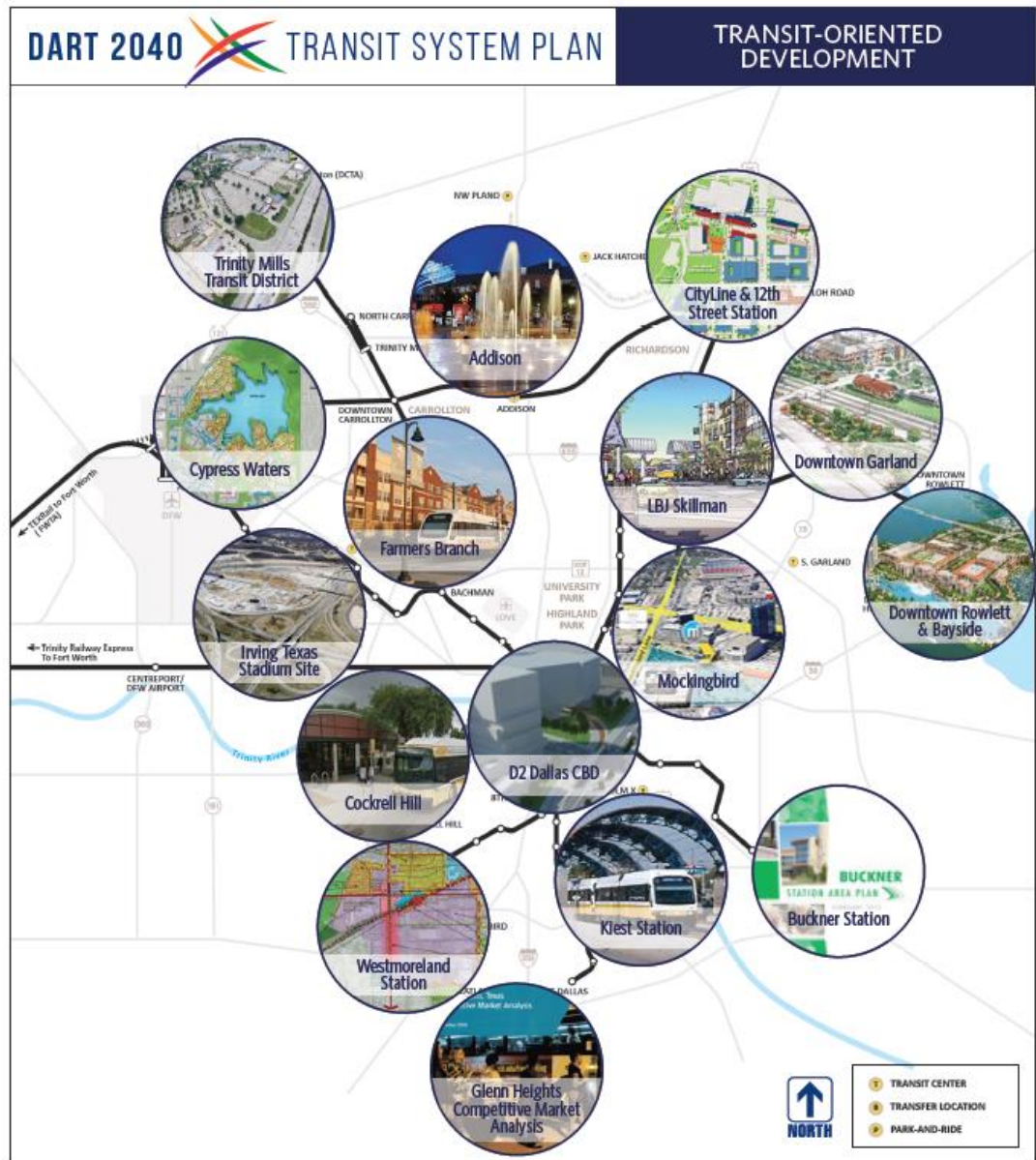
Page 10

- 8** The Waxahachie Corridor would serve growing communities to the south as well as the Inland Port employment area.



Land Use/ TOD

- 2040 Plan includes TOD Opportunities map
- Highlights successes and key opportunities:
 - Committed projects
 - Infill stations
 - New bus/rail corridors
 - Station area plans



Every DART facility has potential for transit-oriented development. At many facilities, TOD is in place and continues to be a catalyst for further redevelopment, strengthening the local economy and enhancing quality of life. Several planning efforts and studies have been done to work toward implementation of TOD at additional locations. DART will continue to collaborate with public and private partners to advance TOD throughout the region.



Bus

- Rapid Ride Corridors
- Express Corridors
- Regional Airport Express
- Core Frequent Network
- Crosstown Enhancements
- On-Call Zone Expansion
- Innovative Service partnerships
- Passenger Facility Expansion
- Fleet/ Operating Facility Expansion
- New Transit Facility
- John West/Peavy
- Wheatland



Light Rail

- Committed
- Red/Blue Line Platform Extensions
- D2 Subway
- Orange Line Infill Stations
- Future
- Fleet/Operating Facility Expansion
- Full Level-Boarding Platforms
- System Enhancements



Regional Rail

- Committed
- Cotton Belt Corridor
- TRE Positive Train Control
- TRE Bridge Replacements
- Future
- Cotton Belt Corridor/Service Improvements
- TRE Corridor/Service Improvements
- Fleet/Operating Facility Expansion



Mobility Management/Paratransit

- Accessibility
- Customer Independence
- Trip Delivery Technology Improvements
- Service Delivery Innovation



Systemwide Programs

- First and Last Mile Connections
- Intelligent Transportation Systems/ Transportation System Management
- Travel Demand Management
- Emerging Technology
- State of Good Repair
- Safety and Security



