



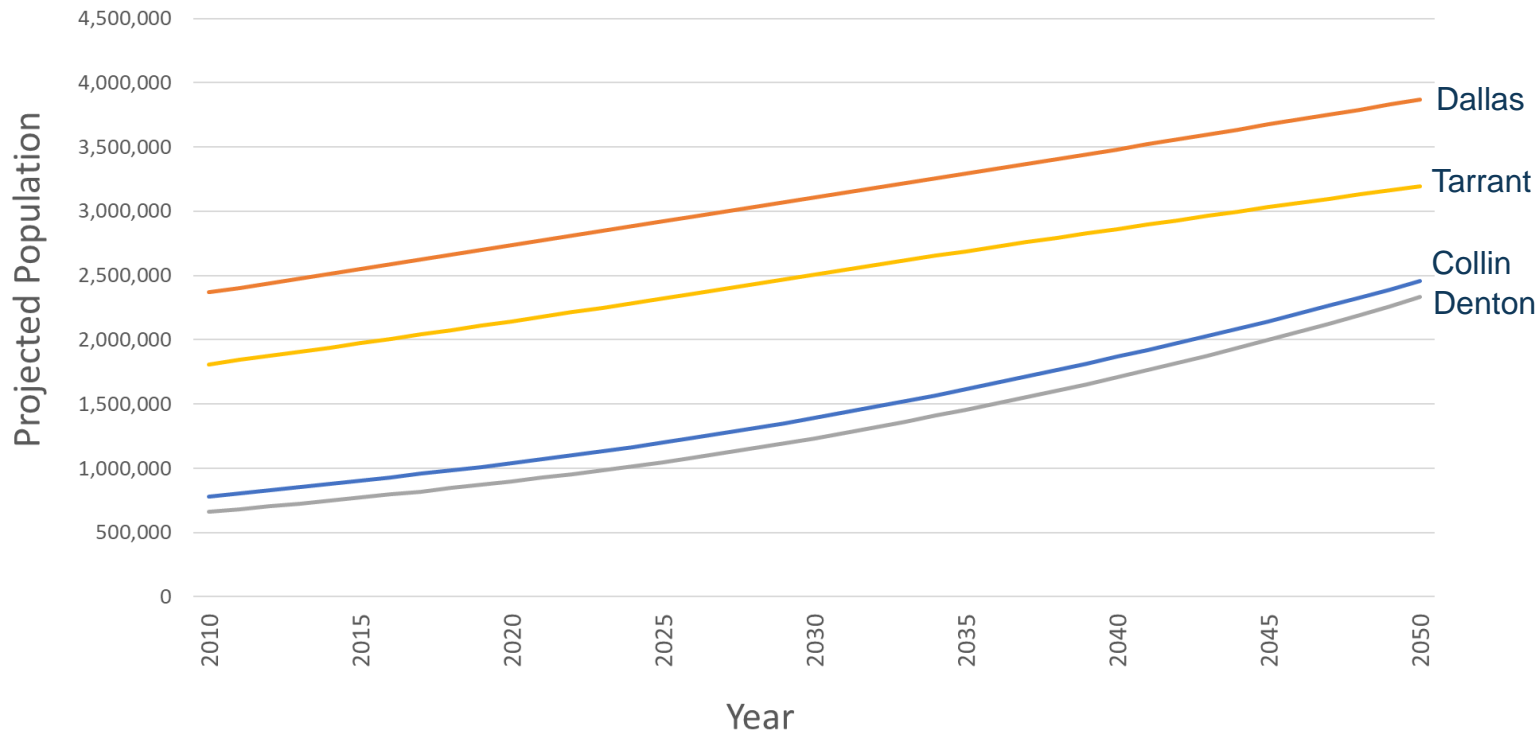
# US 380 Collin County Feasibility Study

Planning for Future Mobility

# Regional Population Growth



Population Estimates and Projections, Metroplex Counties, 2010-2050



Source: Texas State Demographer, 2018 Population Estimates

# Collin County Population Growth



**24%**

**INCREASE IN  
COLLIN COUNTY  
POPULATION FROM  
2010 – 2017**

*“QuickFacts Collin County, Texas” US Census Bureau, 1 July 2017. Web. 23 April 2018.*



**143%**

**PROJECTED INCREASE  
IN COLLIN COUNTY  
POPULATION GROWTH FROM  
2018 – 2050**

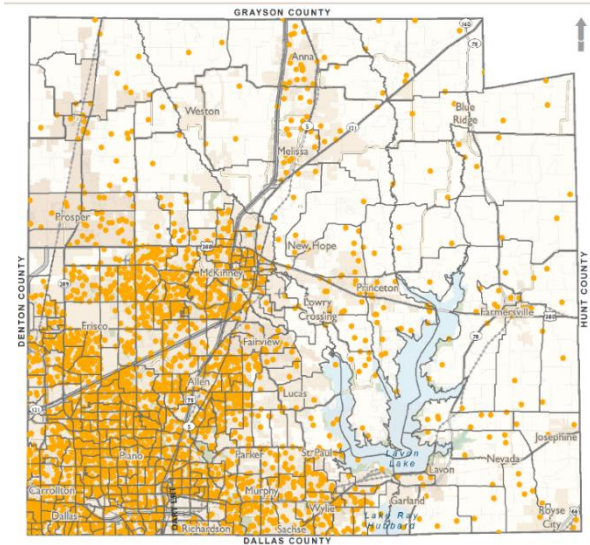
*“2018 Texas Population Projections”; Texas State Demographer, Web. 8 November 2019*

