

DAEPT - COTTON BELT / 2030 PLAN

Oxford

NO. 753 1/3

100%

Addison Cotton Belt Transit Center

- I. Introduction
 - a. What
 - b. Where
 - c. How
 - d. Why
- II. Funding
- III. Layout and Arial Photos

As it has been said many times a picture is worth a thousand words. What we are proposing is to move forward with the planning and design of the Addison Cotton Belt Transit Center. Last year we approached the North Central Texas Council of Governments (NCTCOG) to acquire a grant sufficient enough to prepare a Transit Center Plan to use as marketing, sales and negotiating tool to encourage inclusion the DART 2030 Transportation Plan. Unfortunately the grant request was denied. The feeling was that this was a tremendous idea but should be funded from other municipal sources.

The Location of the Transit Center has already been established. Property currently owned by the Town of Addison and the DART Bus Transit Center is the ideal location, bounded by Arapaho Road to the South, Quorum Road to the East, Addison Road to the West and the Cotton Belt Rail Line to the North. This area is key piece to the overall development of the Addison Circle District and the newly proposed Belt Line Road Reinvention Project.

It is our contention that the idea of "Master Planning" the Transit Center Site, even though the grant was denied by NCTCOG, is still a key element to the overall acceptance of the Addison Cotton Belt Project and a show of commitment to create the type and quality project that the Town of Addison has become known. The question is HOW, without the NCTCOG grant, could we fund such an endeavor.

During the last few months the Public Works Department has been perusing Grand Funds from Dallas County for specific "Quiet Zone" crossings (see attached doc) that are currently being funded out of

the DART LAP fund...approximately \$670,000. If we are successful in acquiring this grant from Dallas County we would recommend the immediate redirection of the LAP funds to commission the development of a Master Plan for the Addison Cotton Belt Transit Center.

Process:

The plan development process would be similar to the design and development of the Arapaho Road Bridge and the Arts and Events Center. This project would include resources and input from Public Works, Parks and Recreation and Development Services.

As we have on other projects, Architectural, landscaping, transportation efficiency, and pedestrian features should be key elements of the overall design.

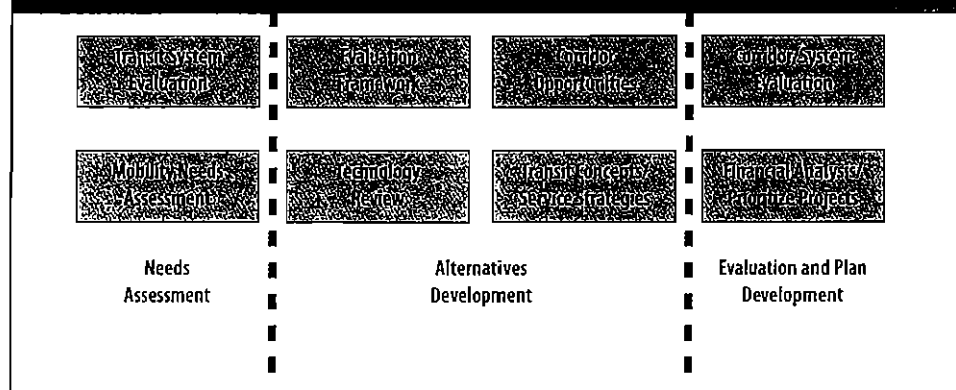
We should know within the next ?????weeks/months if our quiet zone grant has been approved. If and when this grant is approved we would recommend immediately identifying an Architect to begin the process.

Planning for the Future

Dallas Area Rapid Transit (DART) is in the process of updating its long-range Transit System Plan (TSP). The TSP provides a vision for future capital and operating programs in the DART Service Area, which includes 13 member cities. The current TSP has a horizon year of 2010. Most projects in the current TSP have been constructed and are in operation, or are in various phases of design or planning to support implementation before the year 2020. The 2030 TSP update will look beyond the current programmed transit network to identify and prioritize the next generation of rail, bus, high-occupancy vehicle, and other supporting mobility programs to grow the region's multi-modal transportation network and address the projected growth in population and employment. Figure 1 illustrates the planning process for the 2030 TSP update.



FIGURE 1 - System Planning Process



What the Future Holds

Population and employment growth in the Dallas-Fort Worth region is expected to continue to be strong through the year 2030. According to North Central Texas Council of Governments' (NCTCOG) projections, future trends (see Figures 2 and 3) include:

- Nearly doubling population in the region, with most of the growth outside the DART Service Area boundary;
- Nearly doubling employment, with most of the growth also outside DART's Service Area, but with the

majority of jobs still located within the Service Area;

- Nearly doubling of vehicle miles of travel, which trends close to the population and employment growth;
- A five-fold increase in congestion delay – meaning that improvements to the roadway system cannot keep up with population growth.

All of these trends indicate that we will face a less reliable and slower roadway system and spend more of our time

in our cars and in traffic. DART wants to make transit part of the solution to improve mobility in the region and offer fast, efficient and reliable alternatives to the single-occupant vehicle.

A key challenge is how to address growth and mobility needs outside the DART Service Area boundary. Many of these more regional questions are being tackled as part of the Regional Transit Initiative, sponsored by NCTCOG (see www.nctcog.org/rrcs for more information).

Transit as Part of the Solution

DART has defined a range of initial alternatives that will be examined during the 2030 TSP effort. The goal is to develop a multi-modal set of projects and strategies that can address future mobility issues cost-effectively.

Initial alternatives reflect a variety of service strategies developed to meet projected needs within specific planning corridors. Figures 4 and 5 illustrate the initial rail and bus corridors to be tested in the system planning effort. "Express", "Rapid", and/or "Enhanced" service strategies will be tested in the various corridors as appropriate. Table 1 summarizes the characteristics of these different service strategies in terms of their frequency, carrying capacity, and primary right-of-way. While not shown on the map, there are also High Occupancy Vehicle (HOV) Lanes, additional bus services, and mobility programs that will be incorporated into the plan.

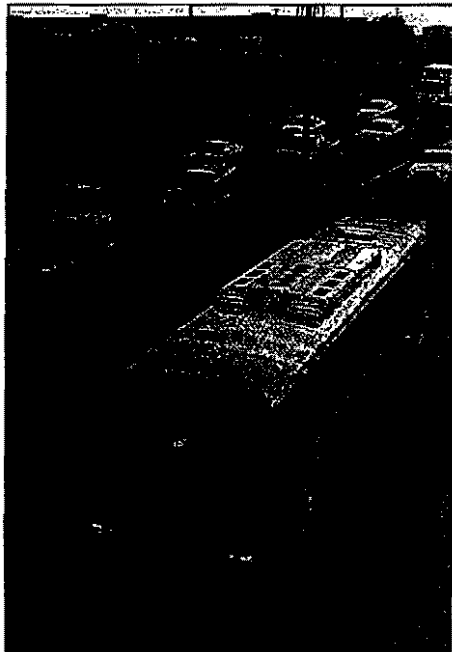
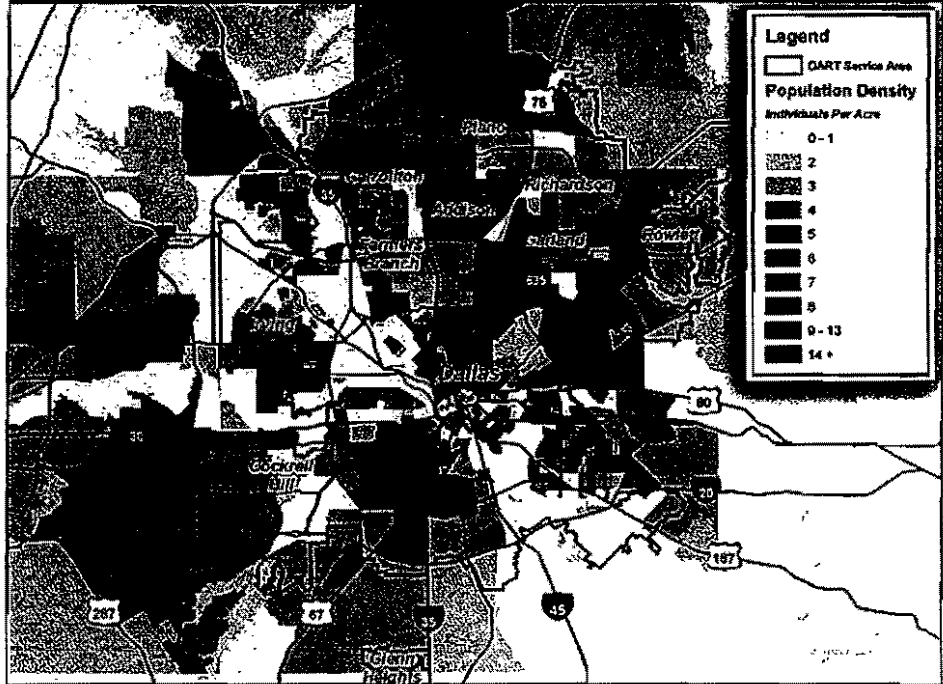


Figure 2 - 2030 Population Density



Figures 2 and 3 illustrate population and employment density projected for the year 2030. Darker areas represent higher densities, where more trips are generated and higher congestion levels typically occur.