Transit-Oriented Development

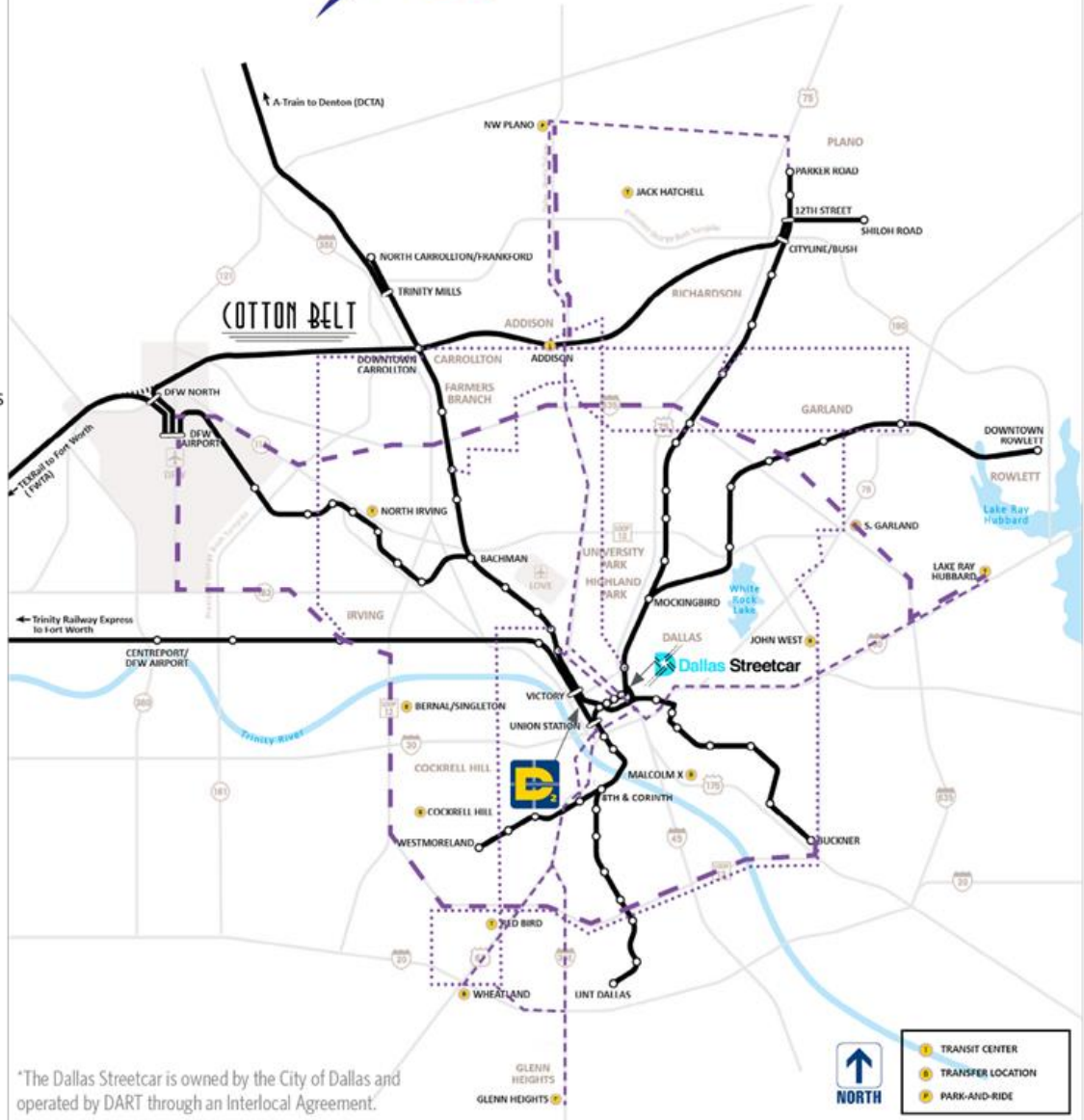
- Collaboration with Public/Private Partners



