POLICY / TECHNICAL COMMITTEE 2

E-5 AND E-6

1:30 p.m., Tuesday, August 3, 2004
Council Chambers, City of Waxahachie

North Central Texas Council of Governments
ACTIVITIES TO DATE

• July 2003
  – First Committee Meetings/Study Orientation
• September 2003
  – Technology Evaluation Criteria
  – Station Location Analysis
  – Orientation to the Corridors (Infrastructure)
• November 2003
  – Technology Applications in Corridors
  – Station Prototypical Layouts
  – Land Use Status Report
  – Freight Bottleneck Study Update
  – Transportation Authority Update
• March 2004
  – Consideration of Regional Rail Alternatives
  – Discussion of Non-Rail Transit Services
  – Opportunities for Transit Oriented Development
• June 2004
  – Consideration of Regional Rail, Light Rail, Bus Rapid Transit Alternatives
  – Discussion of Estimated Costs, Ridership, Benchmarks
  – Discussion of Non-Rail Transit Services
  – Opportunities for Transit Oriented Development
TODAY’S AGENDA

• Presentation of Corridor Recommendations for the E-5 and E-6 Corridors (30 min.)
  – Introduction and Project Overview
  – Assumptions and Refinements
  – Recommendations (Rail and Non-Rail)
  – Transit Oriented Development Financing

• Discussion of Proposed Services (30 min.)

• At-Grade Railroad Crossings and Quiet Zones (10 min.)

• Implementation of Regional Rail System Service (15 min.)
  – Status of Regional Transit Initiative Efforts
  – Opportunities to Further Investigate Evolving Rail Technology
CONSENSUS PROCESS: A “Bottom-Up” Approach

- PROVIDE OPTIONS TO LEGISLATURE
  - David Cain

- EVALUATE INSTITUTIONAL STRUCTURES
  - Lee Jackson

- MATCH REVENUES TO NEEDS

- IDENTIFY CAPITAL AND OPERATING COSTS

- TRANSIT RELATED NEEDS

- EVALUATE FINANCING OPTIONS
  - Wendy Davis
COST ESTIMATES

• Estimates Are Based on Unit Costs for Each Element

• Cost Elements
  – Site Work, Utilities and Urban Design
  – Traction Electrification System [Light Rail Transit (LRT) Only]
  – Crossings/Roadway/Signal System
  – Trackwork
  – Structures
  – Stations
  – Vehicles
  – Other

• Extraordinary Real Estate or Railroad Agreements Not Included
2030 RIDERSHIP FORECASTS

- Performed by NCTCOG Transportation Department Staff Using DFW Regional Travel Model
- Uses Regionally Approved 2030 Demographic Forecasts
REGIONAL RAIL TECHNOLOGY

Vehicle Types for Possible Use in Corridors E-5 and E-6
PERFORMANCE

• Preliminary Performance Benchmark Methodology Uses:
  – Estimate of Cost
    • Considers Useful Life, Annualization, Total Construction Costs (including contingencies)
  – Estimate of Daily Riders
• Reflects Most Factors Used in Federal Transit Administration Evaluation
PROPOSAL FOR E-5 CORRIDOR

• Regional Rail Service – Same as Presented Previously
• Ridership Results Based on Modeling Full Regional Rail System
RECOMMENDED NON-RAIL ELEMENTS

At Local Discretion, Provision for:

- Feeder Bus Service
- Demand Response Service
- Express Service/Park ‘n Ride
- Bottleneck Improvements
- Air Quality Projects
## E-5 CORRIDOR

### Summary Data

<table>
<thead>
<tr>
<th></th>
<th>Regional Rail</th>
<th>Light Rail</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Cost</strong></td>
<td>$153M Total for Corridor [$8.2M/per mile]</td>
<td>$742.5M Total for Corridor [$39.5M/per mile]</td>
<td>$372.7M Total for Corridor [$20.1M/per mile]</td>
</tr>
<tr>
<td><strong>Estimated Daily Ridership</strong></td>
<td>3,780 to 4,620 Average Daily Ridership</td>
<td>7,200 to 8,800 Average Daily Ridership</td>
<td>4,600 to 5,600 Average Daily Ridership</td>
</tr>
<tr>
<td><strong>Performance Benchmark (Cost Effectiveness)</strong></td>
<td>$10.03 Annualized Cost per Annualized Rider</td>
<td>$24.58 Annualized Cost per Annualized Rider</td>
<td>$16.83 Annualized Cost per Annualized Rider</td>
</tr>
</tbody>
</table>

CEI Calculations are Preliminary and Do Not Include Railroad ROW Purchase or Real Estate.