Figure 3 - 2030 Employment Density

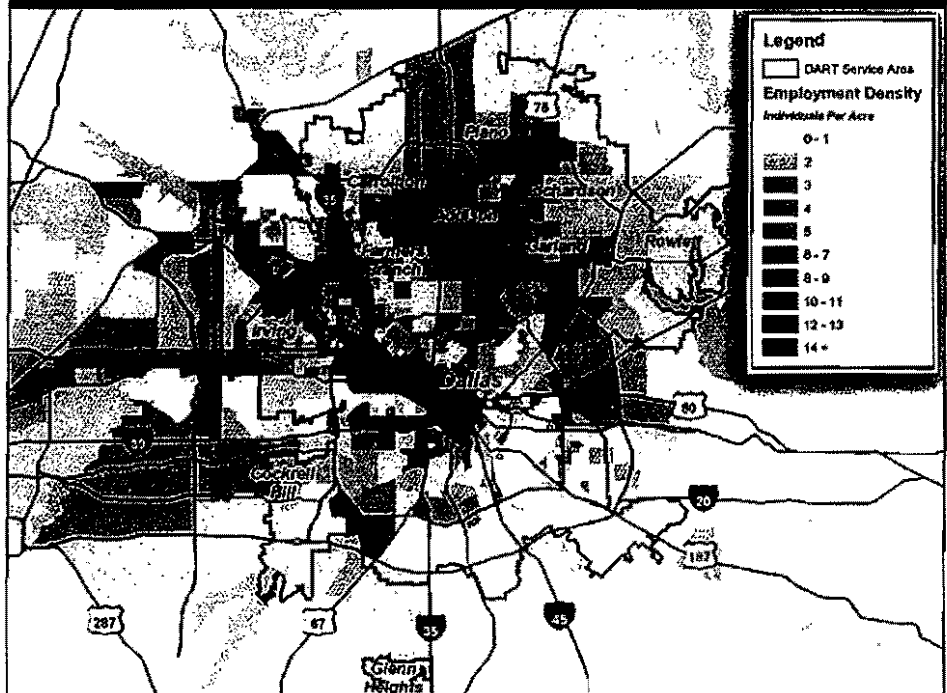


FIGURE 4 - Initial Rail and Bus Corridors To Be Evaluated

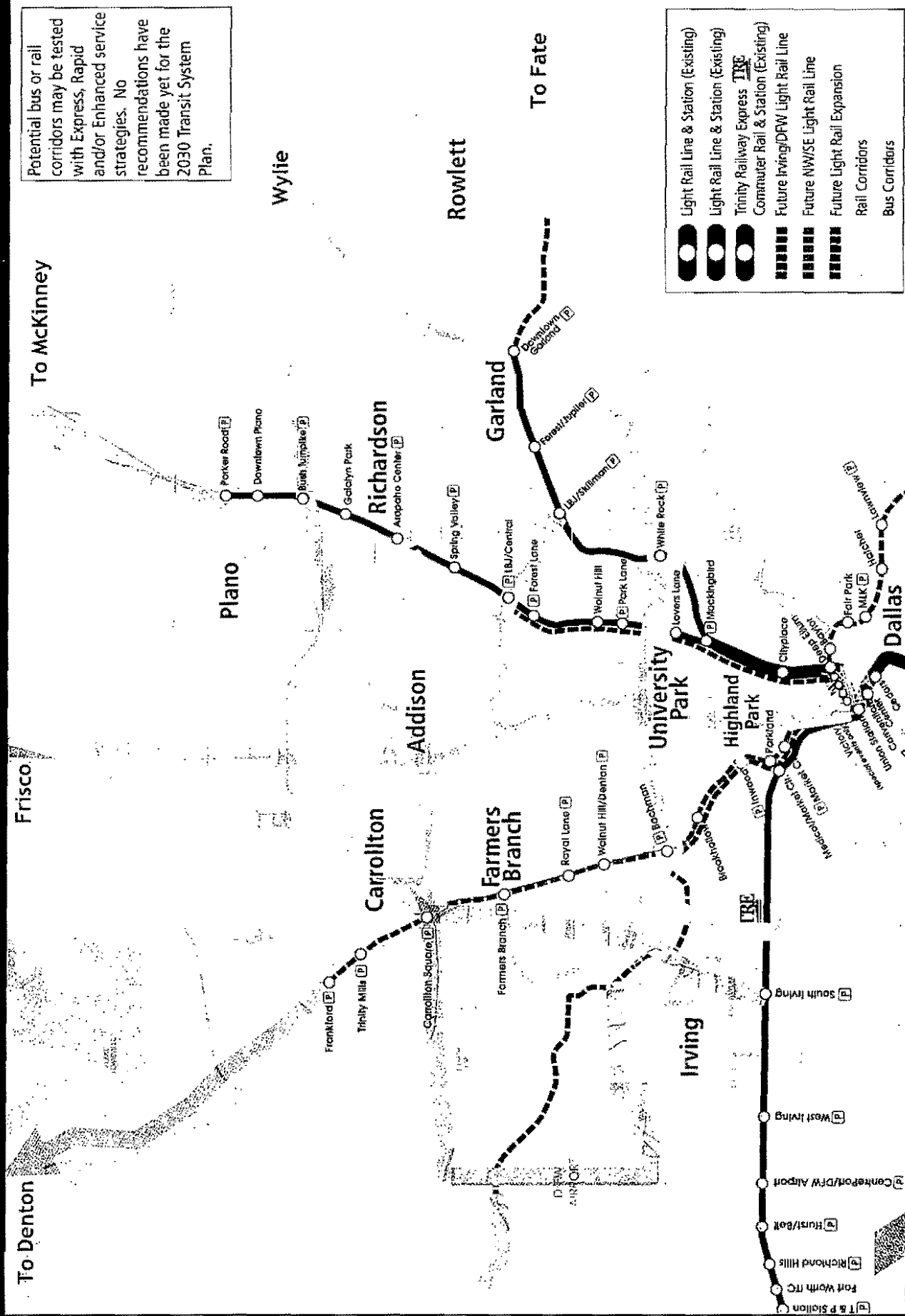
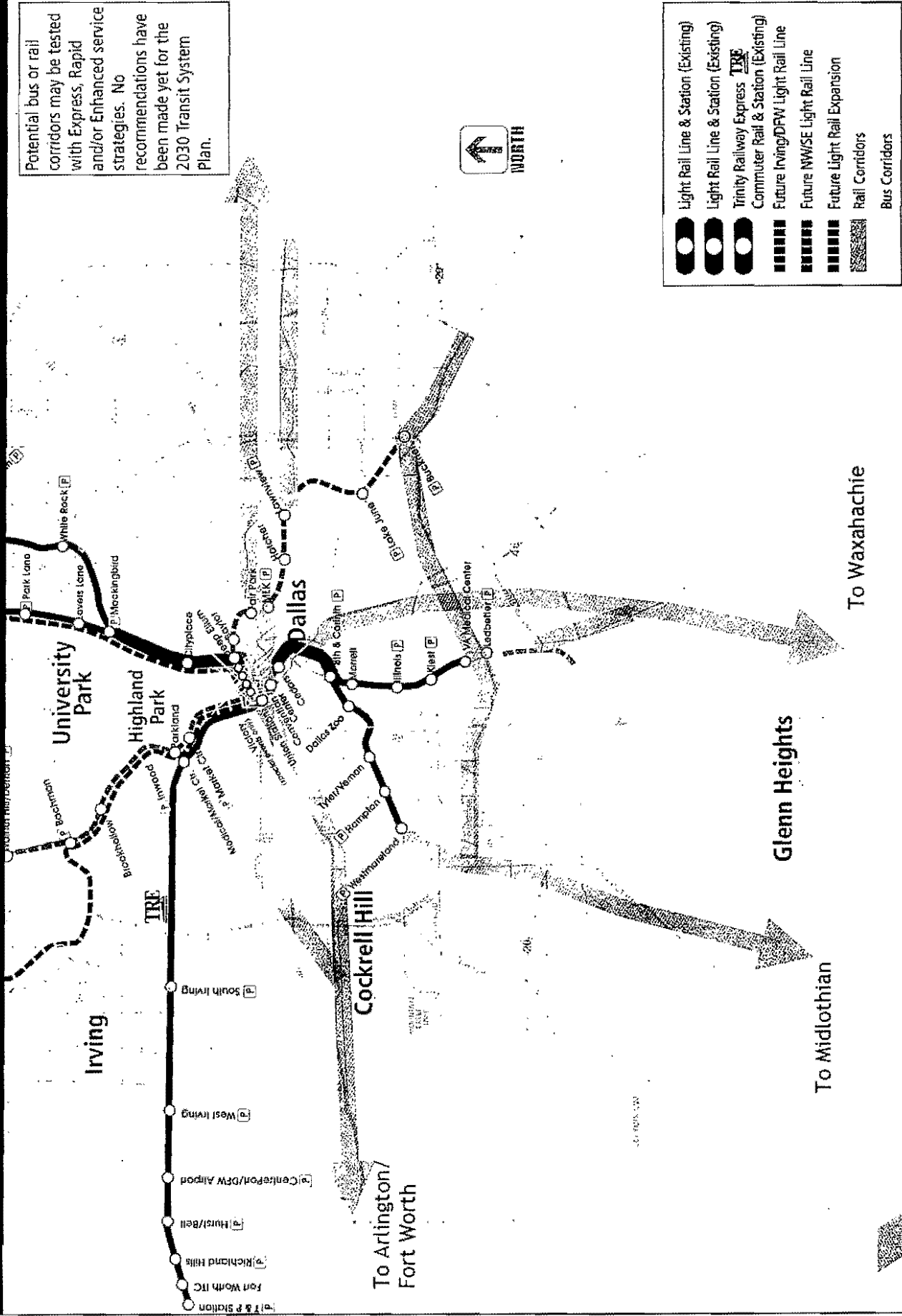


FIGURE 5 - Initial Rail and Bus Corridors To Be Evaluated



Developing the Transit System Plan

DART will conduct a three-step evaluation process to develop the 2030 TSP (see Figure 6). The process begins with the initial set of corridor alternatives, and uses a set of conceptual-level evaluation criteria to refine and screen them. The most promising range of projects will then be combined into several "system plan scenarios" or transit networks. These different system plan scenarios will then go through a more detailed evaluation process, focusing on the system-level performance of the different scenarios – that is, which plans result in the most benefits (ridership, operating efficiencies, air quality, etc.) in the most cost-effective manner?

