US 380 Collin County Feasibility Study
Planning for Future Mobility
Regional Population Growth

Population Estimates and Projections, Metroplex Counties, 2010-2050

- Dallas
- Tarrant
- Collin
- Denton

Source: Texas State Demographer, 2018 Population Estimates
Collin County Population Growth

**24%**

INCREASE IN
COLLIN COUNTY
POPULATION FROM
2010 – 2017


**143%**

PROJECTED INCREASE
IN COLLIN COUNTY
POPULATION GROWTH FROM
2018 – 2050

“2018 Texas Population Projections”; Texas State Demographer, Web. 8 November 2019

“*The Dallas – Fort Worth – Arlington metro area added more people between 2015 and 2016 than any other metro in the country.*” – Texas State Demographer
Collin County Future Population Distribution

2012

PROJECTED
BUILD OUT

"Mobility Plan Update," Collin County 2016

* 1 Dot = 250 Persons
• In 2017 Collin County’s population was 969,603 making it one of the highest populated counties in Texas.

• By 2050, Collin County population could be larger than Dallas County was in 2014 - with less infrastructure to support the projected growth.
Optimal spacing between freeways/tollways is about 5 miles in an urban area.

Current freeways/tollways spacing is between 5 and 8 miles moving north from Dallas.*

Spacing between Sam Rayburn Tollway (SH 121) and the future Collin County Outer Loop will be approximately 14 miles apart, which could have an adverse impact on congestion.
# Traffic Increases on US 380

Traffic volumes across US 380 in Collin County grew by 30% between 2010 and 2016.

**Source:** TxDOT Historical AADT Counts, 2017

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent Increase (2010-2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Princeton</td>
<td>50%</td>
</tr>
<tr>
<td>West McKinney</td>
<td>45%</td>
</tr>
<tr>
<td>East McKinney</td>
<td>34%</td>
</tr>
<tr>
<td>Frisco/Prosper</td>
<td>14%</td>
</tr>
<tr>
<td>Farmersville</td>
<td>14%</td>
</tr>
</tbody>
</table>

### Average Daily Traffic Count

<table>
<thead>
<tr>
<th>Year</th>
<th>Traffic Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>23,950</td>
</tr>
<tr>
<td>2011</td>
<td>25,725</td>
</tr>
<tr>
<td>2012</td>
<td>26,688</td>
</tr>
<tr>
<td>2013</td>
<td>27,125</td>
</tr>
<tr>
<td>2014</td>
<td>29,723</td>
</tr>
<tr>
<td>2015</td>
<td>31,303</td>
</tr>
<tr>
<td>2016</td>
<td>31,874</td>
</tr>
</tbody>
</table>

Traffic volumes across US 380 in Collin County grew by 30% between 2010 and 2016.

**Source:** TxDOT Historical AADT Counts, 2017
Existing Conditions

4 to 6 lane arterial

Traffic over capacity during rush hours

Right of way between 130’ wide and 180’ wide
### Few Planned Improvements for US 380

<table>
<thead>
<tr>
<th>Location</th>
<th>Improvements</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prosper - Frisco</strong></td>
<td>- Widen from 4 to 6 lanes and add access roads</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Denton County line to east of SH 289</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Year Open: 2018</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New interchanges along US 380 at DNT &amp; SH 289</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Year Open: 2028</td>
</tr>
<tr>
<td><strong>McKinney - Princeton</strong></td>
<td>- Widen from 4 to 6 lanes with a raised median</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Airport Road to 4th Street</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completion Date TBD</td>
</tr>
<tr>
<td><strong>Princeton</strong></td>
<td>- Add raised median</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4th Street to CR 985</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Undergoing Planning Studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completion Late 2019</td>
</tr>
</tbody>
</table>

Few additional improvements are planned for US 380 in Collin County between now and 2045.
US 380 Study History

2015
Previous TxDOT Feasibility Study conducted and suggested a freeway as a long-term solution.

Collin County identified US 380 as a priority project & for study as a Limited Access Roadway, Location not specified.

2016

2017
Current TxDOT Feasibility Study underway to determine east-west freeway feasibility, recommended location, and plans for implementation.