The transit benefit to highway is equivalent to 1-lane in each direction on the adjacent freeway.
# E-5 Corridor

**Final Summary Data**

<table>
<thead>
<tr>
<th></th>
<th>Regional Rail</th>
</tr>
</thead>
</table>
| Capital Cost     | $169.5 M Total for Corridor  
[[$9.0 M/per mile]](##) |
| Estimated Daily Ridership | 3,200  
[Average Daily Ridership] |
| Performance Benchmark (Cost Effectiveness) | $14.55  
[Annualized Cost per Annualized Rider] |

CEI Calculations are Preliminary and Do Not Include Railroad ROW Purchase or Real Estate.

*The transit benefit to highway is equivalent to 1-lane in each direction on the adjacent freeway.*
## E-5 CORRIDOR EVALUATION

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Regional Rail</th>
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<tbody>
<tr>
<td>Performance Benchmark (Annual Cost per Annual Rider)</td>
<td>$10.03</td>
<td>5</td>
<td>$24.58</td>
<td>3</td>
<td>$16.83</td>
<td>4</td>
</tr>
<tr>
<td>Total Daily Ridership Forecast</td>
<td>3,780 to 4,620</td>
<td>3</td>
<td>7,200 to 8,800</td>
<td>5</td>
<td>4,600 to 5,600</td>
<td>4</td>
</tr>
<tr>
<td>One-Way Trip Time (minutes)</td>
<td>32</td>
<td>5</td>
<td>38</td>
<td>4</td>
<td>44</td>
<td>3</td>
</tr>
<tr>
<td>Estimated Capital Cost (millions)</td>
<td>$153.5</td>
<td>5</td>
<td>$742.5</td>
<td>2</td>
<td>$372.7</td>
<td>3</td>
</tr>
<tr>
<td>Estimated Annual O&amp;M Cost (millions)</td>
<td>$9.1</td>
<td>4</td>
<td>$13.9</td>
<td>3</td>
<td>$5.4</td>
<td>5</td>
</tr>
<tr>
<td>Local Authority and Funding</td>
<td>None</td>
<td>1</td>
<td>None</td>
<td>1</td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>Community Acceptance</td>
<td>Community may be open to acceptance of regional rail type service.</td>
<td>3</td>
<td>Community may be open to acceptance of light rail.</td>
<td>3</td>
<td>Community may be open to acceptance of BRT.</td>
<td>3</td>
</tr>
<tr>
<td>Ease of Implementation</td>
<td>Use of right-of-way must be negotiated with the BNSF.</td>
<td>4</td>
<td>Use of right-of-way must be negotiated with the BNSF and separate LRT tracks will be required.</td>
<td>2</td>
<td>Will have to be constructed in adjacent freeway, major arterial and city streets.</td>
<td>1</td>
</tr>
</tbody>
</table>

Score: 1 = very bad, 5 = very good.
## E-5 Corridor Evaluation

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<th>Score</th>
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<tbody>
<tr>
<td>Connectivity with Existing and Planned Transit Operations</td>
<td>Regional rail will require transfer to DART at Westmoreland.</td>
<td>4</td>
<td>Light rail allows interlining with DART at Westmoreland without transfers.</td>
<td>5</td>
<td>BRT will require transfer to DART at Westmoreland.</td>
<td>3</td>
</tr>
<tr>
<td>Compatibility with Freight Railroad Operations</td>
<td>Regional rail equipment is compatible.</td>
<td>4</td>
<td>Not compatible. Not feasible to time separate LRT and BNSF operations</td>
<td>3</td>
<td>Not compatible. Insufficient right-of-way width to accommodate both BNSF and BRT.</td>
<td>1</td>
</tr>
<tr>
<td>Serves Area of Unmet Mobility Need</td>
<td>Roadway capacity deficiency not severe</td>
<td>1</td>
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<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>Impact Upon Adjacent Highways, Air Quality</td>
<td>Benefit to adjacent highway is equivalent to 1-lane in each direction</td>
<td>4</td>
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<tr>
<td>Transit Oriented Development Potential</td>
<td>TOD potential exists but is likely to develop slowly as on TRE.</td>
<td>2</td>
<td>TOD potential is good.</td>
<td>4</td>
<td>TOD potential exists.</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td></td>
<td>45</td>
<td></td>
<td>40</td>
<td></td>
<td>36</td>
</tr>
</tbody>
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## Evaluation Criteria