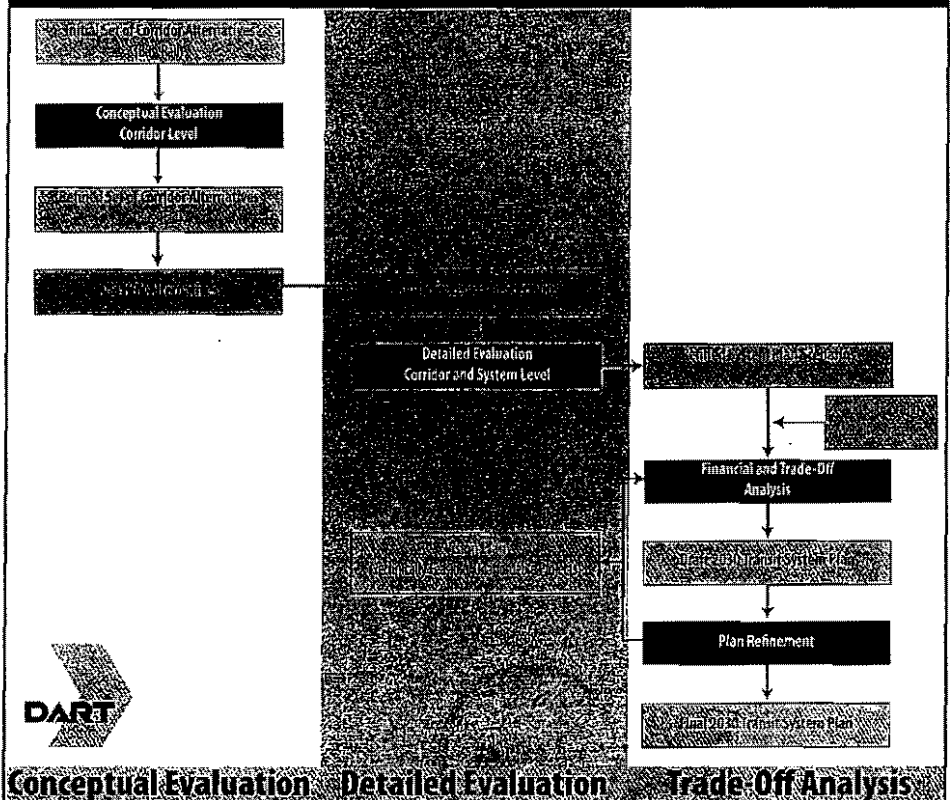
One or more refined scenarios will then go through a trade-off analysis that considers financial constraints. DART will project the amount of funds that may be available through 2030, and will have to select and prioritize improvements based on the amount of funding available. Promising projects that are not affordable may be included in a non-financially constrained vision plan for future consideration. This vision plan may also include projects outside the DART Service Area that could be implemented by others, or could be reassessed in future TSP updates if new member cities join DART.



Table 1 - Service Strategy Characteristics

Service Strategy	Service Frequency (Peak Hours/Week)	Typical Peak Hour/Week Boarding Capacity (per direction)	Primary Right-of-Way
EXPRESS <i>High speed service designed to serve long trips with limited station stops</i>			
Express Rail	20 / 60	500 to 1,500+ (varies with technology)	Existing railroad corridor
Express Bus	10 / none or limited	200 to 300	Freeway / HOV System
RAPID <i>Medium speed service designed to serve short-medium trips with more frequent station stops</i>			
Rapid Rail	10 / 20	2,400 to 3,200	Existing railroad corridor and / or Street corridors
Rapid Bus	10 / 20	300 to 400	Freeway / Street System
ENHANCED <i>Low-cost improvements to enhance speed, service and convenience in major bus corridors</i>			
HOV	Depends on transit service on HOV system	1,700 per lane (automobiles) Also see Express Bus section above	Freeway System
MOBILITY PROGRAMS <i>Supporting programs such as Intelligent Transportation Systems (ITS), Travel Demand Management (TDM), and Transportation System Management (TSM).</i>			

Figure 6 - Evaluation Process Flow Chart



The LINK

2030 Transit System Plan Newsletter

DART

What's Next

DART held six public meetings in April 2004 to discuss the TSP effort, highlight future mobility issues, and review the initial alternatives and evaluation process. The original schedule shown at the April 2004 meetings listed public meetings in July 2004. Due to delays in ridership modeling, the next round of public meetings are tentatively scheduled for late 2004 or early 2005. These meetings will present the preliminary results and recommendations of the conceptual evaluation phase. Thus, the next several months are focused on ridership

analyses, cost estimates, and completion of the conceptual evaluation phase, taking into consideration comments received during the April 2004 meetings.

**For more information
visit the "Expansion
Studies" section of
www.DART.org**

Want More Information?

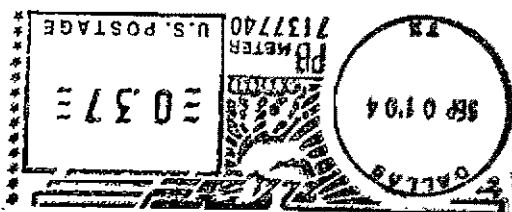
We encourage you to become active in the planning process. If you would like a briefing on the 2030 TSP effort or information on a specific area of interest, contact DART Community Affairs at 972.302.2533.

You may also contact:

Chitraex Jullia (DART Community Affairs) at chitraex@DART.org

Kay Sharon (DART Capital Planning & Development) at ksharon@DART.org

Jim Pierce
6916 Echo Bluff
Dallas, TX 75248

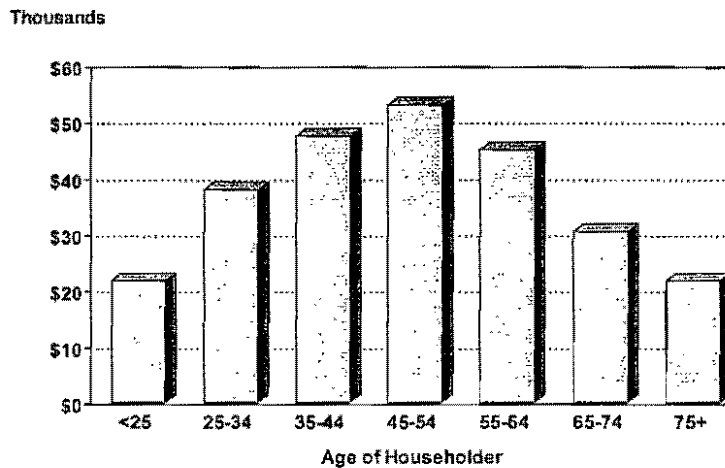


Dallas Area Rapid Transit
1401 Pacific Avenue
P.O. Box 660163
Dallas, TX 75266-7232

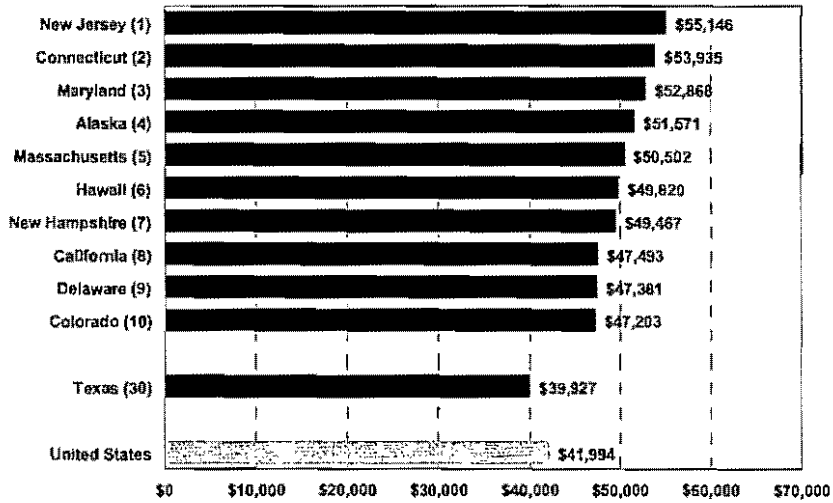
2040 Population Projections

Rank	COG Area	Population		Change in Population	
		2000	2040	Number	Percent
1	Capital Area Planning Council	1,346,833	4,802,535	3,455,702	256.6
2	North Central Texas Council of Governments	5,309,277	17,091,098	11,781,821	221.9
3	South Texas Development Council	264,177	786,341	522,164	197.7
4	Lower Rio Grande Valley Development Council	924,772	2,599,376	1,674,604	181.1
5	Houston-Galveston Area Council	4,834,454	12,883,490	8,029,036	165.4
6	Central Texas Council of Governments	374,318	745,272	370,754	99
7	Rio Grande Council of Governments	704,318	1,274,183	569,865	80.9
8	Alamo Area Council of Governments	1,807,868	3,136,524	1,328,656	73.5
9	East Texas Council of Governments	745,180	1,275,802	530,622	71.2
10	Big Bend Valley Council of Governments	267,085	425,411	158,326	59.3
11	Coastal Bend Council of Governments	549,012	873,659	324,647	59.1
12	Hill Country Council of Governments	321,536	506,024	184,488	57.4
13	Pathfinder Regional Planning Commission	402,862	593,469	190,607	47.3
14	Deep Eam Texas Council of Governments	355,862	522,052	166,190	46.7
15	South East Texas Regional Planning Commission	385,090	532,846	147,756	38.6
16	Middle Rio Grande Development Council	154,381	213,897	59,516	38.6
17	Texoma Council of Governments	178,200	236,905	58,705	32.9
18	Golden Corral Regional Planning Commission	183,903	233,946	50,043	27.2
19	Permian Basin Regional Planning Commission	376,672	431,016	54,344	14.4
20	Concho Valley Council of Governments	148,212	169,314	21,102	14.2
21	MORTEX Regional Planning Commission	224,366	245,267	20,901	9.3
22	South Plains Association of Governments	377,871	404,206	26,335	7
23	West Central Texas Council of Governments	324,901	320,811	-4,090	-1.3
24	Arki-Tex Council of Governments	270,468	289,517	19,049	7

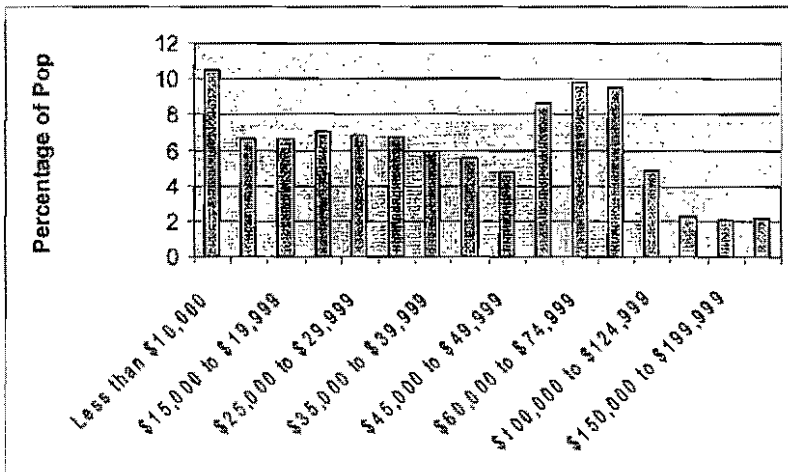
Median Household Income in 1999 in Texas by Age of Householder



States Ranked by Median Household Income in 1999



Texas Income Distribution (2000)



2030 TRANSIT SYSTEM PLAN

Public Meetings

April 2004



AGENDA

- DART Transit System Plan
 - What is it?
 - Why plan?
 - Guiding Principles
- Planning Process
- Growth Trends and Mobility Issues
- Technology Options
- Transit Service Strategies
- Initial Alternatives (Rail, Bus, HOV)
- Evaluation Process
- Schedule and Milestones



DART Transit System Plan

- What is it?
 - The Transit System Plan is the long-range element of DART's Transit Service Plan and provides an indication of future capital and operating programs for DART.