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

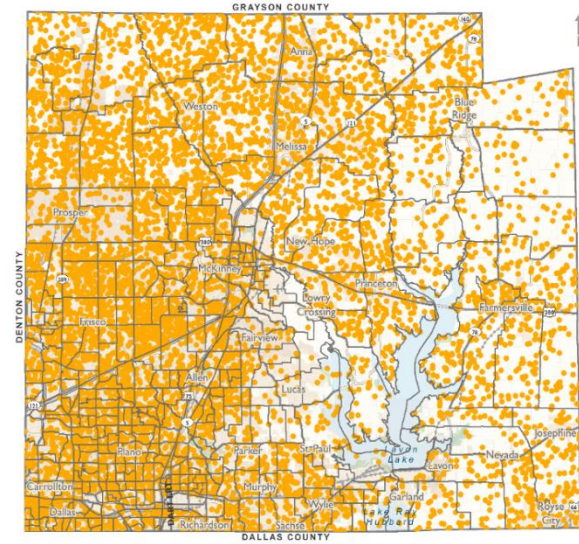
# Collin County Future Population Distribution



**2012**



**PROJECTED  
BUILD OUT**

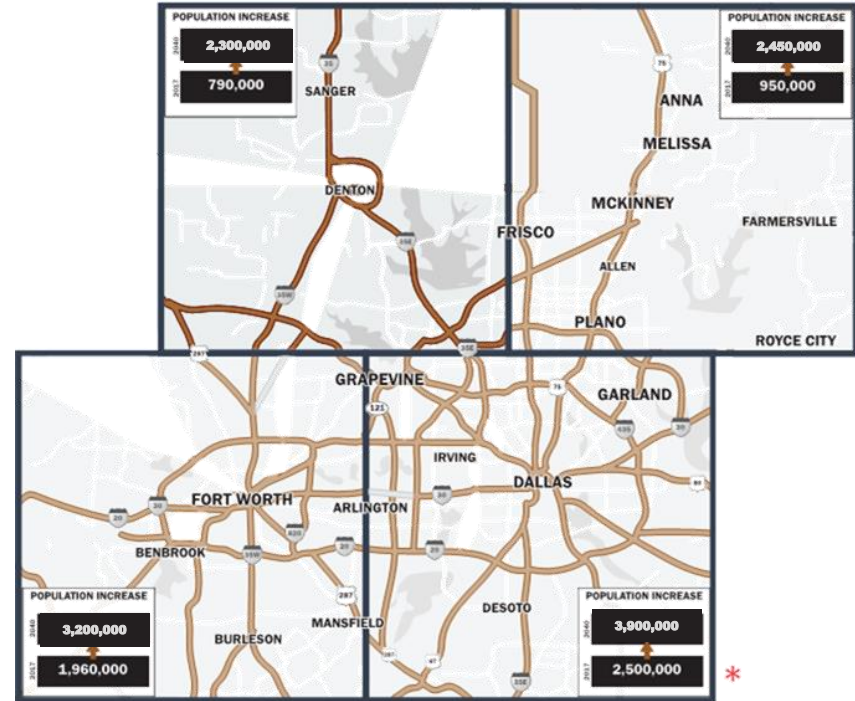


“Mobility Plan Update,” Collin County 2016

● 1 Dot = 250 Persons

# Comparing County Freeway/Tollway Networks

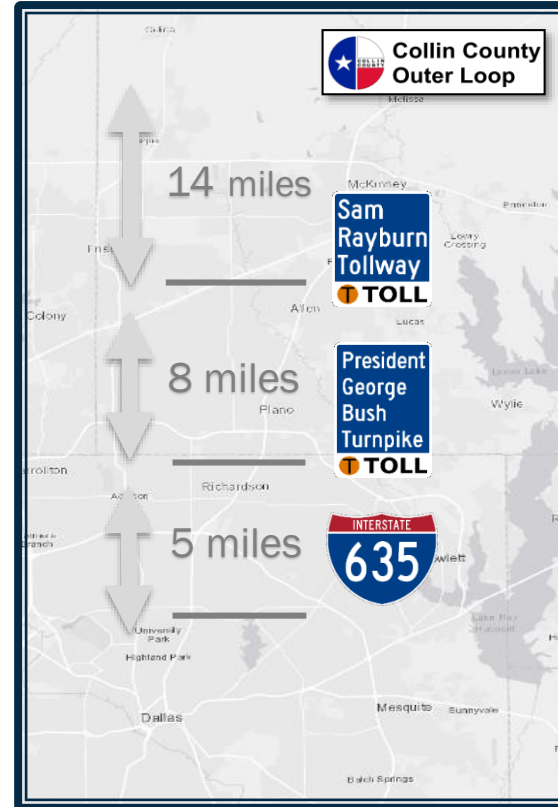
- In 2017 Collin County's population was 969,603 making it one of the highest populated counties in Texas.
- By 2050, Collin County population could be larger than Dallas County was in 2014 - with less infrastructure to support the projected growth.



# Freeway Network Spacing



- 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.



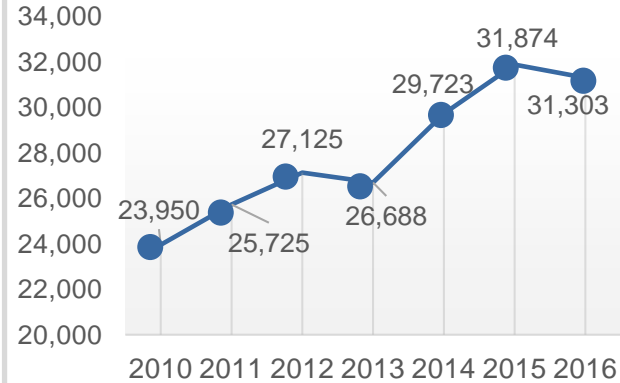
*Approximate distances measured from points halfway between DNT & US 75*

# Traffic Increases on US 380



Location	Percent Increase (2010-2016)
Princeton	50%
West McKinney	45%
East McKinney	34%
Frisco/Prosper	14%
Farmersville	14%