Collin County Roadway Action Plan is developed and underway.
It was determined that TxDOT will lead further study for the US 380 corridor.

2018

2019
2016 TxDOT Feasibility Study

Studied a wide range of potential solutions for US 380 ranging from:

• Minor improvements
  • Adding turn lanes

• Moderate Improvements
  • Constructing overpasses or underpasses at select intersections

• Major Improvements
  • Existing US 380 as a freeway

Final Recommendation:

A freeway “provides the best mobility and safety and addresses the long term needs of the communities” but “an additional detailed study covering Denton, Collin, and Hunt Counties is likely necessary”.
Corridor Types Modeled

- Signalized Arterial
  LOS F

- Grade Separated Arterial
  LOS F

- Freeway
  LOS B or greater
## Comparison Of Corridor Types

<table>
<thead>
<tr>
<th>EVALUATION CRITERIA:</th>
<th>NO NEW IMPROVEMENTS ON US 380</th>
<th>GRADE SEPARATED INTERSECTIONS</th>
<th>FREEWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhances Safety</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
<tr>
<td>Reduces Existing Congestion</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
<tr>
<td>Regional Mobility</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
<tr>
<td>Minimizes Future Congestion Expected from Growth</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
<tr>
<td>Cost</td>
<td>$$$$$</td>
<td>$$ $$ $$</td>
<td>$$$$$$$</td>
</tr>
<tr>
<td>Supports Future Economic Growth</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
<tr>
<td>TOTAL SCORE</td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
</tbody>
</table>

### Criteria Rating Scale

<table>
<thead>
<tr>
<th>Does not achieve criteria</th>
<th>Partially meets criteria</th>
<th>Highly meets criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
<td><img src="#" alt="Circle" /></td>
</tr>
</tbody>
</table>
Existing and Proposed Development

Cities/Towns in the Study Area:
- Prosper
- Frisco
- McKinney
- Fairview
- New Hope
- Lowry Crossing
- Princeton
- Farmersville
Proposed Development Heat Map

Heat Map Legend

- Undated Planned Development
- Approved Zoning
- Active
- Approved
- Plats Filed
- Building Permit Issued
Freeway Typical Sections Considered
Initial Alignments Considered
Initial Travel Demand Model Runs
Travel Demand Model Metrics

- Volumes
- Magnitude of Volume Change
- V/C
- Level of Service
- Segment Delay
- Countywide Delay
- Regional Delay
US 380
- Traffic volumes support a controlled access highway
- Vehicular demand is highest for alignments closest to the current US 380 alignment
- Northern bypass options are attractive and could offer relief to existing US 380
- Generally reduces stress on local arterials

Spur 399 Extension
- Generally reduces volumes along complementary US 380 segment
- Reduces US 380 & US 75 issue
Alignment Options – Public Meeting #1
NCTCOG 2045 TDM
- Regionally accepted "Official" model

Collin County “Build Out” TDM
- Provided by Collin County / Jacobs Engineering
Other Major Alignment Influencers

- Impacts to homes and businesses
- Plans for future developments
- Impacts to water transmission lines
- Floodplains and floodways
- Findings through desktop environmental research
- City/County Thoroughfare Plans
Travel Demand Model Results

2045 ESTIMATES

**NO BUILD**
- **AVG. DAILY VOLUME**: 46,200
- **LEVEL OF SERVICE**: F
- **VEHICLE MILES TRAVELED DAILY**: 1.49M
- **REGIONAL HOURS OF DELAY DAILY**: 425,000

**RED A & B**
- **AVG. DAILY VOLUME**: 78,500
- **LEVEL OF SERVICE**: B
- **VEHICLE MILES TRAVELED DAILY**: 3.01M
- **REGIONAL HOURS OF DELAY DAILY**: 387,900

**GREEN A**
- **AVG. DAILY VOLUME**: 86,300
- **LEVEL OF SERVICE**: B
- **VEHICLE MILES TRAVELED DAILY**: 2.80M
- **REGIONAL HOURS OF DELAY DAILY**: 394,900

**GREEN B**
- **AVG. DAILY VOLUME**: 90,200
- **LEVEL OF SERVICE**: B
- **VEHICLE MILES TRAVELED DAILY**: 2.93M
- **REGIONAL HOURS OF DELAY DAILY**: 395,000
## Alignment Analysis Matrix