Regional Expansion

- Leadership and Coordination

DART 2040 TRANSIT SYSTEM PLAN



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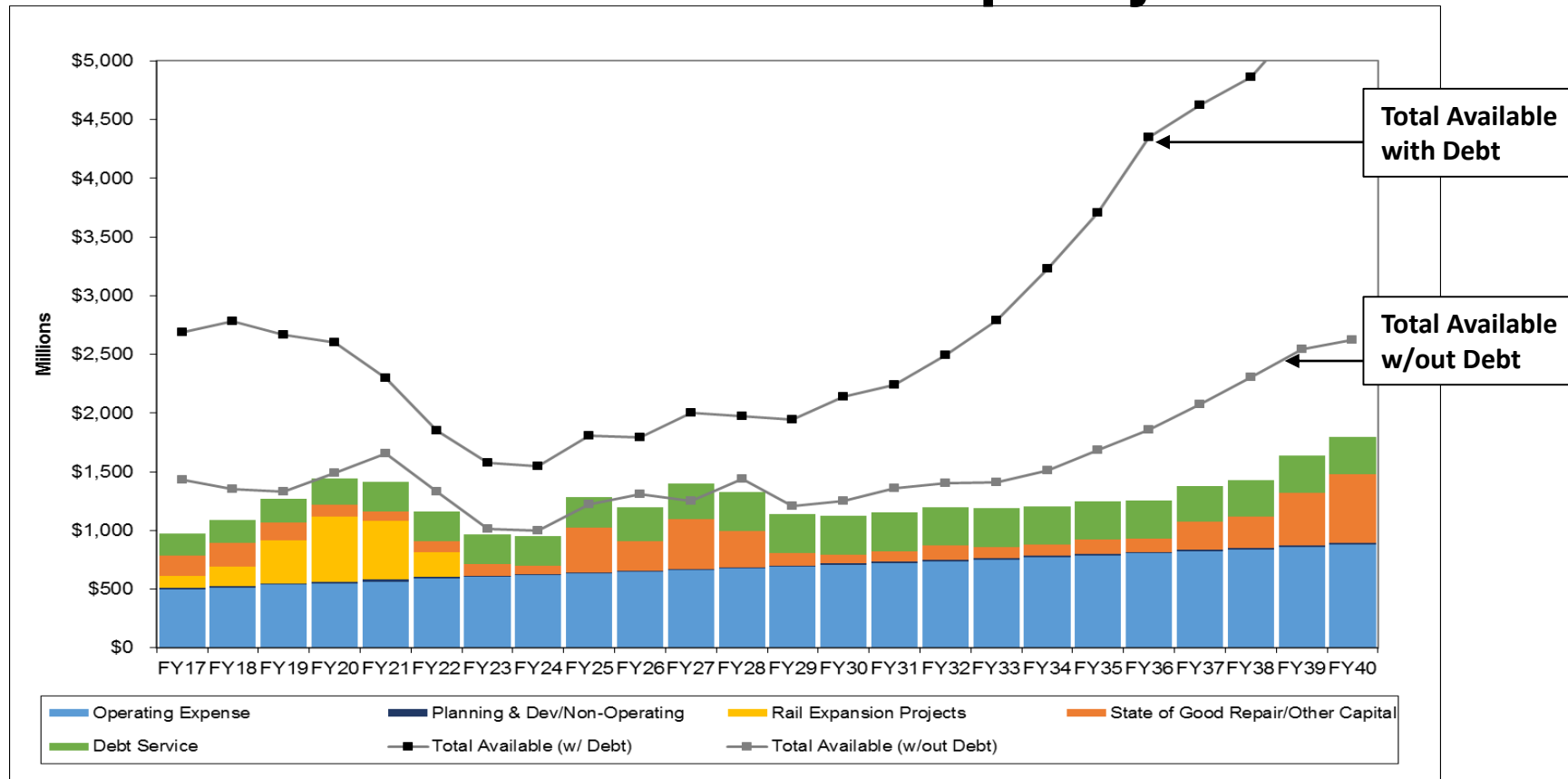
Financial Plan and Timing of Recommendations

Financial Plan Relationship

- The 2040 Transit System Plan is financially constrained
- The Transit System Plan documents opportunities beyond financial constraints since conditions can change
- The Draft 2040 Plan takes into account the more conservative FY18 Financial Plan
- The FY18 20-Year Financial Plan influences timing of recommendations

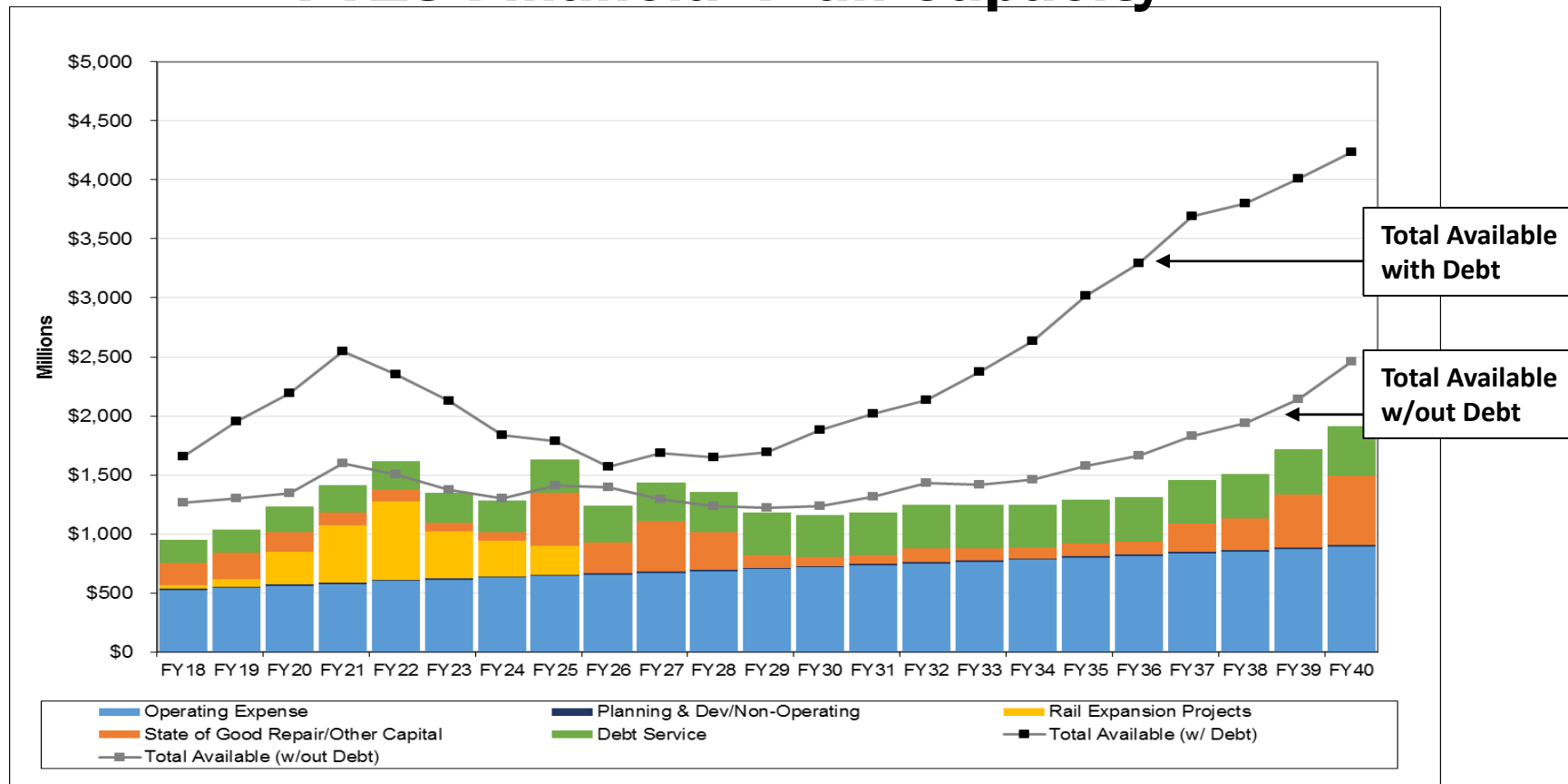
How the Financial Plan influences the Transit System Plan

