

Collin County Mobility Plan Build-Out Travel Demand Modeling

Commissioners Court

Project Report

July 11, 2016

Presented by Clarence Daugherty, Director of Engineering



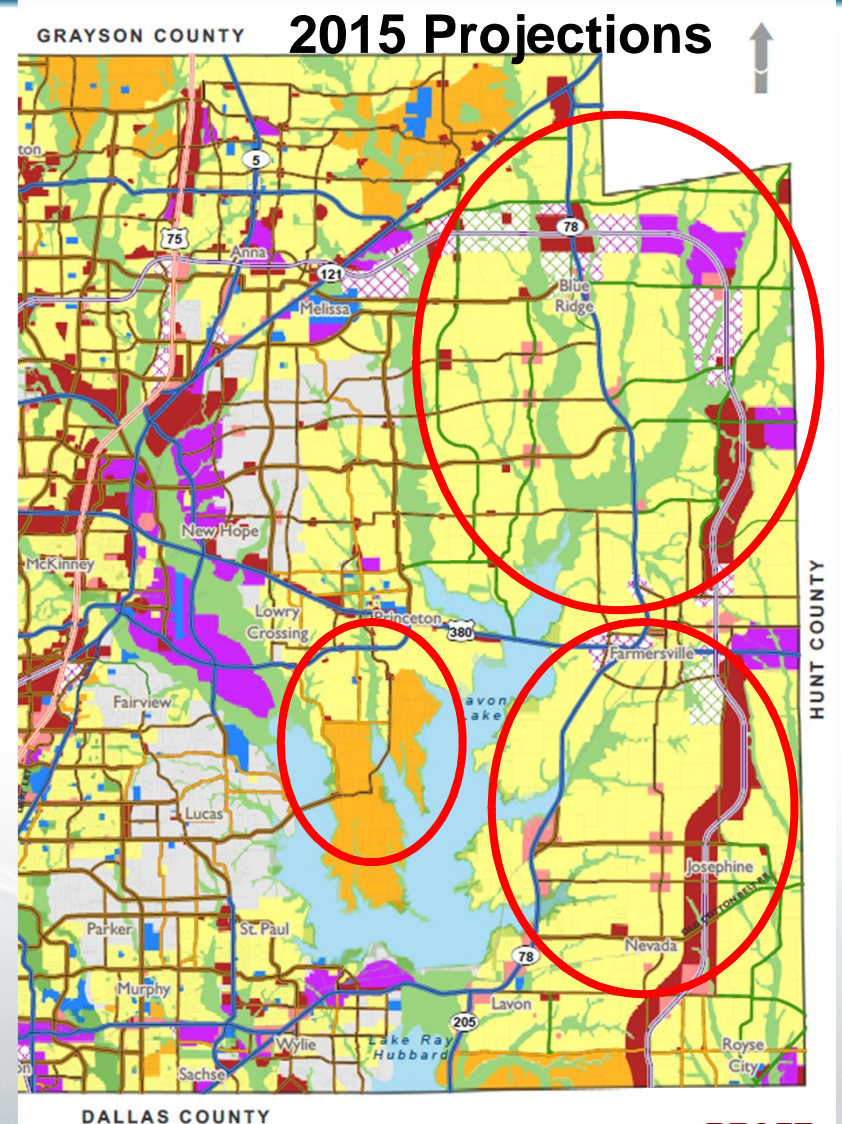
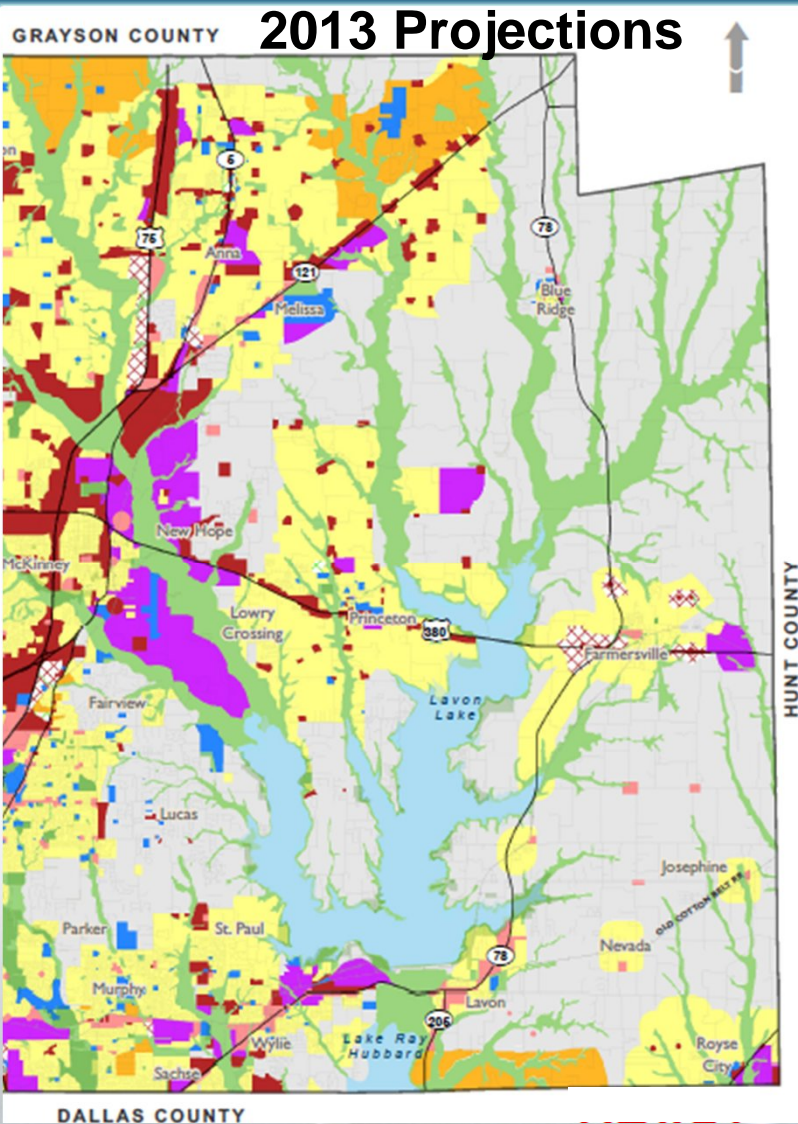