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<tbody>
<tr>
<td>Performance Benchmark (Annual Cost per Annual Rider)</td>
<td>$14.55</td>
<td>4</td>
</tr>
<tr>
<td>Total Daily Ridership Forecast</td>
<td>3200</td>
<td>2</td>
</tr>
<tr>
<td>One-Way Trip Time (minutes)</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Estimated Capital Cost (millions)</td>
<td>$169.5</td>
<td>5</td>
</tr>
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<td>Estimated Annual O&amp;M Cost (millions)</td>
<td>$9.1</td>
<td>4</td>
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<td>None</td>
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<td>Benefit to adjacent highway is equivalent to 1-lane in each direction</td>
<td>4</td>
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<td>Transit Oriented Development Potential</td>
<td>TOD potential exists but is likely to develop slowly as on TRE.</td>
<td>2</td>
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</tbody>
</table>

**TOTAL SCORE** 43

Score: 1 = very bad, 5 = very good.
PROPOSAL FOR E-6 CORRIDOR

• Regional Rail Service – Same as Presented Previously
• Additional Station at I-20
• Ridership Results Based on Modeling Full Regional Rail System
### E-6 CORRIDOR Summary Data

<table>
<thead>
<tr>
<th></th>
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<th>Light Rail</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Cost</td>
<td>$245M Total for Corridor [$8.0M/per mile]</td>
<td>$1,143.8M Total for Corridor [$37.3M/per mile]</td>
<td>Not applicable to this corridor</td>
</tr>
<tr>
<td>Estimated Daily Ridership</td>
<td>5,490 to 6,710 Average Daily Ridership</td>
<td>9,450 to 11,550 Average Daily Ridership</td>
<td></td>
</tr>
<tr>
<td>Performance Benchmark (Cost Effectiveness)</td>
<td>$10.83 Annualized Cost per Annualized Rider</td>
<td>$28.58 Annualized Cost per Annualized Rider</td>
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<th>Regional Rail</th>
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<tr>
<td></td>
<td>$265.7 M Total for Corridor</td>
</tr>
<tr>
<td></td>
<td>[$8.7 M/per mile]</td>
</tr>
<tr>
<td>Estimated Daily Ridership</td>
<td>4,000</td>
</tr>
<tr>
<td>Average Daily Ridership</td>
<td></td>
</tr>
<tr>
<td>Performance Benchmark</td>
<td>$17.98 Annualized Cost per Annualized Rider</td>
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<td>(Cost Effectiveness)</td>
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</tr>
<tr>
<td>One-Way Trip Time (minutes)</td>
<td>53</td>
<td>5</td>
<td>61</td>
<td>4</td>
</tr>
<tr>
<td>Estimated Capital Cost (millions)</td>
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<td>$1,143.8</td>
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<tr>
<td>Estimated Annual O&amp;M Cost (millions)</td>
<td>$13.8</td>
<td>5</td>
<td>$21.1</td>
<td>4</td>
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<tr>
<td>Local Authority and Funding</td>
<td>None</td>
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<td>Ease of Implementation</td>
<td>Use of right-of-way must be negotiated with the BNSF and the UP. Flyover of the UP will be required at Forest Avenue.</td>
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<td>Use of right-of-way must be negotiated with the BNSF and separate LRT tracks will be required.</td>
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<td>Connectivity with Existing and Planned Transit Operations</td>
<td>Regional rail will access Dallas Union Station and could be interlined with the TRE if practical.</td>
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<td>2</td>
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<td>4</td>
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</table>

**TOTAL SCORE**

| Regional Rail | 45 | Light Rail | 36 |

Score: 1 = very bad, 5 = very good.
## FINAL E-6 CORRIDOR EVALUATION

<table>
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<tbody>
<tr>
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<td>Total Daily Ridership Forecast</td>
<td>4,000</td>
<td>3</td>
</tr>
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<td>5</td>
</tr>
<tr>
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<td>2</td>
</tr>
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</table>

| TOTAL SCORE | 42 |

Score: 1 = very bad, 5 = very good.
REGIONAL RAIL SYSTEM *

* Based on Mobility 2025 - 2004 Update and Refinements through the Regional Rail Corridor Study
TEXAS METROPOLITAN MOBILITY PLAN
CORRIDOR NEEDS