- Policies
- Strategies
- Implementation and Phasing
- Vision

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PLAN

Current 2010 Transit System Plan

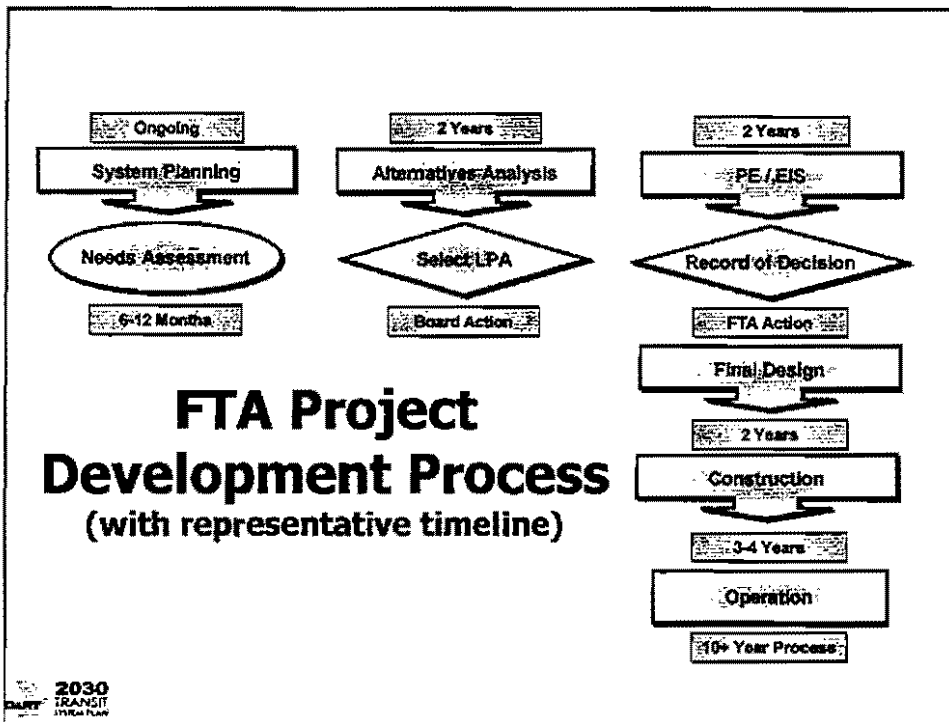
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DART Transit System Plan

- Why plan 25 years into the future?
 - To define a vision based on future needs
 - To determine project phasing and budget needs
 - To consider project development timeframe (concept through construction)
- Why update the plan every few years?
 - To respond to changing land use and development patterns
 - To respond to changing financial conditions and assumptions
 - DART sales tax income
 - Other local, regional or federal funds

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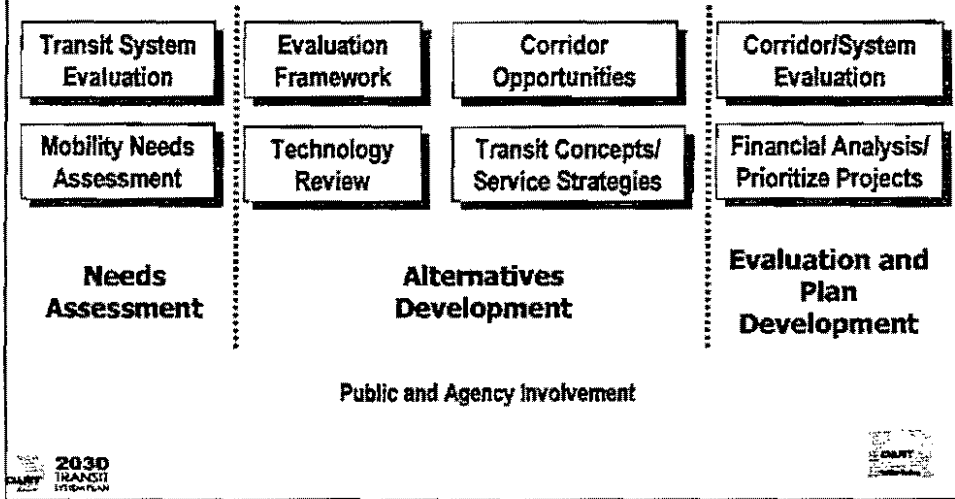
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2030 Transit System Plan (TSP) DART Board Guiding Principles

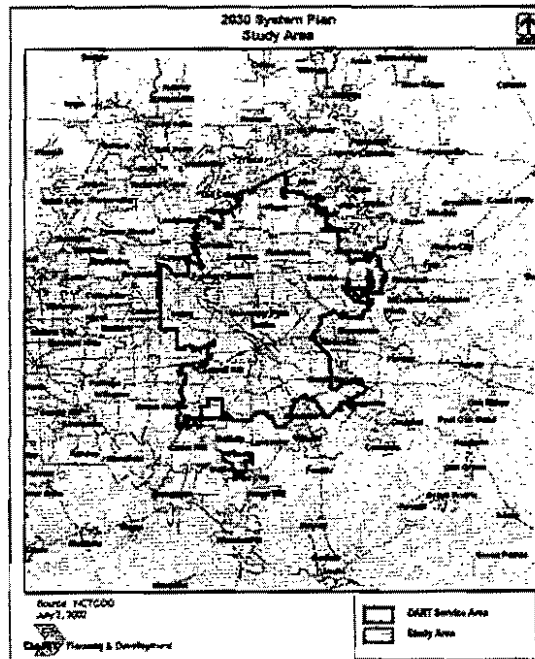
1. **Mobility** - to serve market needs and opportunities, provide an integrated system, and preserve right-of-way
2. **Fiscal Responsibility** - to provide an efficient and cost-effective system
3. **Land Use and Economic Development** - to encourage transit-oriented development and responsible land use planning
4. **Planning Process** - to develop a common vision with broad-based support

System Planning Process

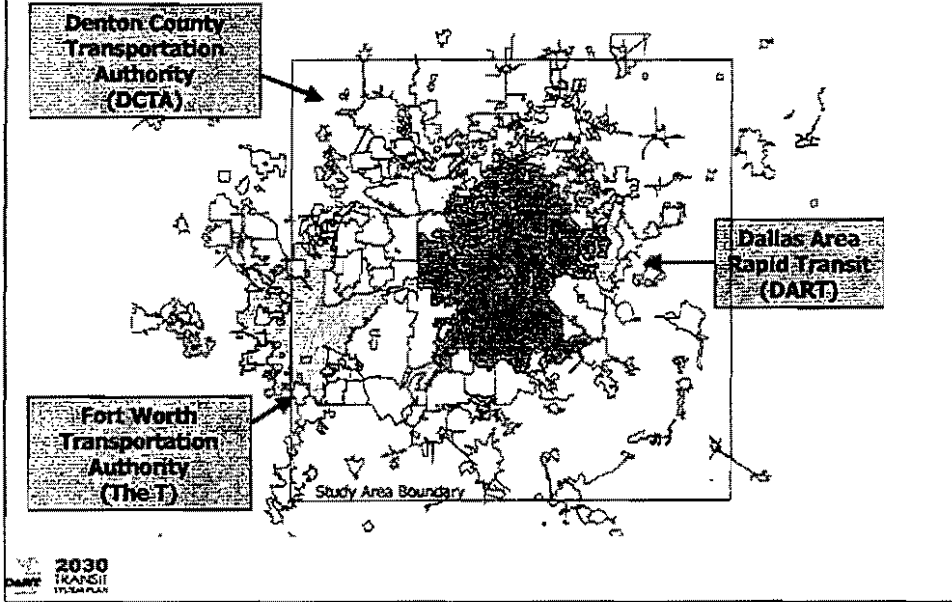


Study Area

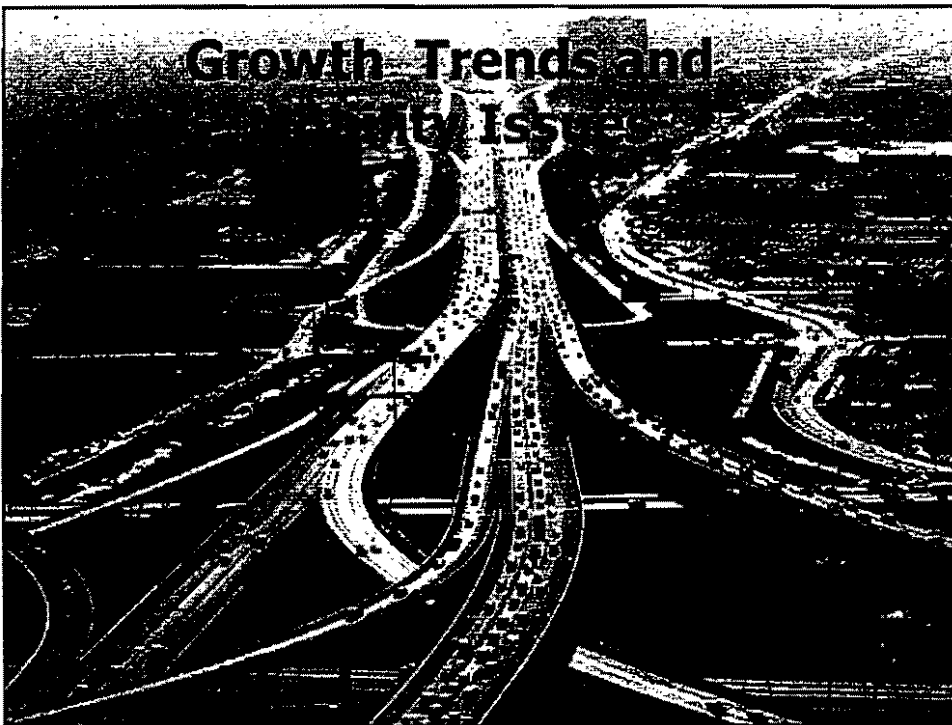
- Focus is DART 13-Member City Service Area
- Study Area is larger
 - to understand mobility issues and potential projects outside Service Area
 - how might those issues or other projects impact DART service