FY17 Financial Plan Capacity

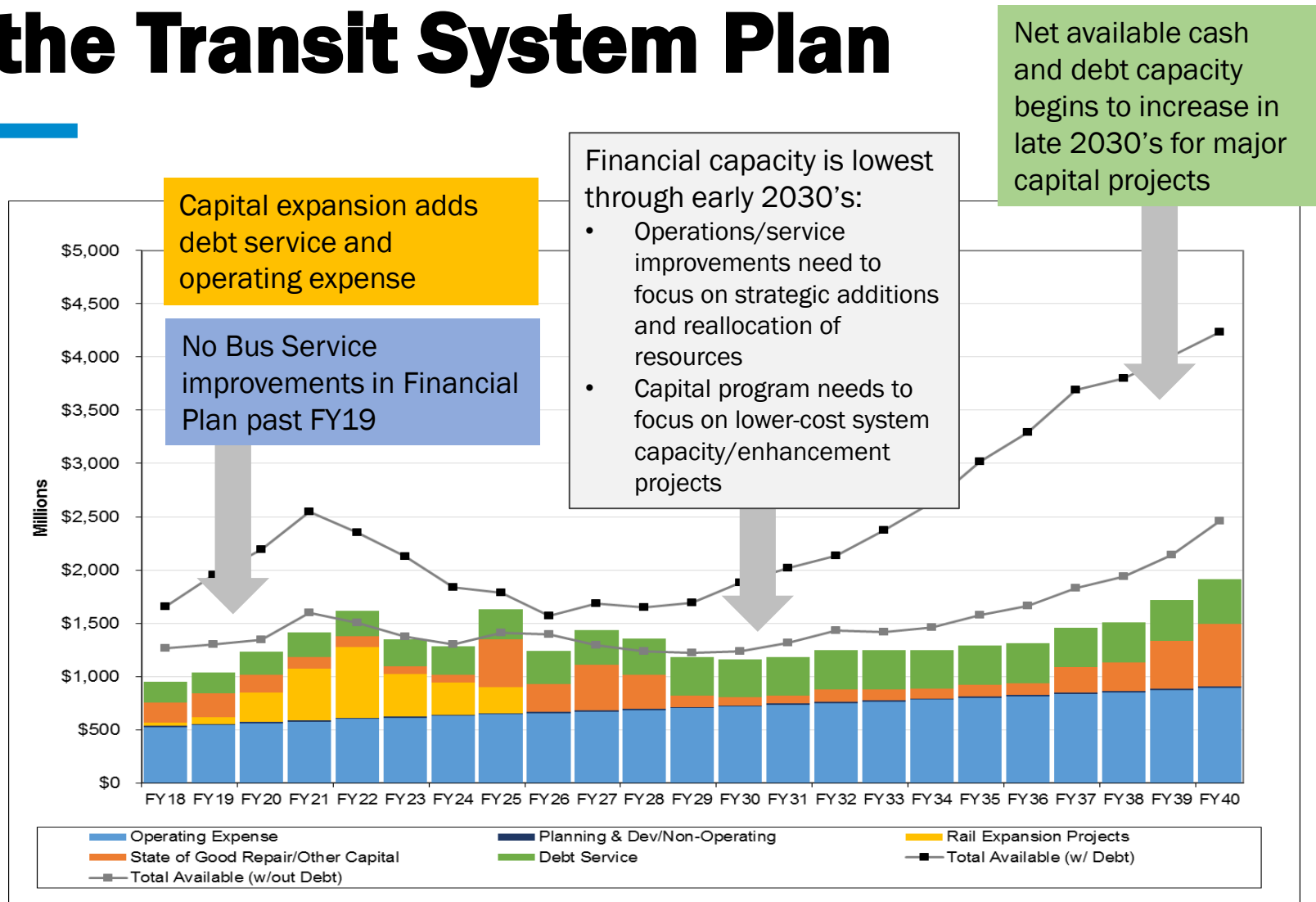


How the Financial Plan influences the Transit System Plan

FY18 Financial Plan Capacity

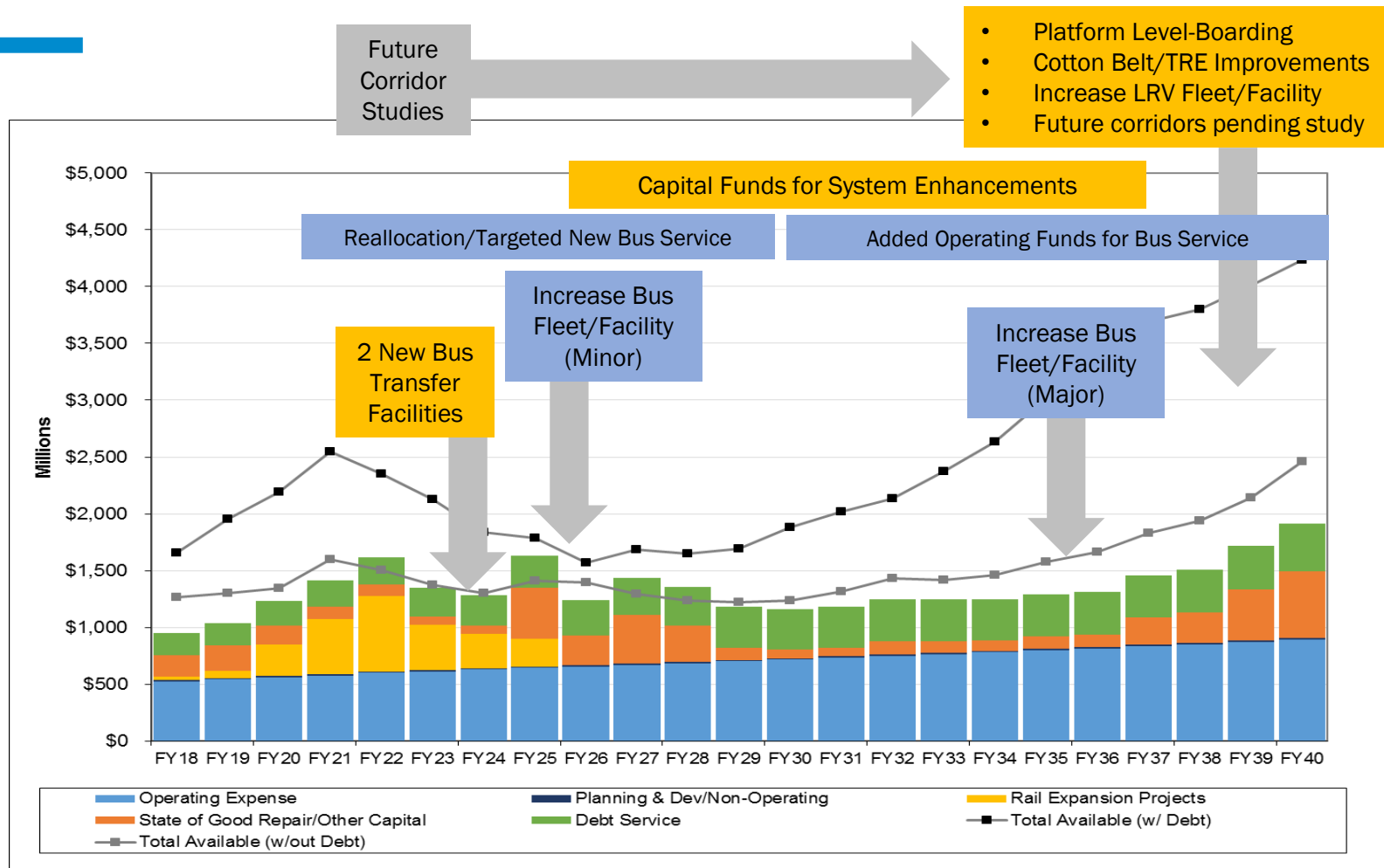


How the Financial Plan influences the Transit System Plan



Proposed Timing of Recommendations

In context of FY 18 Financial Plan





Summary

Summary

- Significant capital expansion program underway
- Bus Service Plan undergoing additional refinement
- Approval to distribute 2040 Draft Transit System Plan to public is pending additional DART Board discussion
- Rapidly changing conditions will likely involve more frequent system plan updates



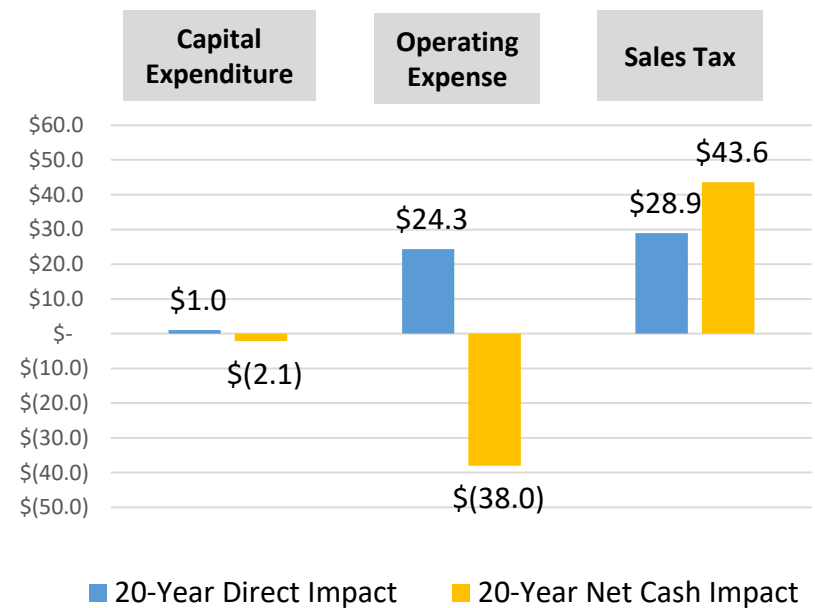


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Financial Opportunities and Risks