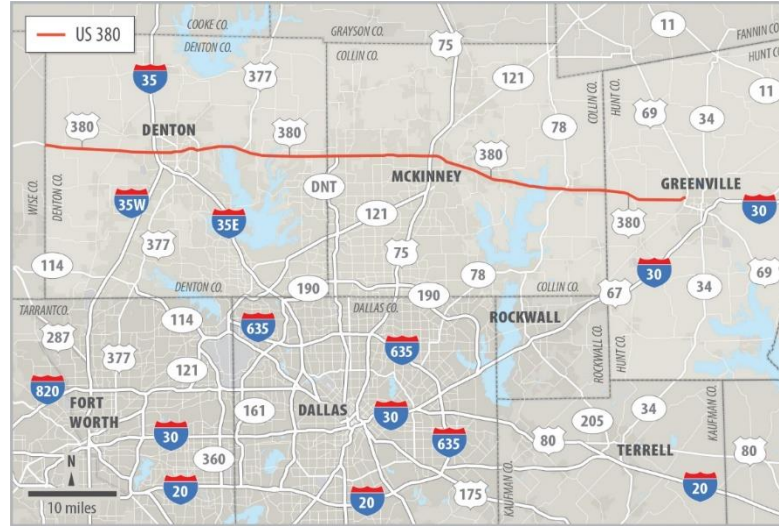
## Average Daily Traffic Count



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

Source: TxDOT Historical AADT Counts, 2017

# US 380 Today



## 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



## Prosper - Frisco

- Widen from 4 to 6 lanes and add access roads
  - Denton County line to east of SH 289
  - Year Open: 2018
- New interchanges along US 380 at DNT & SH 289
  - Year Open: 2028

## McKinney - Princeton

- Widen from 4 to 6 lanes with a raised median
  - Airport Road to 4<sup>th</sup> Street
  - Completion Date TBD

## Princeton

- Add raised median
  - 4<sup>th</sup> Street to CR 985
  - Undergoing Planning Studies
  - Completion Late 2019

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.

**2016**

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

**2017**

**2018**

**2019**

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.