Regional Transit Authorities



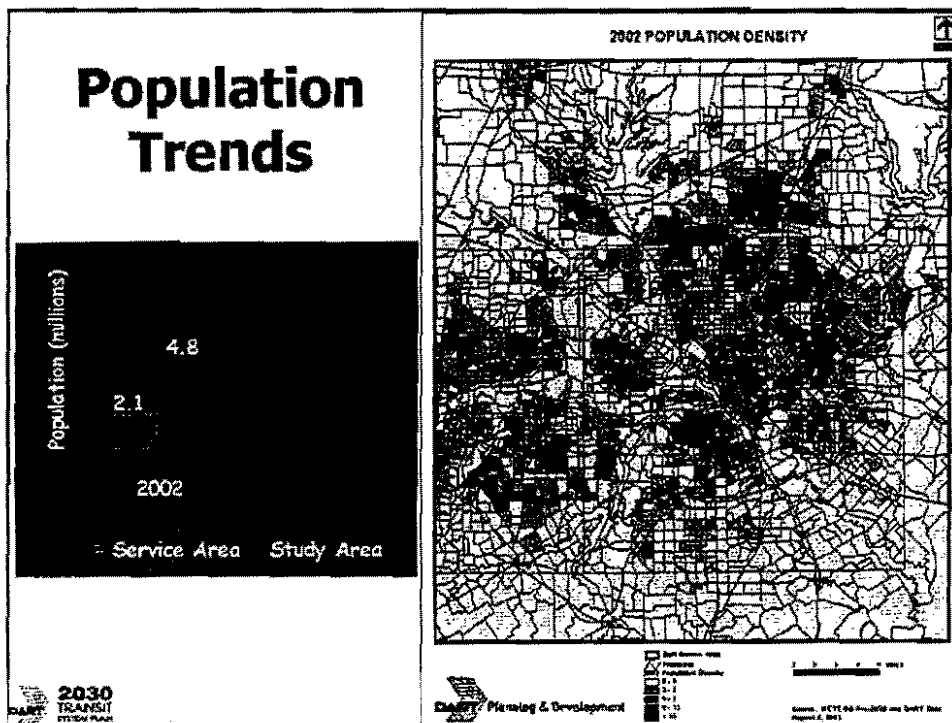
Growth Trends and Quality Issues

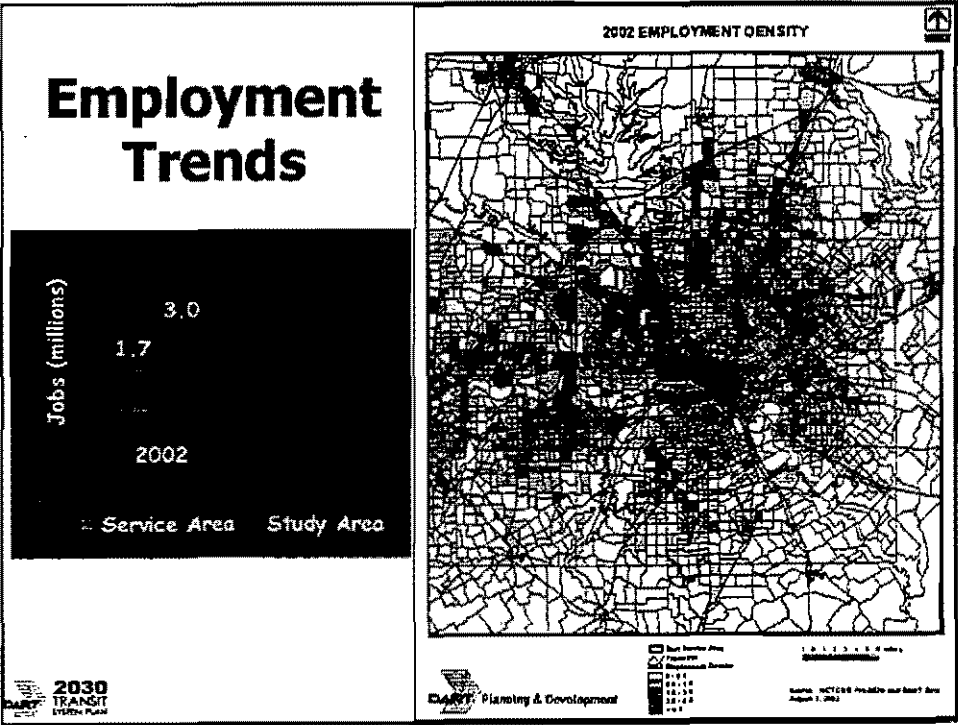
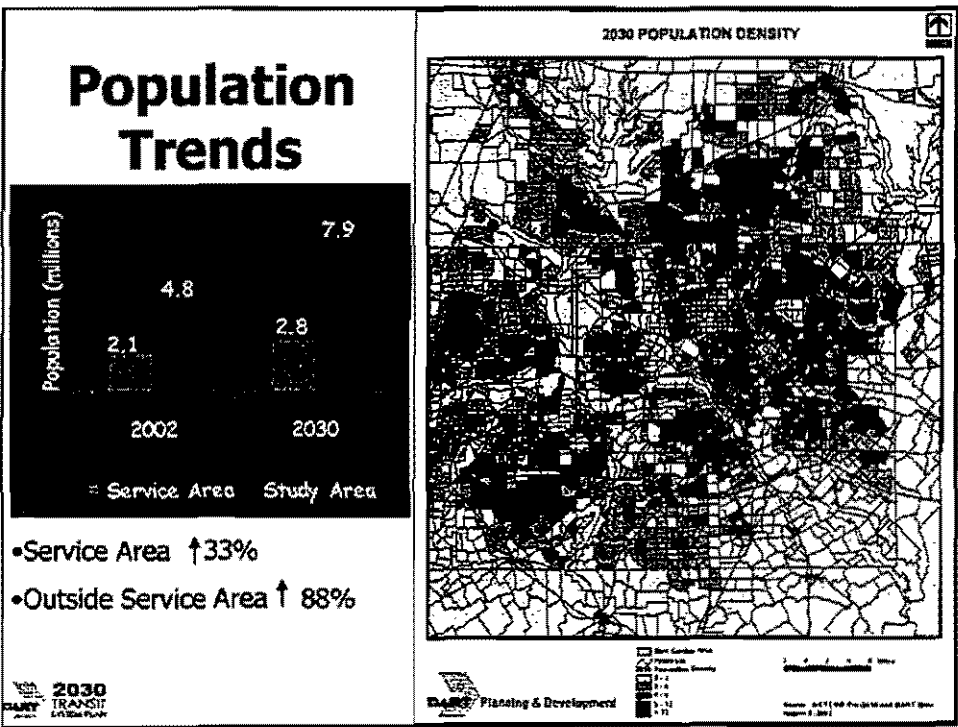


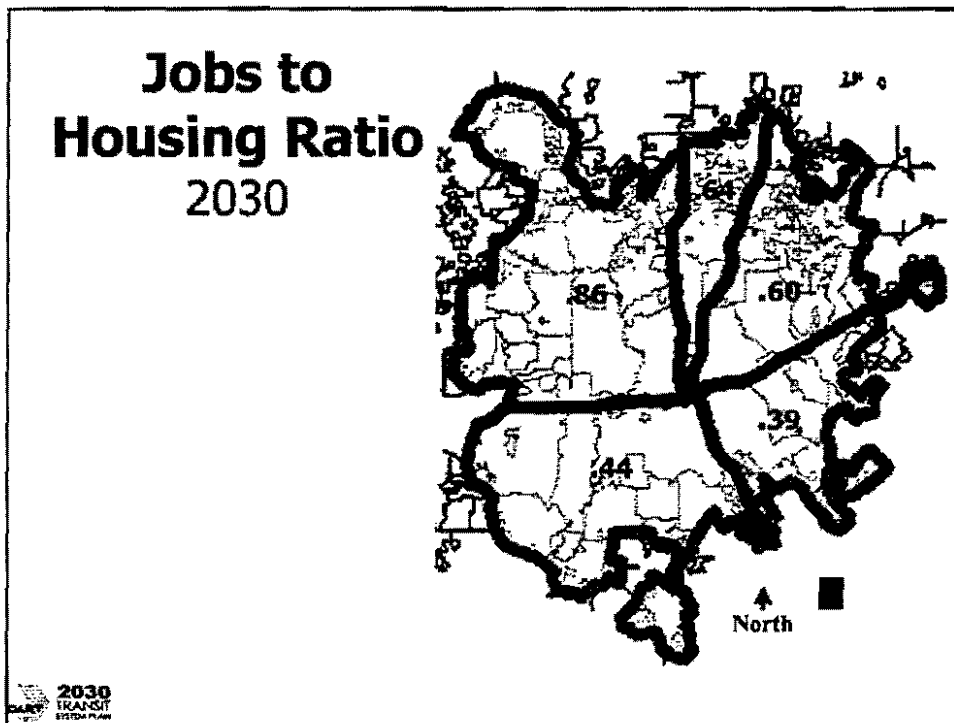
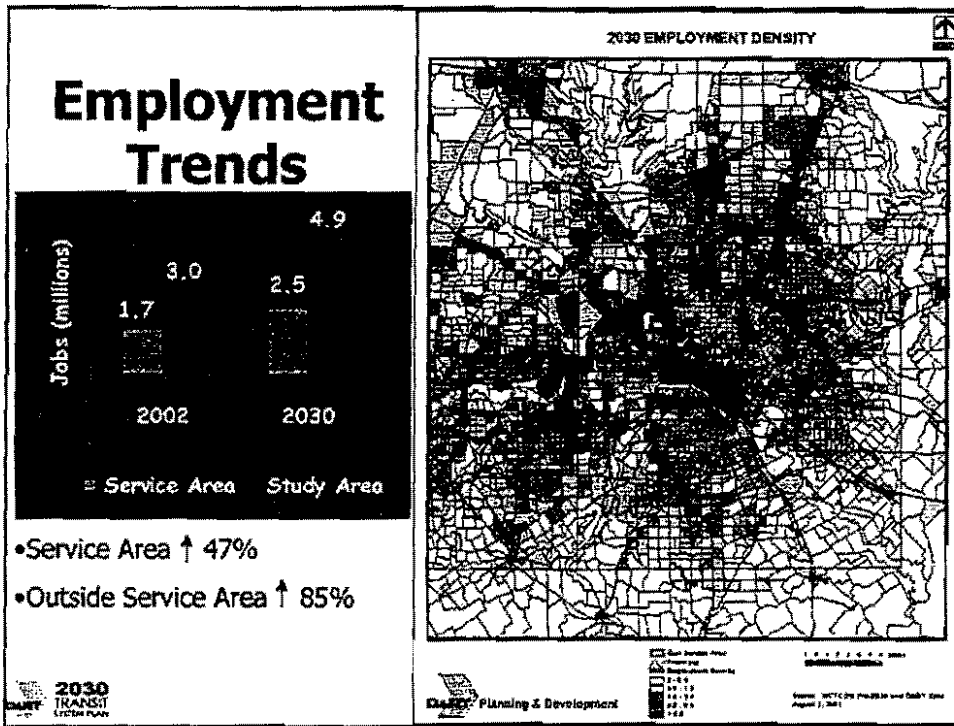
Mobility Needs Overview