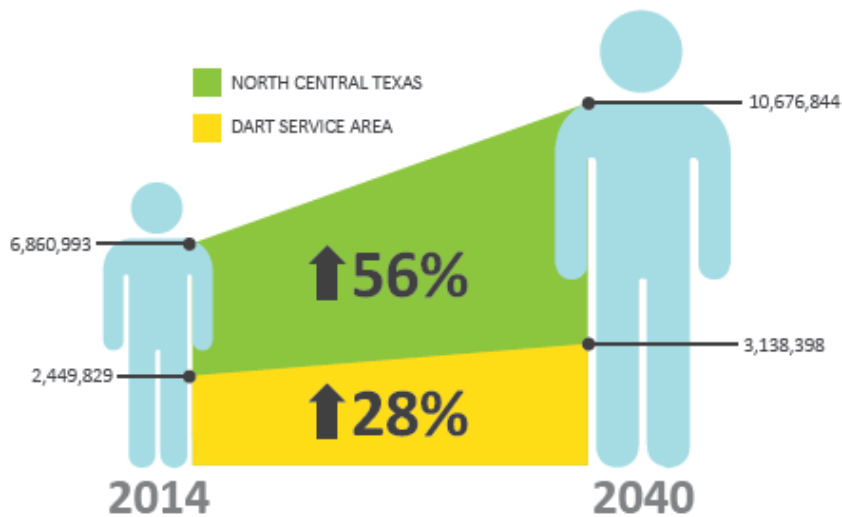
- Capital Costs
 - Higher than anticipated costs could reduce future financial capacity to fund current or new projects
- Operating Expense Growth
 - Largest use of funds in Financial Plan so presents largest risk for future financial capacity
- Sales Tax
 - Small shifts in the sales tax rate can have significant long-term effects on the plan