# Previous US 380 Study Recommendations



## 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”.*

# US 380 Feasibility Study Key Factors



**ENGINEERING  
ANALYSIS**



**TRAFFIC  
ANALYSIS**



**SAFETY AND  
CRASH DATA**



**RIGHT-OF- WAY  
REQUIREMENTS**



**EXISTING AND  
PLANNED RESIDENTIAL  
AND COMMERCIAL  
DEVELOPMENTS**



**EXISTING AND  
PLANNED UTILITIES**



**COST AND  
ECONOMIC IMPACT**



**OTHER PLANNING  
EFFORTS**



**NATURAL AND  
CULTURAL  
RESOURCES**



**ENDANGERED  
SPECIES**



**LAND USE AND  
PARKLAND**



**WATER RESOURCES  
AND FLOOD PLAINS**



**HAZARDOUS  
MATERIALS**



**SOCIAL AND  
COMMUNITY  
IMPACTS**



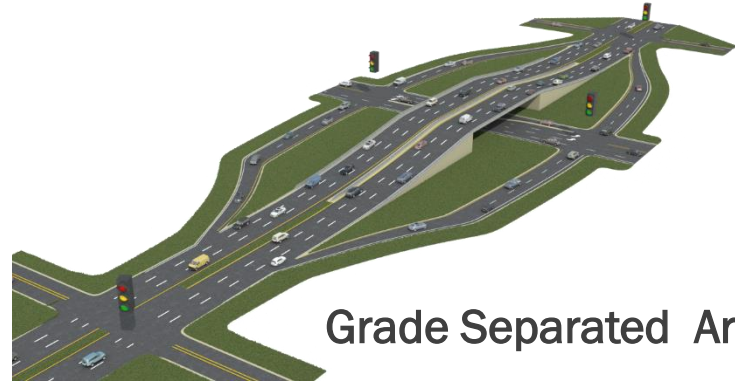
**STAKEHOLDER AND  
PUBLIC INPUT**

# Corridor Types Modeled



Signalized Arterial

LOS F



Grade Separated Arterial

LOS F
























Freeway

LOS B or greater

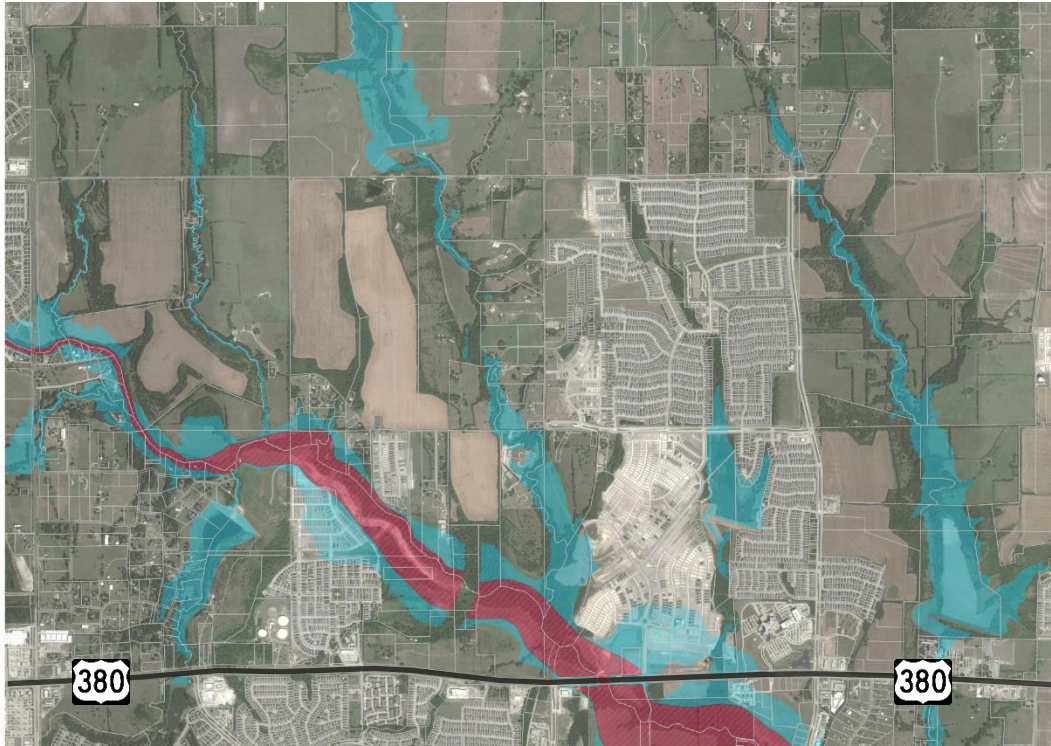
# Comparison Of Corridor Types



EVALUATION CRITERIA:	 <b>NO NEW IMPROVEMENTS ON US 380</b>	 <b>GRADE SEPARATED INTERSECTIONS</b>	 <b>FREEWAY</b>
Enhances Safety			
Reduces Existing Congestion			
Regional Mobility			
Minimizes Future Congestion Expected from Growth			
Cost	\$\$\$\$\$	\$\$\$\$	\$\$\$\$\$
Supports Future Economic Growth			
<b>TOTAL SCORE</b>			

Criteria Rating Scale				
Does not achieve criteria		Partially meets criteria		Highly meets criteria
				