- Where is population and employment growth predicted to occur?
- What will travel patterns look like – where do people want to go?
- What is the future market for transit?
- Travel Demand
 - ✓ Population + Employment = Trip Density
 - ✓ Trip Density – System Capacity = Congestion
 - ✓ Indications of Congestion = Potential Markets

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Urbanization Levels (2002)

Population Density
+ Employment Density
Urbanization

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2002 URBANIZATION INDEX



Planning & Development

0 20 40 60 80 100
Urbanization Index

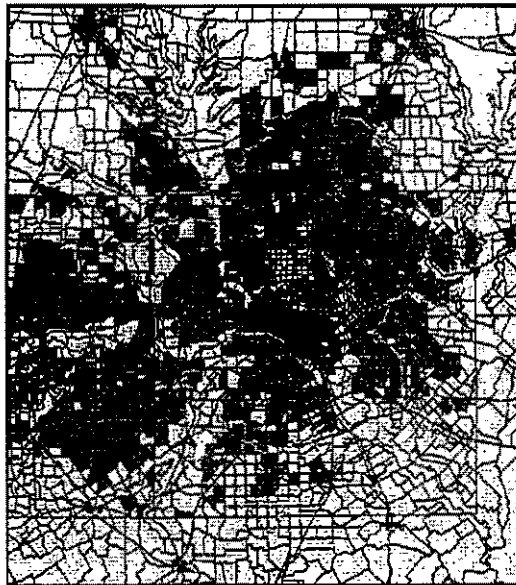
Source: DCTD's Pro-Model and Data Team
August 7, 2003

Urbanization Trends (2030)

Population Density
+ Employment Density
Urbanization

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2030 URBANIZATION INDEX



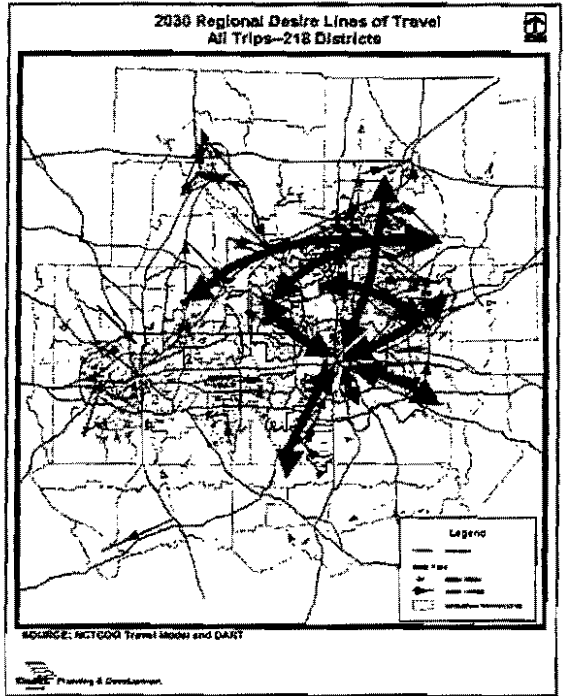
Planning & Development

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Urbanization Index

Source: DCTD's Pro-Model and Data Team
August 7, 2003

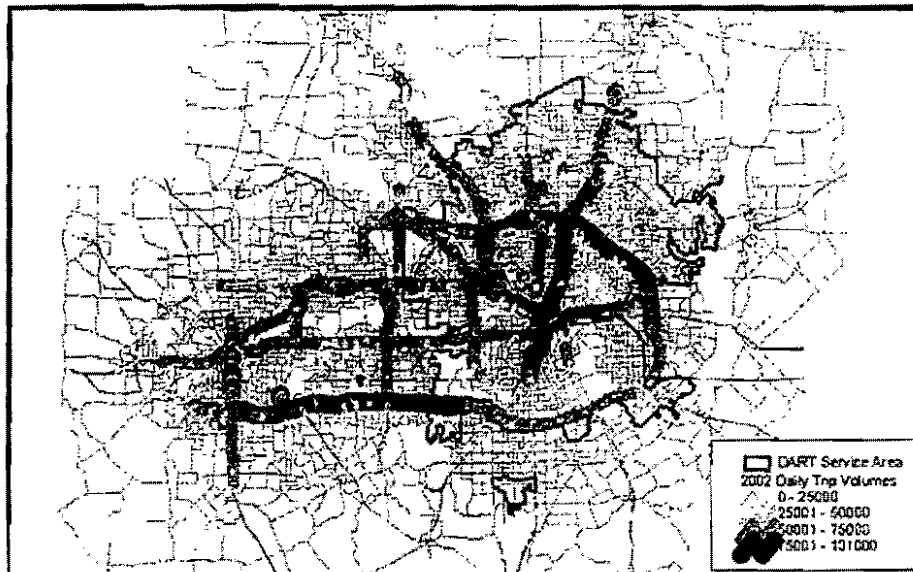
Regional Desire Lines of Travel

- Trips becoming more dispersed
- Major travel patterns emerge



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HIGHWAY

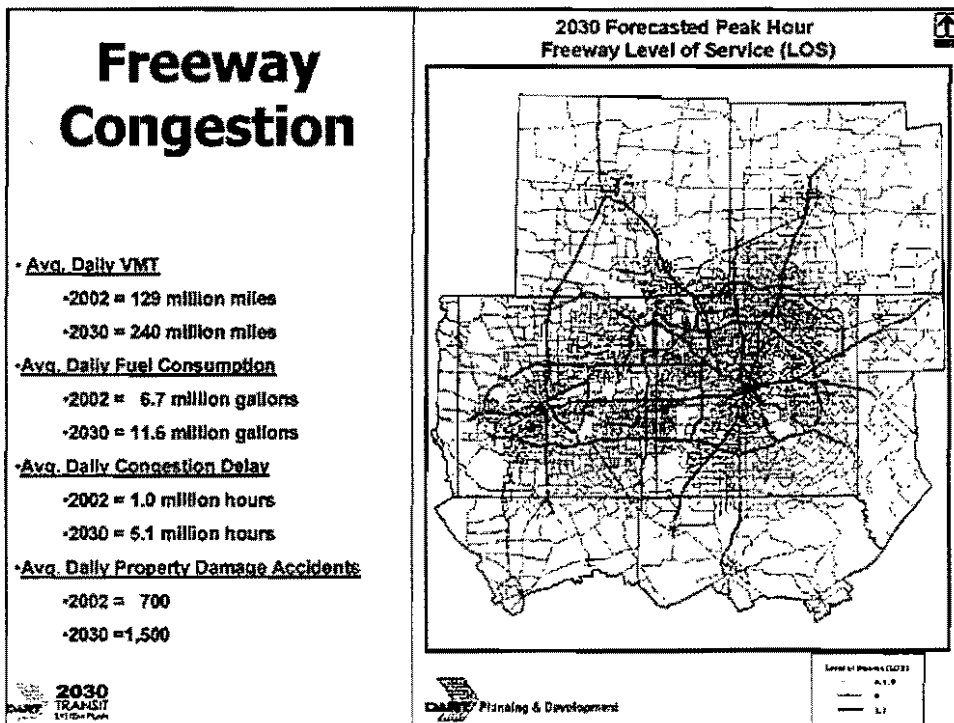
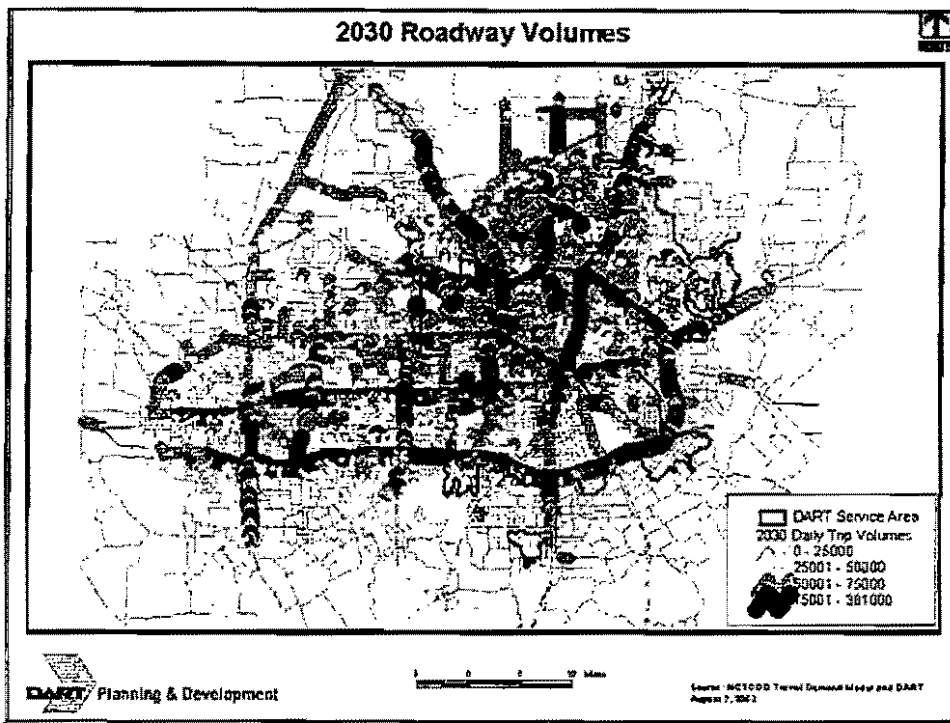
2002 Roadway Volumes