20-Year Impact of \$1 Million

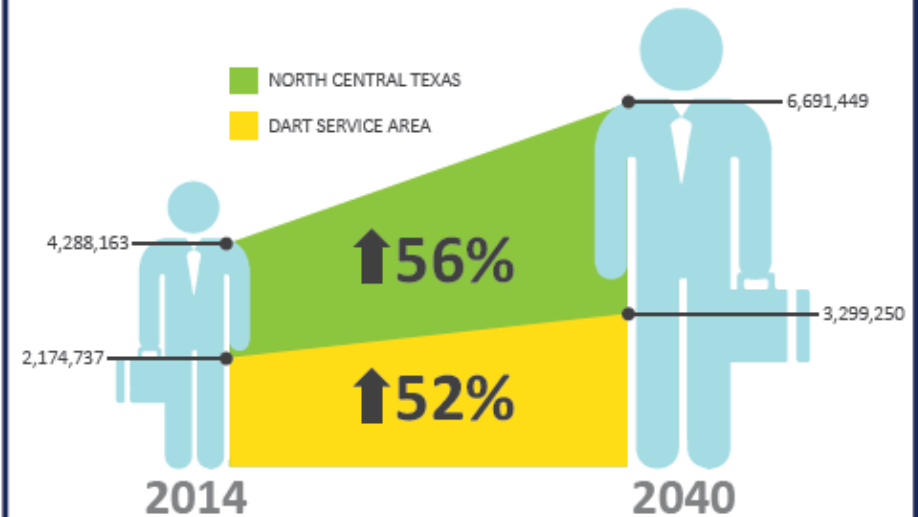


Population & Employment Growth

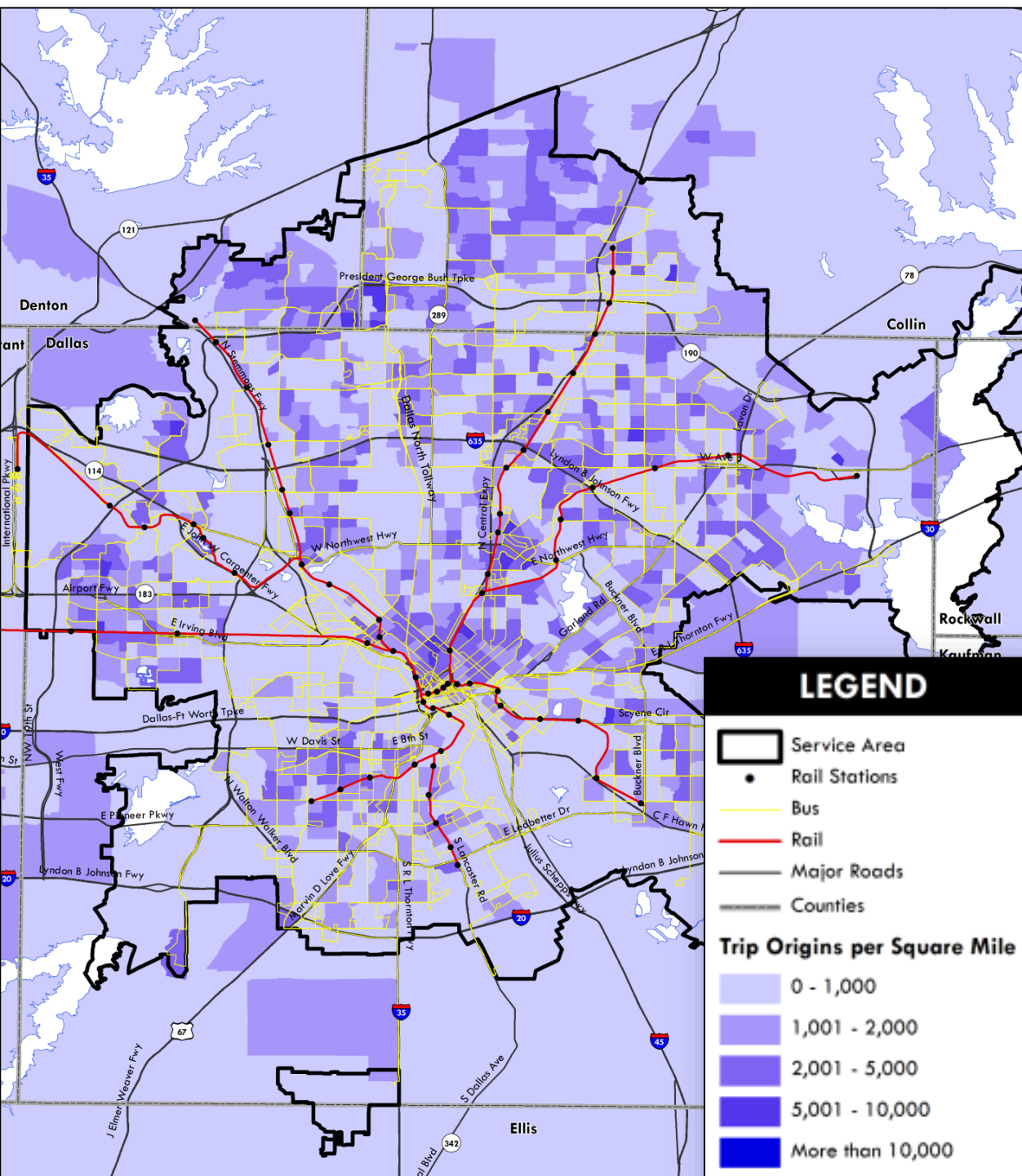
POPULATION GROWTH | 2014-2040



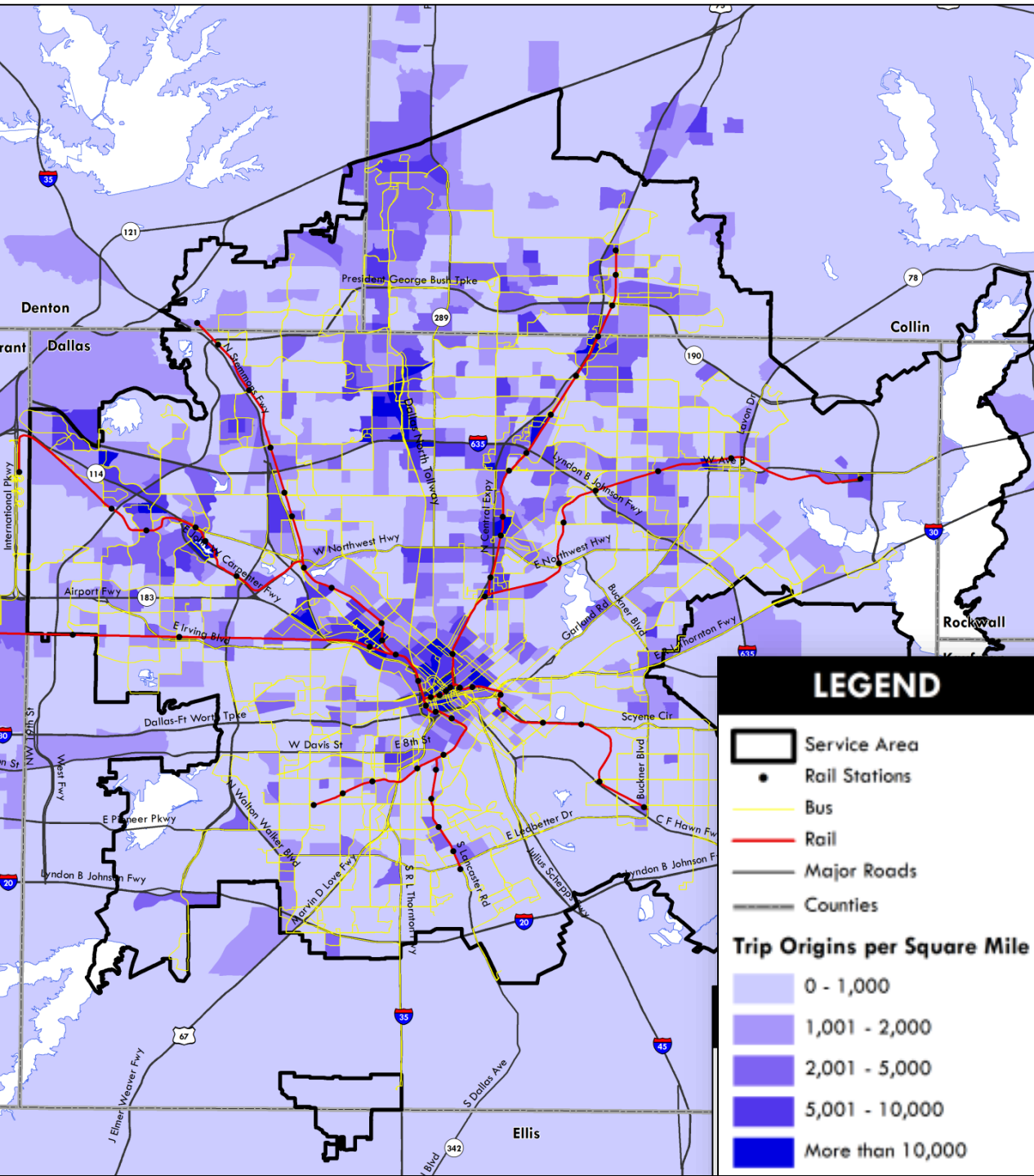