# Existing and Proposed Development



## Cities/Towns in the Study Area:

Prosper

Frisco

McKinney

Fairview

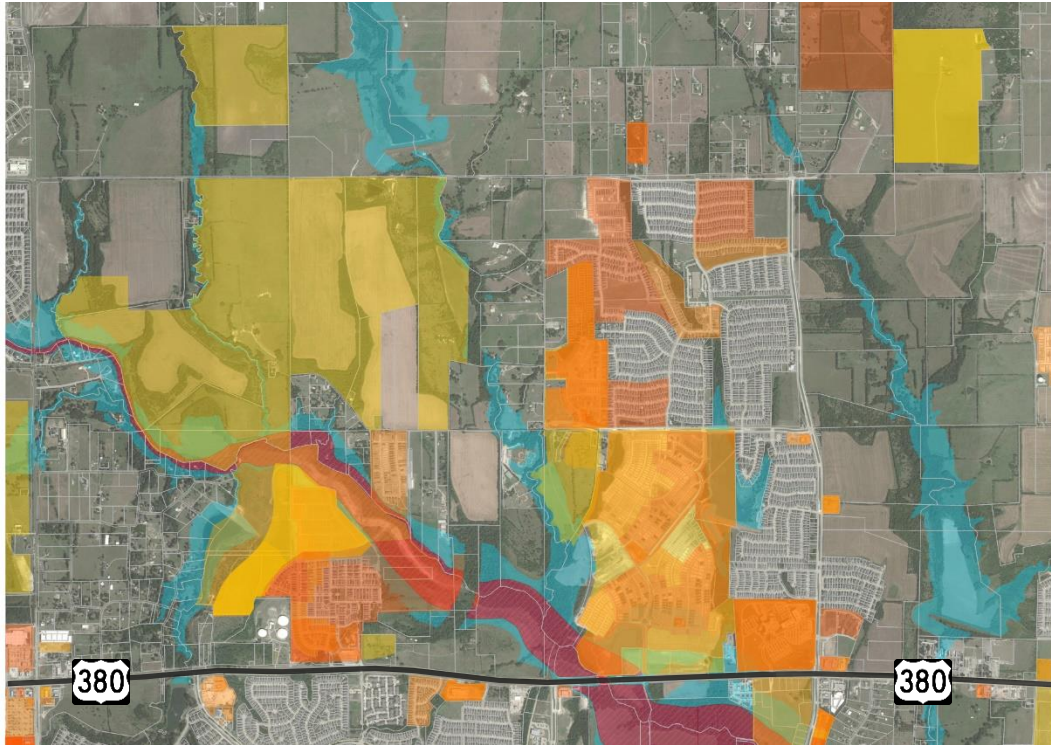
New Hope

Lowry Crossing

Princeton

Farmersville

# Proposed Development Heat Map



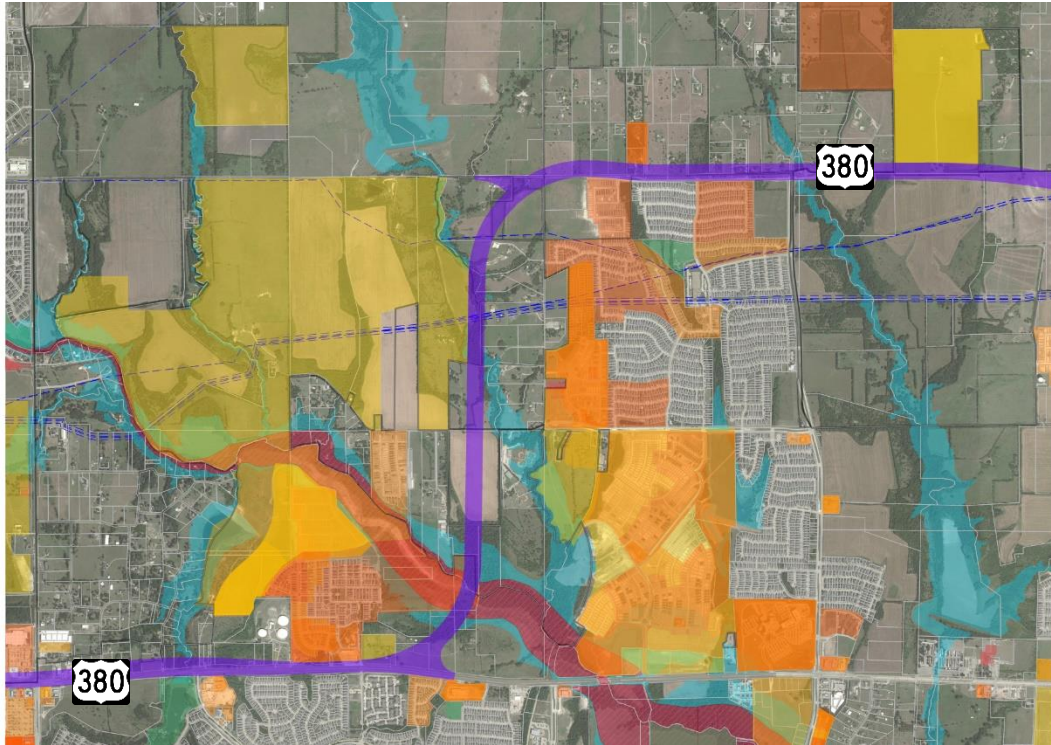
## Heat Map Legend



- ← Undated Planned Development
- ← Approved Zoning
- ← Active
- ← Approved
- ← Plats Filed