DART Planning & Development

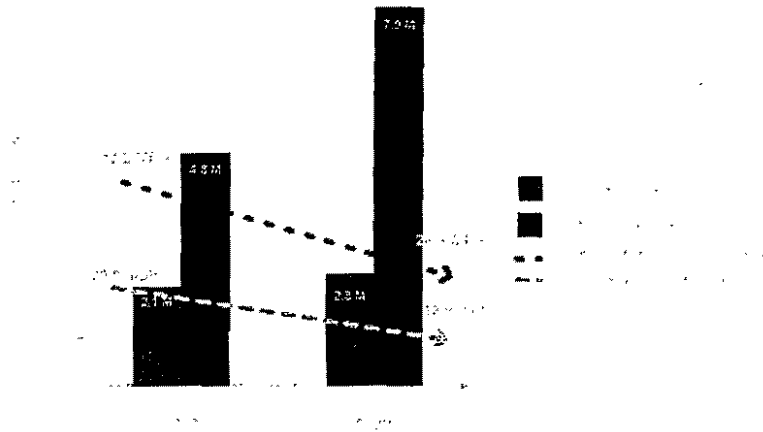
0 5 10 Miles

SOURCE: RCTSD's Travel Demand Model and DART
Figure 2, 2001



Mobility Needs Overview

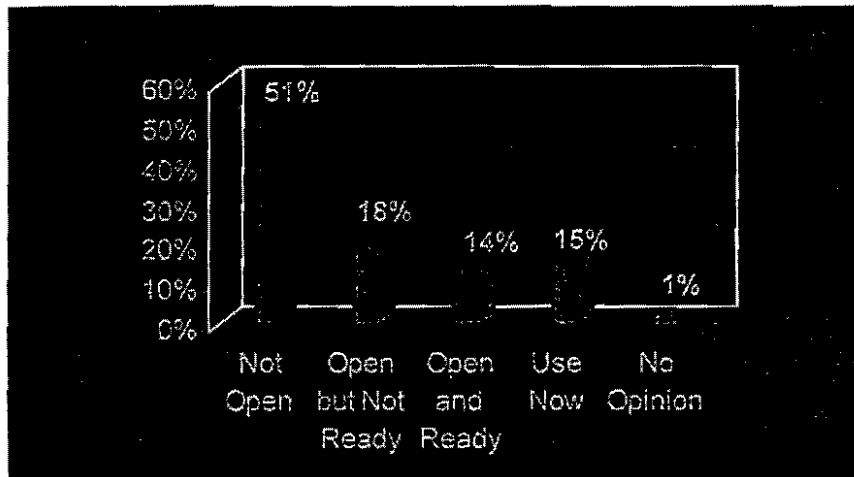
Comparison of Population Growth to Land Requirements



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Market Assessment

(Question: Which of the following best describes your feeling about public transportation?)



Source: DART 2002 Climate Survey

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Technology Review



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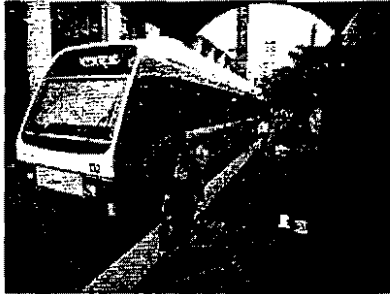
Technology Review

- Variety of technologies can be used in DART system
- Desire is to have technologies well-suited to the service strategy and environment in which they operate:
 - What works best to get people to where they want to go?
 - Can the technology address community concerns (noise, visual, etc.)?
 - How customer-friendly is the technology?
- The 2030 Transit System Plan focuses on the service strategy:
 - more detailed studies would confirm technology type

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Technology Options

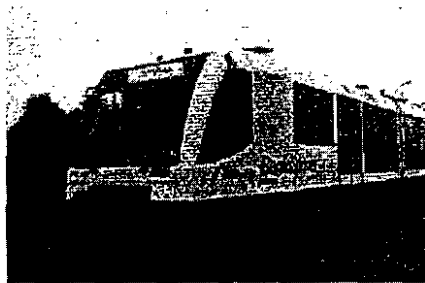


DART Light Rail Transit (LRT)

- Station Spacing: <1 to 3 miles
- Design flexibility
- Low to high capacity
- Serve short-medium length trips
- Powered by overhead catenary system
- FRA non-compliant - Cannot share railroad with freight
- Typical capital cost/mile: \$20-\$55 million

Lightweight Diesel Multiple Unit (DMU)

- Similar to LRT but diesel powered; no overhead catenary
- Station Spacing: <1 to 3 miles
- Widely used in Europe
- FRA non-compliant - Cannot share railroad with freight
- Typical capital cost/mile: \$5-\$20 million



Technology Options



Diesel Locomotive

- Diesel-powered, Locomotive-pulled trains
- Station Spacing: 3 to 5 miles
- Used for Dallas-Fort Worth Trinity Railway Express (TRE) Commuter Rail service
- Serves longer-trips at high average speeds
- FRA compliant - Can share railroad with freight
- Typical capital cost/mile: \$5-\$25 million

Diesel Multiple Unit (DMU)

- Self-propelled, diesel powered units
- Used for Dallas-Fort Worth Trinity Railway Express (TRE) Commuter Rail service
- Station Spacing: 3 to 5 miles
- Serves longer trips at high average speeds
- FRA compliant - Can share railroad with freight
- Typical capital cost/mile: \$5-\$25 million



Technology Options



Streetcar

- Low to medium capacity intra-urban service
- Powered by overhead catenary system
- Frequent station stops
- Typically operates on streets – shared lane with autos, or exclusive lane
- Vehicles can be vintage, modern, or new made to look old
- Vintage vehicles used on Dallas' McKinney Avenue
- Portland, OR has a modern streetcar system
- Typical capital cost/mile: \$10-\$25 million



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Technology Options

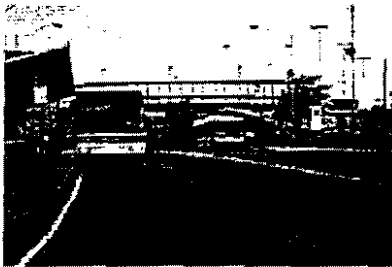


High Occupancy Vehicle (HOV) Strategies

- Dedicated freeway lanes for high speed carpool and transit service
- Several existing and planned HOV lanes in DART Service Area
- Typically serves longer trips with medium-high operating speed
- Used for Express bus service
- Typical capital cost/mile: \$5-8 million (varies)

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MIDRANGE PLAN

Technology Options



Bus Rapid Transit (BRT)

- Exclusive transitway for bus use
- Medium capacity service with speeds comparable to LRT (20-35 mph average)
- Station spacing: 1-3 miles
- Typically serves longer trips with medium-high operating speed
- Typical capital cost/mile: \$4-40 million (varies)

Enhanced Bus Strategies

- Would use low-floor bus technology
- Focused on enhancing service by increasing speed and customer convenience
- Operates on arterial streets with some level of transit priority treatment (dedicated bus lane, traffic signal priority, etc.)
- Typically serves short trips
- Typical capital cost/mile: < \$1million (varies)



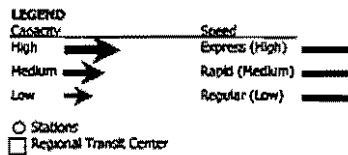
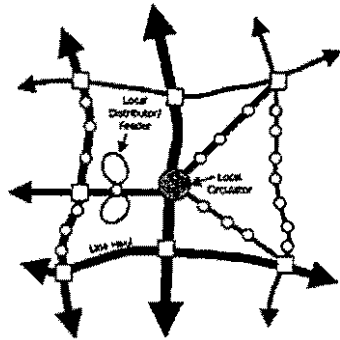
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PROGRAM

Transit Service Concepts and Initial Alternatives



Transit Service Concepts

Transit Service Examples

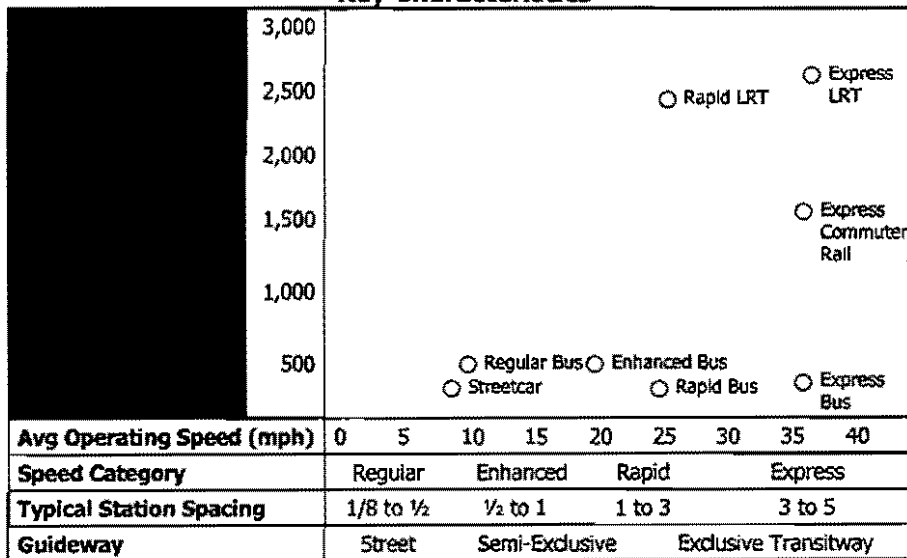


- **Express:**
 - Regional commuter rail
 - Express Bus
- **Rapid:**
 - Light Rail Transit (LRT)
 - Bus Rapid Transit (BRT)
- **Enhanced:**
 - Enhanced Bus
- **Regular:**
 - Local Bus
- **Circulator/Feeder:**
 - Streetcar
 - Activity Center circulator
 - Bus feeder routes