EMPLOYMENT GROWTH | 2014-2040



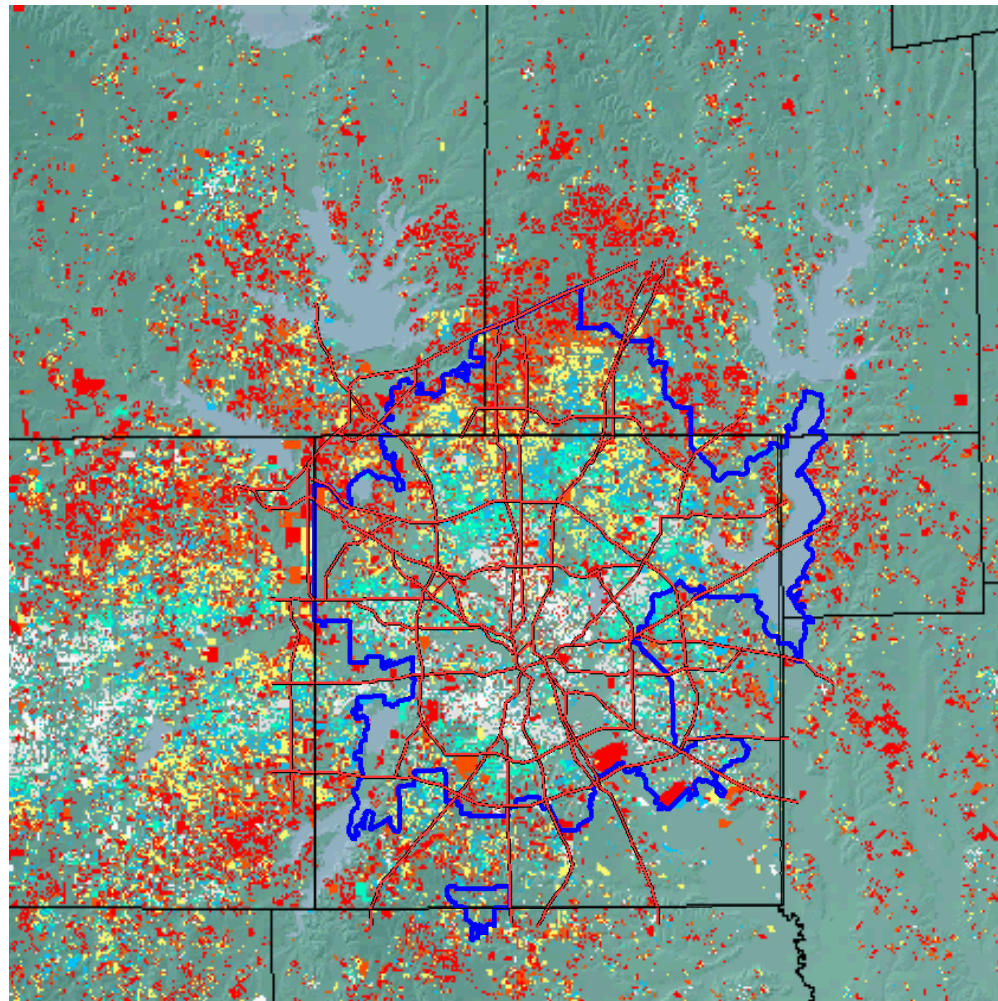
Trip Density Home Based Work Origins (AM Peak)



Trip Density Home Based Work Destinations (AM Peak)