- ← Building Permit Issued



# Proposed Development Heat Map

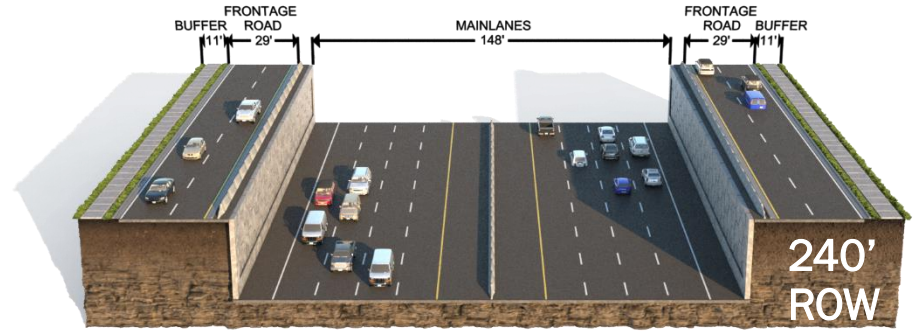
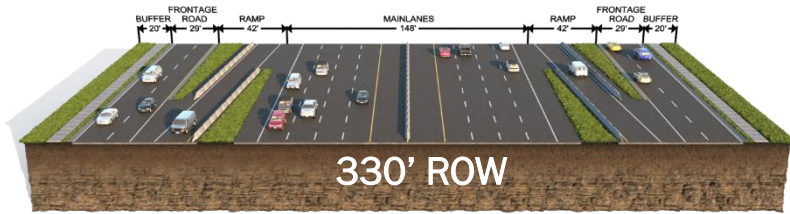
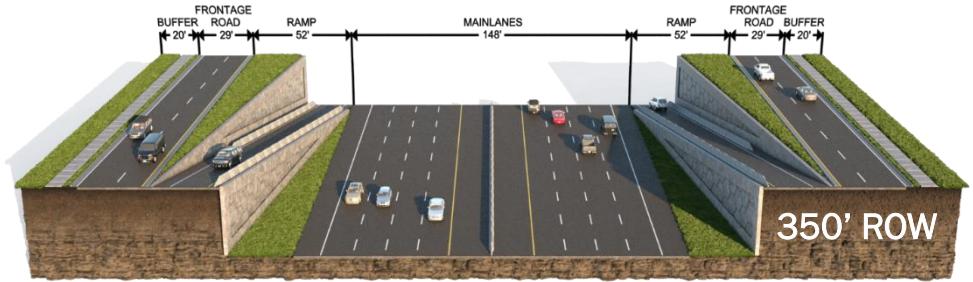
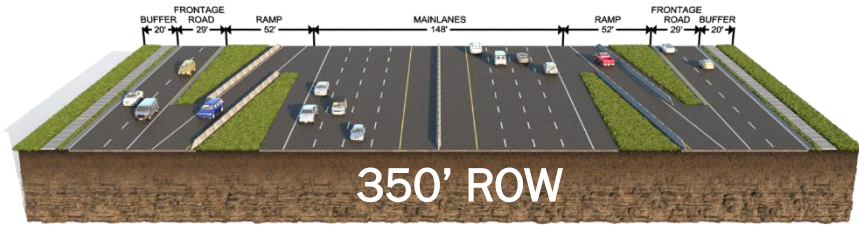


## Heat Map Legend

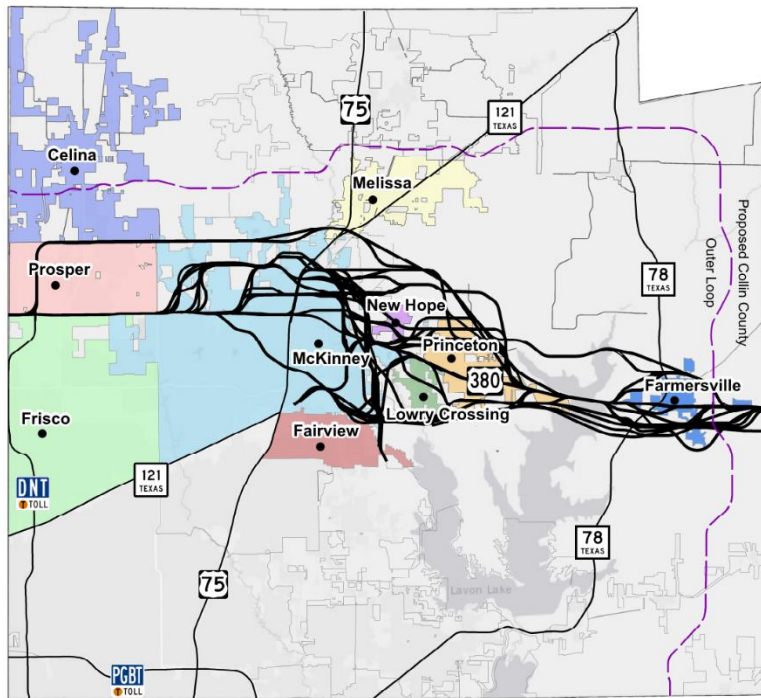


- ← Undated Planned Development
- ← Approved Zoning
- ← Active
- ← Approved
- ← Plats Filed
- ← Building Permit Issued