Range of Capacity Deficiencies

<table>
<thead>
<tr>
<th>Least Severe</th>
<th>Moderate</th>
<th>Severe</th>
<th>Most Severe</th>
</tr>
</thead>
</table>

Areas of Moderate Peak Period Congestion
Areas of Severe Peak Period Congestion
Rail Corridors Under Study
Mobility 2025 - 2004 Update Rail Network
## DEMAND FOR RAIL SERVICE

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Near-Term</th>
<th>Long-Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-2 – Denton/Carrollton</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E-3 – McKinney/Dallas</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E-4 – Frisco/Carrollton</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E-5 – Dallas/Midlothian</td>
<td>Yes, Phased Service in Ellis County</td>
<td>Yes</td>
</tr>
<tr>
<td>E-6 – Dallas/Waxahachie</td>
<td>Yes, Phased Service in Ellis County</td>
<td>Yes</td>
</tr>
<tr>
<td>W-1 – Fort Worth/Dallas</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>W-2 – Fort Worth to D/FW Airport</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>W-4 – Fort Worth/Cleburne</td>
<td>Yes, Phased Service South of Sycamore School Road</td>
<td>Yes</td>
</tr>
</tbody>
</table>
NCTCOG Transit-Oriented Development Technical Assistance

Planning and Zoning
Reduce cost of holding land for development by helping change planning and zoning in advance of private sector transit-oriented development proposals

Capital Planning
Advance planning and cost estimates to help local governments develop the public infrastructure necessary to incent a private sector investment in transit-oriented development.

Financial Planning
Help local governments develop financial tools to support public infrastructure
## Upcoming Transit-Oriented Development Implementation Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place Makers Smart Code Workshop</td>
<td>October 27 – 30</td>
</tr>
<tr>
<td>NCTCOG Transit-Oriented Development Workshop for Regional Rail Corridor Study/Regional Transit Initiative Participants</td>
<td>November 18</td>
</tr>
<tr>
<td>Land Use/Transportation Joint Venture Call for Projects</td>
<td>2004 - 2005</td>
</tr>
<tr>
<td>Urban Land Institute/Center Of Development Excellence Visioning Program</td>
<td>Spring, 2005</td>
</tr>
</tbody>
</table>
1. Maximizing Safety Through Capital Improvements

2. Linking Operations with Nearby Traffic Controls and Other Corridor Improvements

3. Minimizing Noise and Other Environmental Impacts Near Sensitive Land Uses

4. Enhancing the Reliability of Antiquated Equipment
AT-GRADE RAILROAD CROSSINGS
Recently Funded and Recommended Projects

Railroad Crossing Reliability Partnership Program

Eligible Applications Received
- Recommended for Funding
- Recommended for Consideration in Partnership Program Two
- Funded by TxDOT's Section 130 Program
- Not Recommended for Funding

Recently Funded
- Signalized with Section 130 Funds Through TxDOT
- Signalized with TxDOT (Dallas District) Discretionary Funds
- Closed by the City of Fort Worth
- Grade Separations Funded by NCTCOG Strategic Programming Initiative

Other Features
- At-Grade Railroad Crossings
- Railroads
- Regional Rail Corridor Study Corridors
QUIET ZONES / TRAIN HORN RULE

Basics

Federal Railroad Administration Published the Rule on December 18, 2003; it Goes Into Effect December 18, 2004

Intended to Enhance Safety and Reduce Train Horn Noise

Requires Trains Approaching Public Crossings to Sound a Horn to Provide a Warning (15-20 seconds)

Enables Communities to Establish Quiet Zones by Reducing the Risk Caused by Lack of Horns
QUIET ZONES / TRAIN HORN RULE
Measures Necessary to Establish a Quiet Zone

1. Closure 
   or

2. Four Quadrant Gates
   or

3. One-Way Street with a
   Gate Across Width
   or

4. Channelization with Gates
QUIET ZONES / TRAIN HORN RULE

Other Considerations

Minimum Length: ½ mile

Wayside Horns May be Used with Gates (One-for-One Replacement of Train Horn)

Sample Quiet Zone on the Trinity Railway Express in Tarrant County: $6 million for a 16-mile-long corridor
QUIET ZONES / TRAIN HORN RULE

Next Steps on Railroad Crossings and Quiet Zones

1. Attend Upcoming FRA / NCTCOG Quiet Zone Workshop (date and location TBD)

2. Participate in Subregional Quiet Zone Planning

3. Identify Crossings for Closure

4. Participate in Funding Opportunities for Quiet Zones/Safety/Reliability

5. Work with NCTCOG Staff to Implement Targeted Safety Program in High Risk Areas
IMPLEMENTATION OF REGIONAL RAIL SYSTEM SERVICE

Status of Regional Transit Initiative Efforts

Vision:
To provide a bottom-up process for the exchange of information and ideas among elected representatives, policy officials, and the general public regarding options for the implementation of a seamless transit system for North Central Texas.