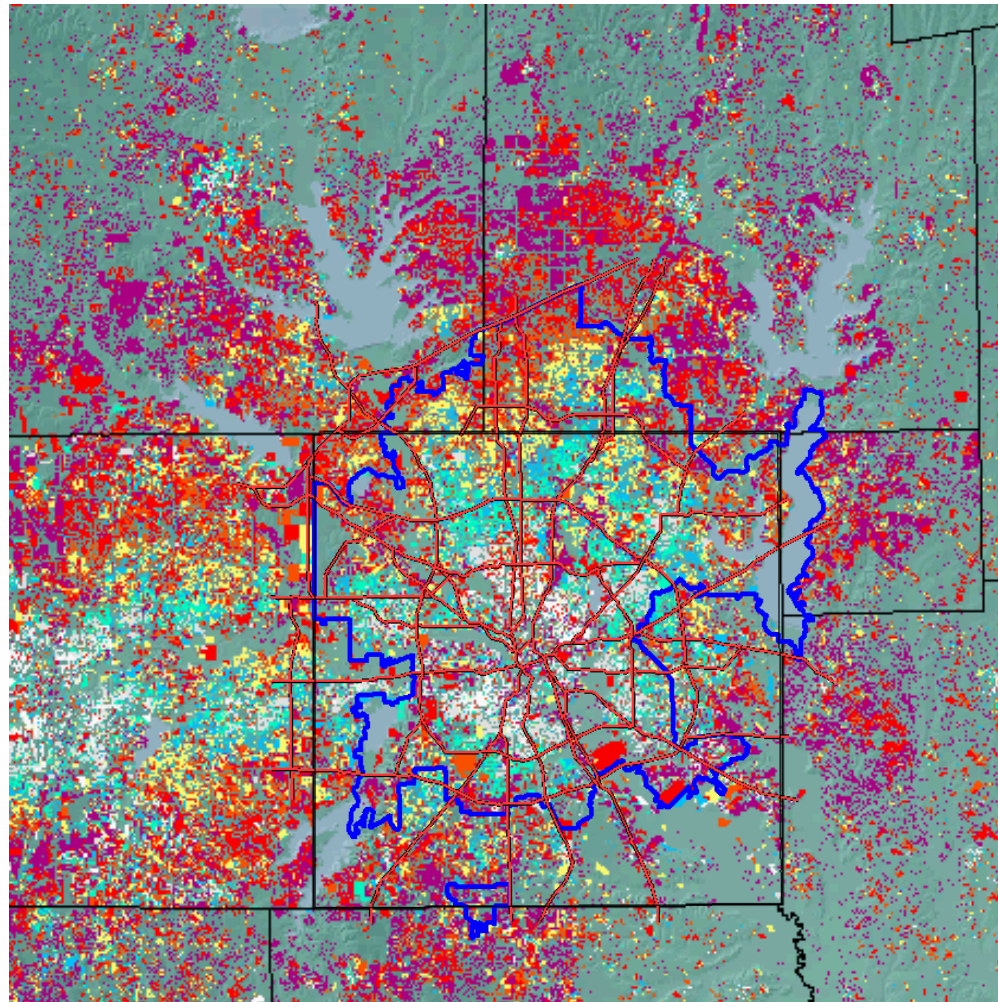


2010-2040 Growth Animation



2010

2010-2040 Growth Animation



2040

- Before 1955
- 1956-1965
- 1966-1975
- 1976-1985
- 1986-1995
- 1996-Present
- 2040 Forecast