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Transit Service Concepts

Key Characteristics



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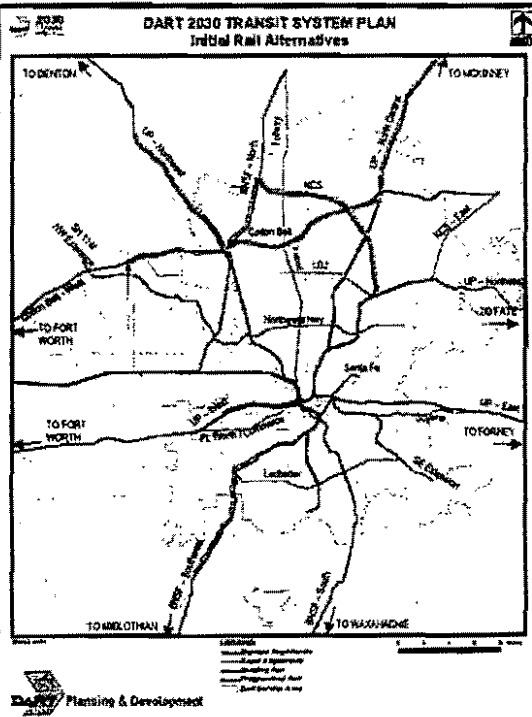
Initial Alternatives

- Initial bus, rail and HOV alternatives have been defined based on mobility issues, DART staff, and member city and agency staff input
- Provides the basis for defining model runs to test various corridor alternatives and service strategies
- Alternatives focus on service strategy rather than mode. Service strategies include:
 - **Express** – high speed, limited stations, long-haul trips
 - **Rapid** – moderate speed, closer stations, short-medium-haul trips
 - **Enhanced** – improved service through physical/operational enhancements

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Initial Rail Alternatives

- Range of express and rapid alternatives
- Corridor segments defined at logical break points

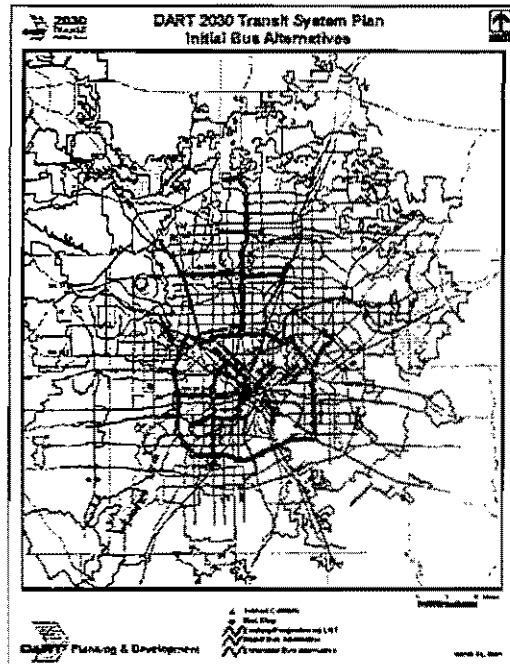


2030
TRANSIT
SYSTEM PLAN

Initial Bus Alternatives

- Bus Rapid Transit (BRT) on Loop 12
 - Low-moderate investment
 - Exclusive or shared ROW with BRT stations
- Enhanced Bus Strategies on major bus corridors
 - Low cost enhancements to improve speed and convenience

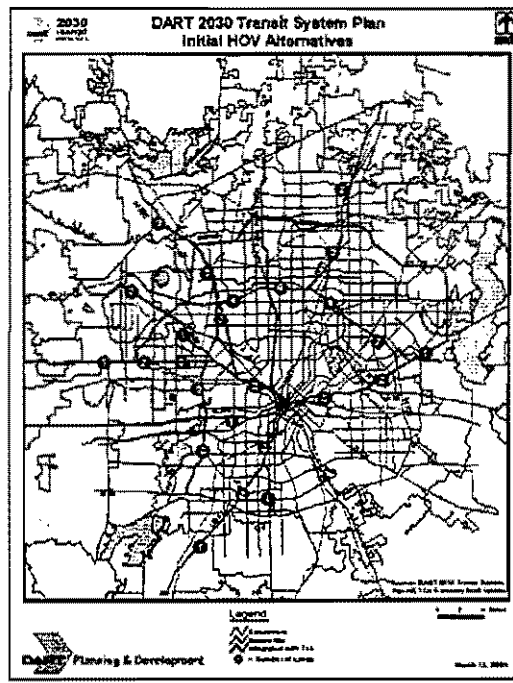
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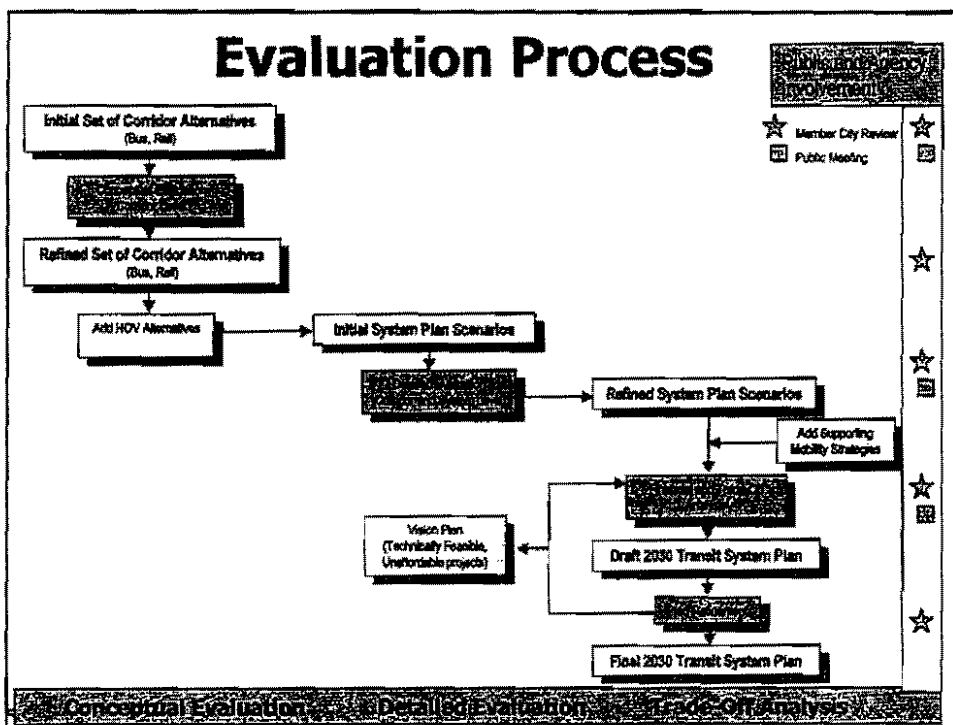


Initial HOV Alternatives

- Used Mobility 2025 Plan update as basis for alternatives
- 2030 TSP will focus on defining transit enhancements to take advantage of HOV facilities

2030
TRANSIT
SYSTEM PLAN





Evaluation Categories

- Six major evaluation categories
 - Mobility
 - Feasibility
 - Cost-Effectiveness/Affordability
 - Land Use/Economic Development
 - Environmental
 - Public and Agency Support

Example Evaluation Criteria

Mobility	Ridership Potential - <i>uses benchmarks</i>
	Travel Time Savings Potential (vs. auto)
	Connectivity
Feasibility	Right-of-way availability; ownership
	Level of transit priority
Cost-Effectiveness/ Affordability	Annualized Cost per Rider/Mile - <i>uses benchmarks</i>
Land Use/Economic Development	Urbanization Level (1/2 mile buffer)
	Market Area Potential (3 mile buffer)
Environmental	Air Quality effects (change in VMT from baseline)

Evaluation Process

- Alternative corridor strategies will be qualitatively ranked "High, Medium, or Low"
 - Quantitative data will back up ranking
- Benchmarks will be defined to compare to 2030 forecast ridership and cost-effectiveness
 - Potential indicator of federal fund competitiveness
- Evaluation will support dropping alternatives or segments that do not perform well
 - Refined alternatives that perform well will be included in Initial System Plan scenarios for detailed evaluation



Schedule and Milestones

TASK	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Public and Agency Involvement	★	☐	★	★	☐	★		★		★
Corridor Opportunities / Alternatives Development	■									
Evaluation Methodology and Criteria	■									
Cost Estimates	■									
Ridership Modeling*	■									
Conceptual Evaluation		■								
Initial System Plan Scenarios				■						
Detailed Evaluation					■					
Refined System Plan Scenarios						■				
Trade-Off Analysis / Draft 2030 TSP Development							■			
Final 2030 TSP / Approvals								■		

★ Member City Review

☐ Public Input

☐ DART Board approval



* Any delays to ridership modeling will impact overall schedule

NEXT STEPS

- Next three months will focus on:
 - ridership modeling
 - conceptual evaluation
- Public meetings planned for Summer 2004 to review:
 - conceptual evaluation results
 - initial system plan scenarios

Contact Information

- www.DART.org
 - Information available under "Publications"
- Michael Miles / Rosa Cavazos Rosteet
 - Community Affairs
 - 214/749-2853 / 214/749-2522
 - mmiles@dart.org / rrosteet@dart.org
- Kay Shelton / Ernie Martinez
 - Project Management/Technical Issues