### Denton County Line to Hunt County Line

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>No Build</th>
<th>Green Alignment Option A</th>
<th>Green Alignment Option B</th>
<th>Red Alignment Option A</th>
<th>Red Alignment Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Residential Property Impacts</td>
<td>0</td>
<td>54</td>
<td>43</td>
<td>78</td>
<td>75</td>
</tr>
<tr>
<td>Number of Current Residential Displacements</td>
<td>0</td>
<td>87</td>
<td>83</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>Number of Business Impacts</td>
<td>0</td>
<td>119</td>
<td>121</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>Number of Business Induced Displacements</td>
<td>0</td>
<td>16</td>
<td>17</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Number of Business Direct Displacements</td>
<td>0</td>
<td>289</td>
<td>286</td>
<td>36</td>
<td>23</td>
</tr>
<tr>
<td>Number of Business Displacements</td>
<td>0</td>
<td>305</td>
<td>303</td>
<td>39</td>
<td>24</td>
</tr>
<tr>
<td>Future Development Impacts (acres)</td>
<td>0</td>
<td>110</td>
<td>96</td>
<td>284</td>
<td>342</td>
</tr>
<tr>
<td>Environmental, Watershed, and Park Land Impacts (acres)</td>
<td>0</td>
<td>357</td>
<td>216</td>
<td>437</td>
<td>449</td>
</tr>
<tr>
<td>Cost - includes construction, ROW, utility relocation</td>
<td>0</td>
<td>$2.46B</td>
<td>$2.28B</td>
<td>$2.23B</td>
<td>$2.12B</td>
</tr>
</tbody>
</table>

- Enhances Regional Mobility
- Satisfies Travel Demand
- Enhances Safety
- Supports Future Regional Economic Growth
Over 18,000 comments/surveys received and responded to

Many of the comments/surveys listed concerns about existing US 380 including:
- Traffic
- Congestion
- Safety (number of accidents/fatalities and high rates of speed)
- Pace of future developments and impacts on congestion
- Lack of other east/west routes

RED DOTS INDICATE THE LOCATION OF RESIDENCES AND BUSINESSES IN COLLIN COUNTY WHERE INPUT WAS RECEIVED DURING THE COMMENT PERIOD
Recommended Alignment – Public Meeting #3
INPUT FROM THE PUBLIC IS IMPORTANT AND CONSIDERED BY TxDOT AT EVERY PHASE OF PROJECT DEVELOPMENT

FEASIBILITY STUDY
CORRIDOR IDENTIFIED
WE ARE HERE

ROW PRESERVATION/ACQUISITION THROUGH LAND USE PLANNING AND PURCHASES

ENVIRONMENTAL STUDIES* AND DESIGN SCHEMATIC
FINAL DESIGN, CONSTRUCTION PLANS, COST ESTIMATES AND UTILITIES COORDINATION
PHASED CONSTRUCTION

*Environmental studies must be compliant with the National Environmental Policy Act. 2 types of studies that would be conducted for this project include:

ENVIRONMENTAL ASSESSMENT (EA)
ALONG EXISTING RDS NO SIGNIFICANT IMPACTS EXPECTED TYPICALLY 1 TO 2 YEARS

OR

ENVIRONMENTAL IMPACT STATEMENTS (EIS)
NEW LOCATION SIGNIFICANT IMPACTS EXPECTED TYPICALLY 2 TO 4 YEARS

Other viable alignments or changes to alignments can still be considered during environmental studies.
Types of environmental studies include:

**Environmental Assessment (EA)**
- Segments along existing US 380
- No significant impacts expected
- 1-2 years

**Environmental Impact Statement (EIS)**
- New location segments and along existing US 380
- Significant impacts to human & natural environments expected
- Multiple alignments considered
- 2-4 years

There is potential that other viable alternatives or changes to alignments would need to be considered.
Study Contacts

STEPHEN ENDRES, P.E.
TxDOT Project Manager
Stephen.Endres@txdot.gov
(214) 320-4469

JOSH ROBERTSON, P.E.
Study Team Deputy Project Manager
JRRobertson@burnsmcd.com
(972) 455-3128