# Freeway Typical Sections Considered



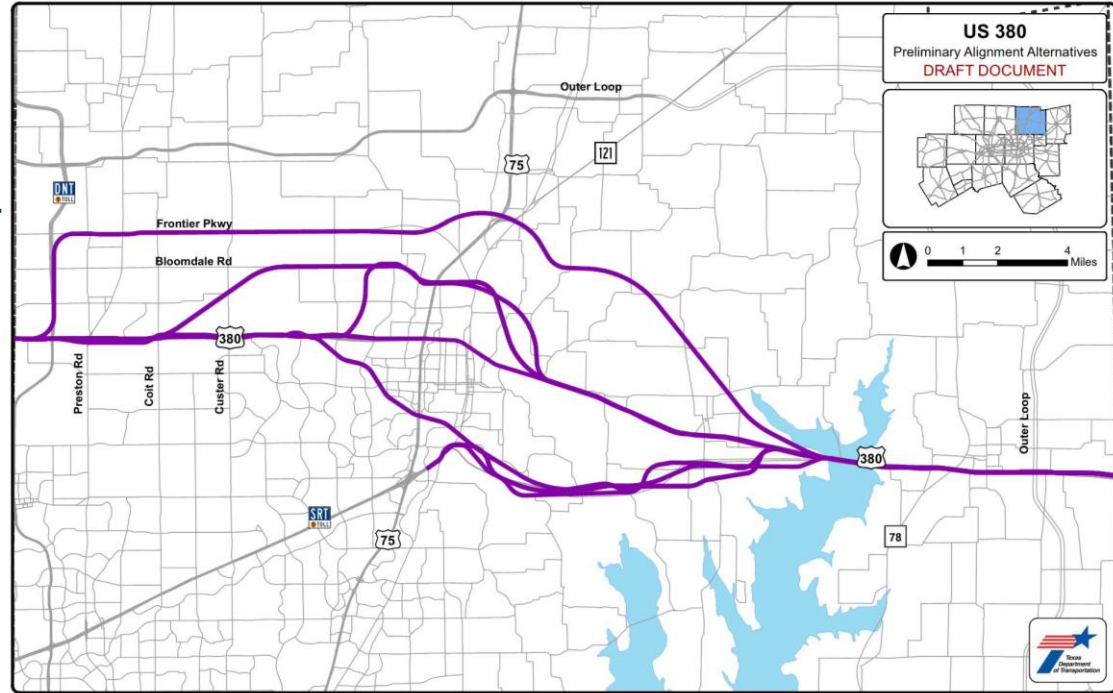
# Initial Alignments Considered



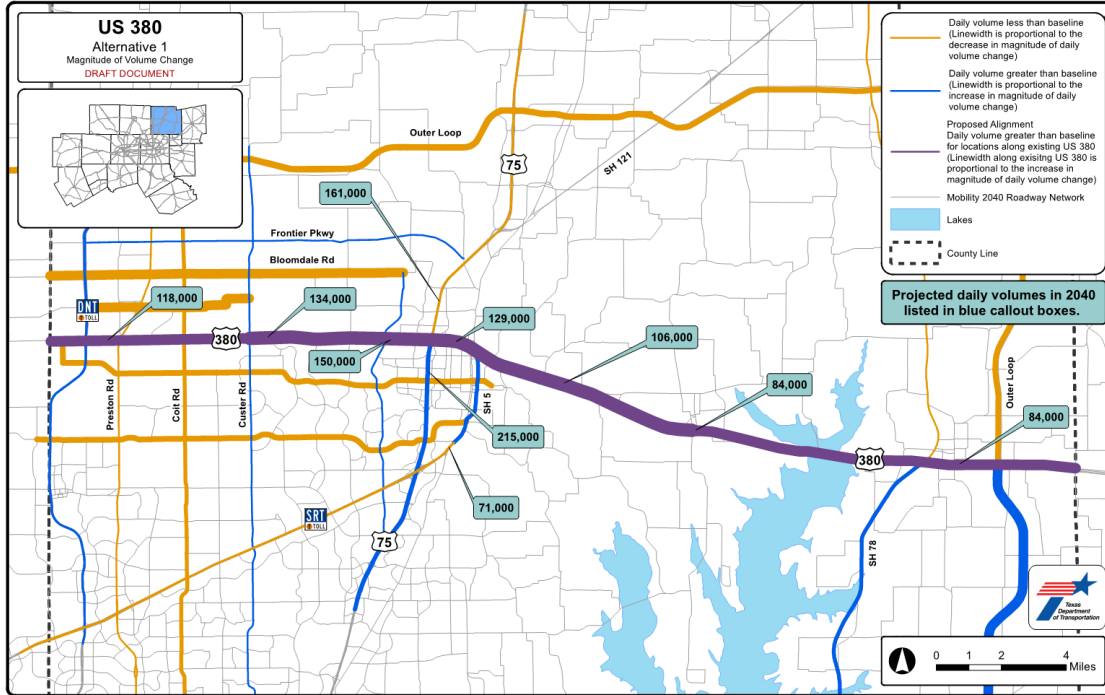
# Initial Travel Demand Model Runs



Initial  
Bracketed  
Model  
Runs



# Travel Demand Model Metrics



## 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



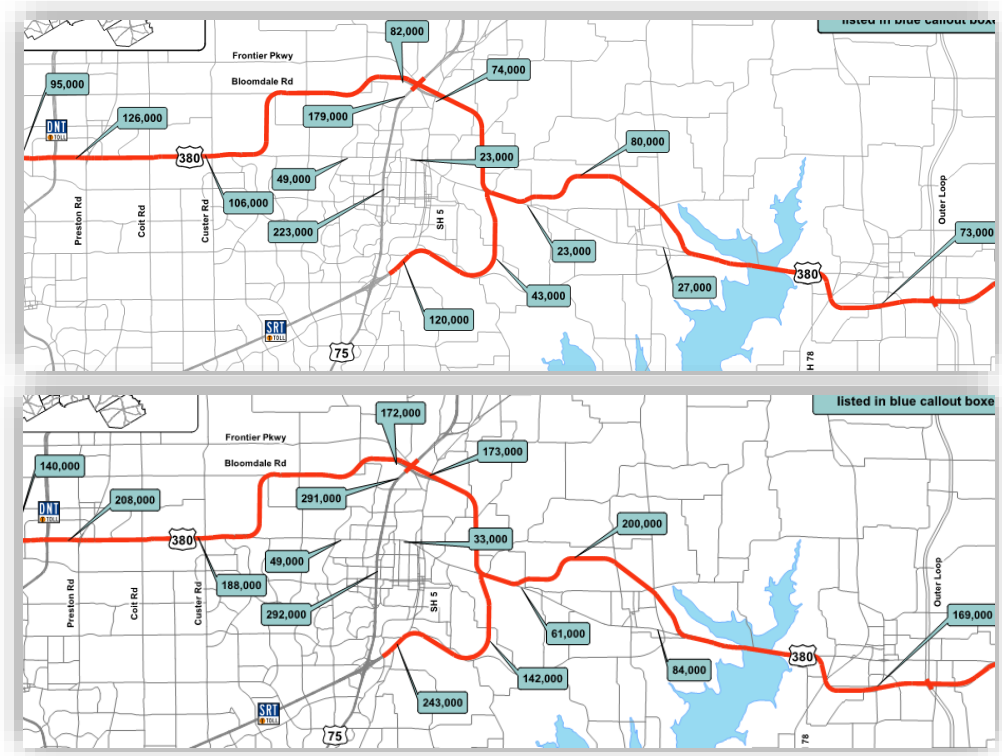
# Travel Demand Modeling – Scenario Planning