Purpose:
Create a consensus position for implementation of regional rail throughout North Central Texas.
COMMITTEE COORDINATION

Policy/Technical Committee Meetings (Committees 1 – 6)

Six Rounds of Meetings (36)
July, September and November 2003
March, May and August 2004

Regional Transit Initiative Meetings (Committees 8, 9 and 10)

Eight Rounds of Meetings (8)
January, March, April (2), May, June, July, August 2004

Quarterly Public Meetings

Six Rounds of Meetings (18)
July, August, October and December 2003
March, June 2004

Committee 7 Meeting

May 20, 2004
INSTITUTIONAL COMMITTEE
Principles and Recommendations

1. Provision for Regional Rail in Six Counties
2. Ability to Expand to Additional Counties as Needed
3. Maintain three existing transit authorities with funding, responsibilities and commitments (DART, DCTA, FWTA)
4. Encourage transit service through regional cooperation
5. Provide seamless service to customer
6. Avoid extra layers of bureaucracy and duplicative services
7. Assure fair sharing of costs for transit services received
8. Structure governance representation fairly
9. Address equity issues; East and West
**REVENUE SOURCES FOR REGIONAL RAIL AUTHORITY (RRA)**

<table>
<thead>
<tr>
<th>Estimated RRA Capital and Operating Annualized Costs</th>
<th>Necessary Sales Tax Increase</th>
<th>Necessary Motor Fuels Sales Tax Rate</th>
<th>Necessary Motor Vehicle Sales Tax Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>$167.3M</td>
<td>1/2 Percent</td>
<td>6 3/8 Percent per gallon</td>
<td>2 3/8 Percent tax per sale</td>
</tr>
</tbody>
</table>

Includes possibility, at local discretion, of minimal feeder bus, air quality projects, bottleneck improvements, etc.
MULTIPLE FUNDING OPTIONS

Stand Alone Funding Approach: Raise Ceiling on Sales Tax Cap

Funding Partnerships:
1. Expand Sales Tax
2. Texas Mobility Fund
3. Motor Vehicle Sales Tax Increase
4. Traffic Impact Fees
   (Toll Revenue Unavailable)

Business as Usual:
1. Join Existing Authorities, if available
2. Contract Services with Existing Authorities
3. RTC Partnership Program
4. 4A/4B Local Government Reprioritization
1. DCTA Service Area*
   (.5¢ existing cities + .5¢ proposed for entire county)
2. FWTA Service Area**
   (.5¢ existing + .5¢ proposed = 1¢ Total)
3. DART Service Area
   (1¢ existing + 1¢ proposed)
4. Potential New Regional Rail Authority ***
   (.5¢ proposed)

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** FWTA preference for distribution of FWTA Regional Rail Authority sales-tax to that of the FWTA Service Area.

*** Flexibility including but not limited to the following:
- Creation of Regional Rail Authority Service Area
- Able to Partner with other Authorities
- Expand to Counties as Needed
- Minimal “Feeder” Bus Service
- Additional Funding Includes: Air Quality Projects, Local Match, Bottleneck Improvements, etc.
NEXT STEPS

Transit Summit – August 13, 2004

Legislative Committee plus “Tactical Plan Development”

Judges/Mayors North Texas Legislative Conference – Summer/Fall 2004

Legislative Committee chairpersons plus Governor, Lieutenant Governor, and Speaker of the House

Legislative Proposal – Fall 2004
OPPORTUNITIES TO FURTHER INVESTIGATE EVOLVING RAIL TECHNOLOGY

- American Public Transportation Association Expo in Dallas – September 26-28, 2005
- Colorado Railcar Tour, Fall 2004
- Examination of Other Systems in Service
New Railcar Technology Is Rolling Into North Central Texas

October 2004
REGIONAL RAIL CORRIDOR STUDY

• Contacts: Public Transportation Team
  – NCTCOG, Transportation Department
  – Christie Zupancic or Ruth Boward
    (817) 695-9240

• Website:
  – www.nctcog.org/rrcs