## NCTCOG 2045 TDM

- Regionally accepted “Official” model

## Collin County “Build Out” TDM

- Provided by Collin County / Jacobs Engineering





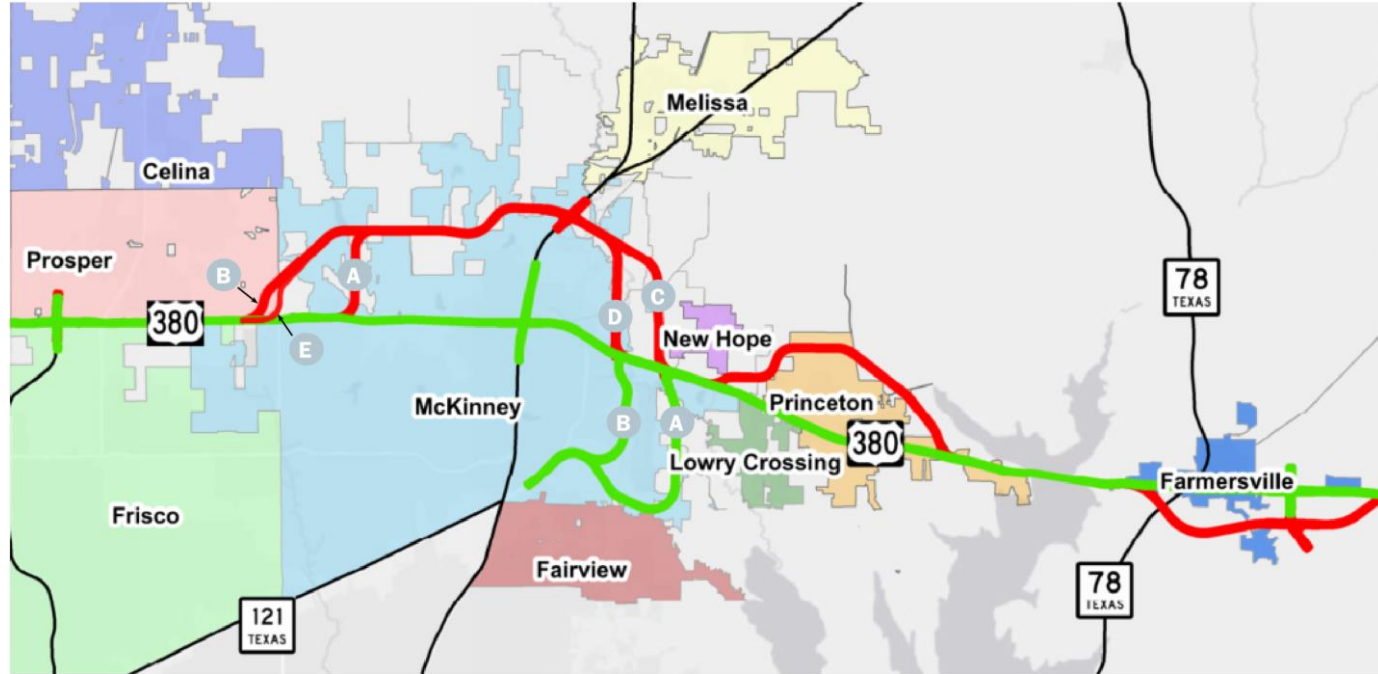
# Other Major Alignment Influencers



- 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



# Alignment Options – Public Meeting #2



# 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



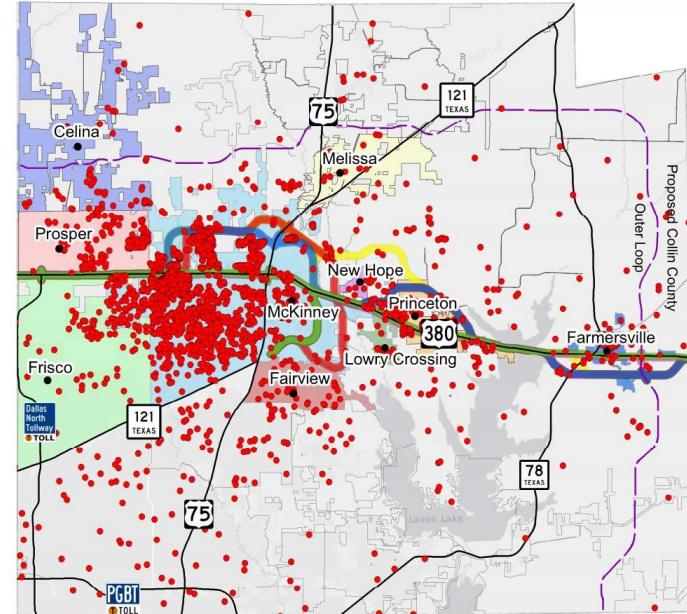
## DENTON COUNTY LINE TO HUNT COUNTY LINE

Evaluation Category	No Build	Green Alignment Option A	Green Alignment Option B	Red Alignment Option A	Red Alignment Option B
Number of Residential Property Impacts	0	54	43	78	75
Number of Current Residential Displacements	0	87	83	37	35
Number of Business Impacts	0	119	121	39	26
Number of Business Induced Displacements	0	16	17	3	1
Number of Business Direct Displacements	0	289	286	36	23
Number of Business Displacements	0	305	303	39	24
Future Development Impacts (acres)	0	110	96	284	342
Environmental, Watershed, and Park Land Impacts (acres)	0	357	216	437	449
Cost - Includes construction, ROW, utility relocation	0	\$2.46B	\$2.28B	\$2.23B	\$2.12B
Enhances Regional Mobility	○	●	●	●	●
Satisfies Travel Demand	○	●	●	◐	◐
Enhances Safety	○	●	◐	●	◐
Supports Future Regional Economic Growth	○	◐	◐	◐	◐

# Public Meeting Input Highlights

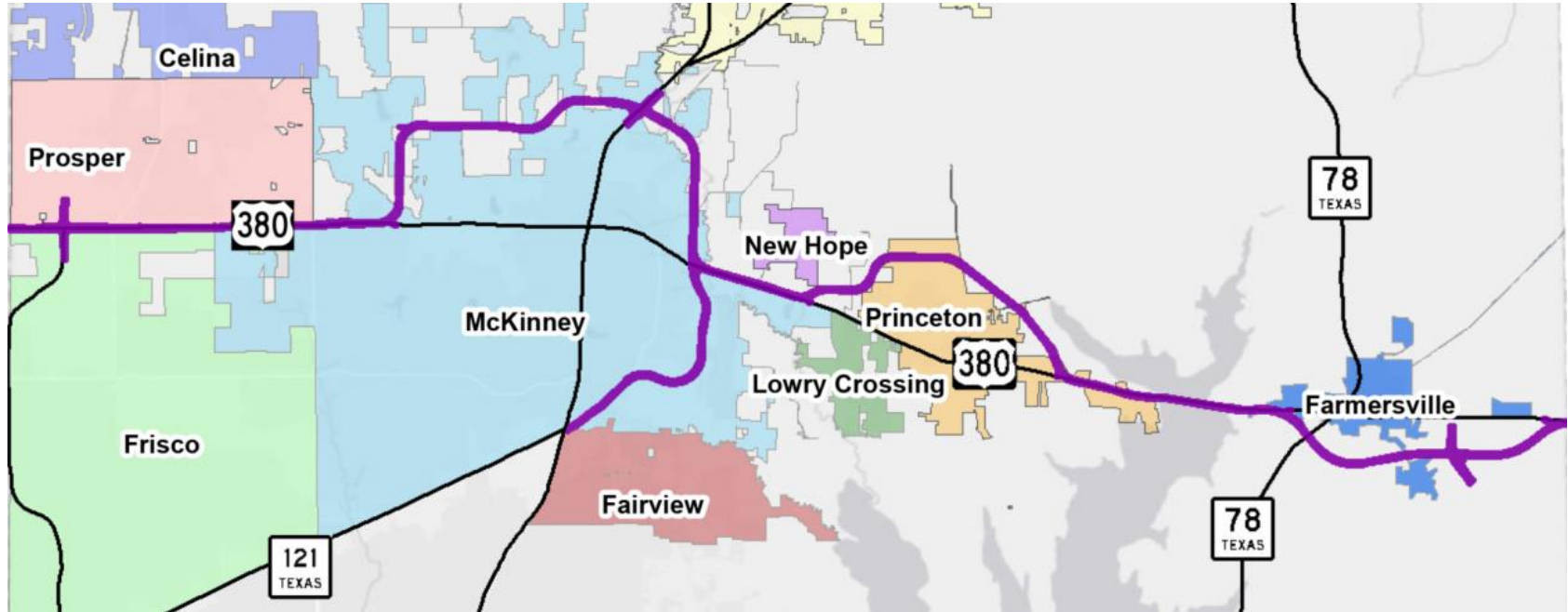


- Over 18,000 comments/surveys received and responded to
- Many of the comments/surveys listed concerns about existing US 380 including:
  - Traffic
  - Congestion
  - Safety (number of accidents/fatalities and high rates of speed)
  - Pace of future developments and impacts on congestion
  - Lack of 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



# Process Moving Forward



**INPUT FROM THE PUBLIC IS IMPORTANT AND CONSIDERED BY TxDOT AT EVERY PHASE OF PROJECT DEVELOPMENT**



**Other viable alignments or changes to alignments can still be considered during environmental studies**

# Transition From Feasibility To NEPA



Types of environmental studies include:

## Environmental Assessment (EA)

- Segments along existing US 380
- No significant impacts expected
- 1-2 years

**OR**

## 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.





**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**