Project History

- 2014 Collin County Mobility Plan Update
- Included Build-Out Scenario (2.1M residents; 1.2M jobs)
- Assumed Minimal Development East and North
 - Limited infrastructure
 - Local opposition to growth
- Additional Build-Out Scenario Projected in 2015
 - Remove constraints East and North
 - Suburban development
 - 3.4M residents; 1.6M jobs
- Completed Travel Demand Model Runs
 - 2.1M build-out and 3.4M build-out
 - Unconstrained vs. Constrained



Demographic Analysis Results



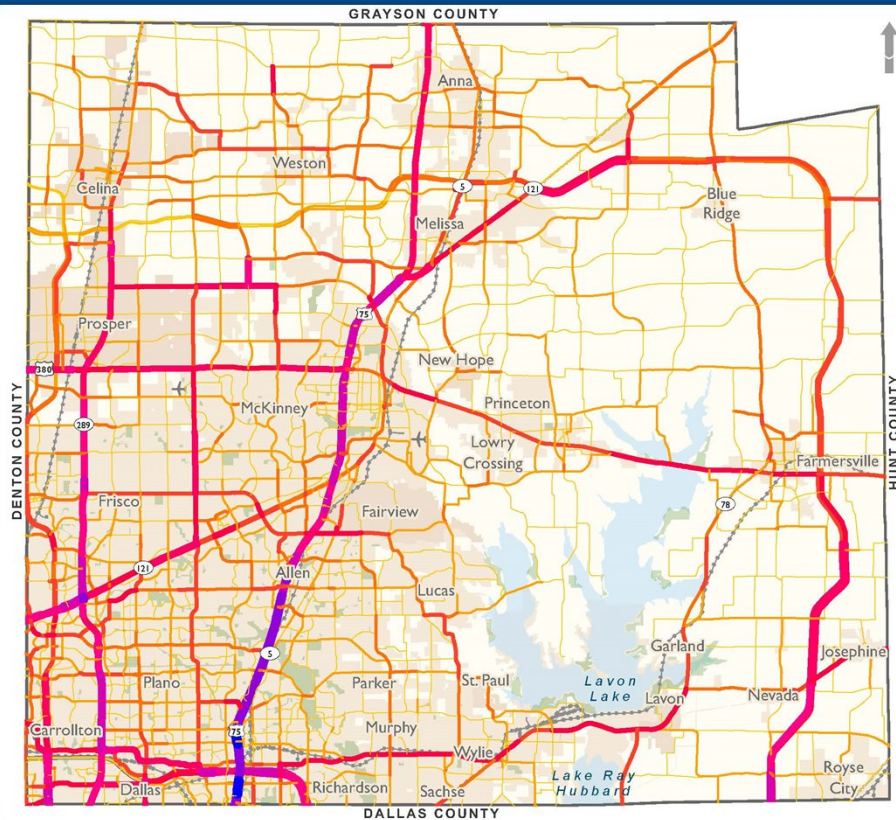


Travel Demand Model Process

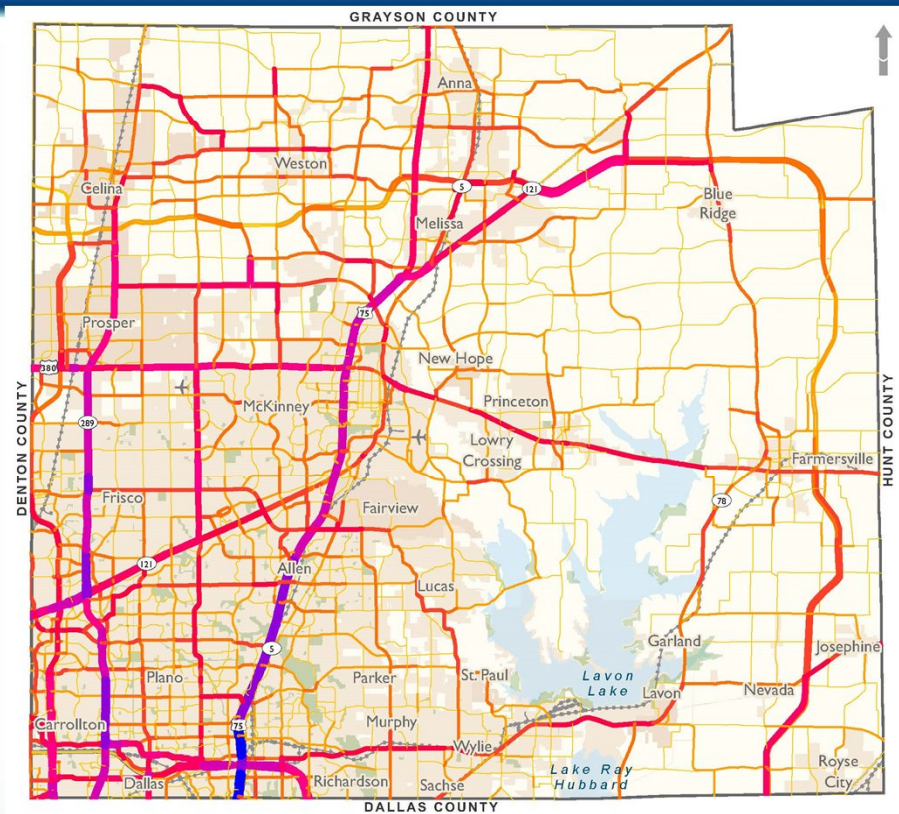
- Build-Out Demographics Provided to NCTCOG (2 scenarios)
- NCTCOG Generated Trip Tables
- Delays Due to Adjustments to Model Assumptions
- New Model Results for:
 - 2.1M Build-Out (2013 Study)
 - 3.4M Build-Out (2015 Alternate Build-Out Scenario)



Unconstrained Modeling Results



CCMP 2.1M



CCMP 3.4M

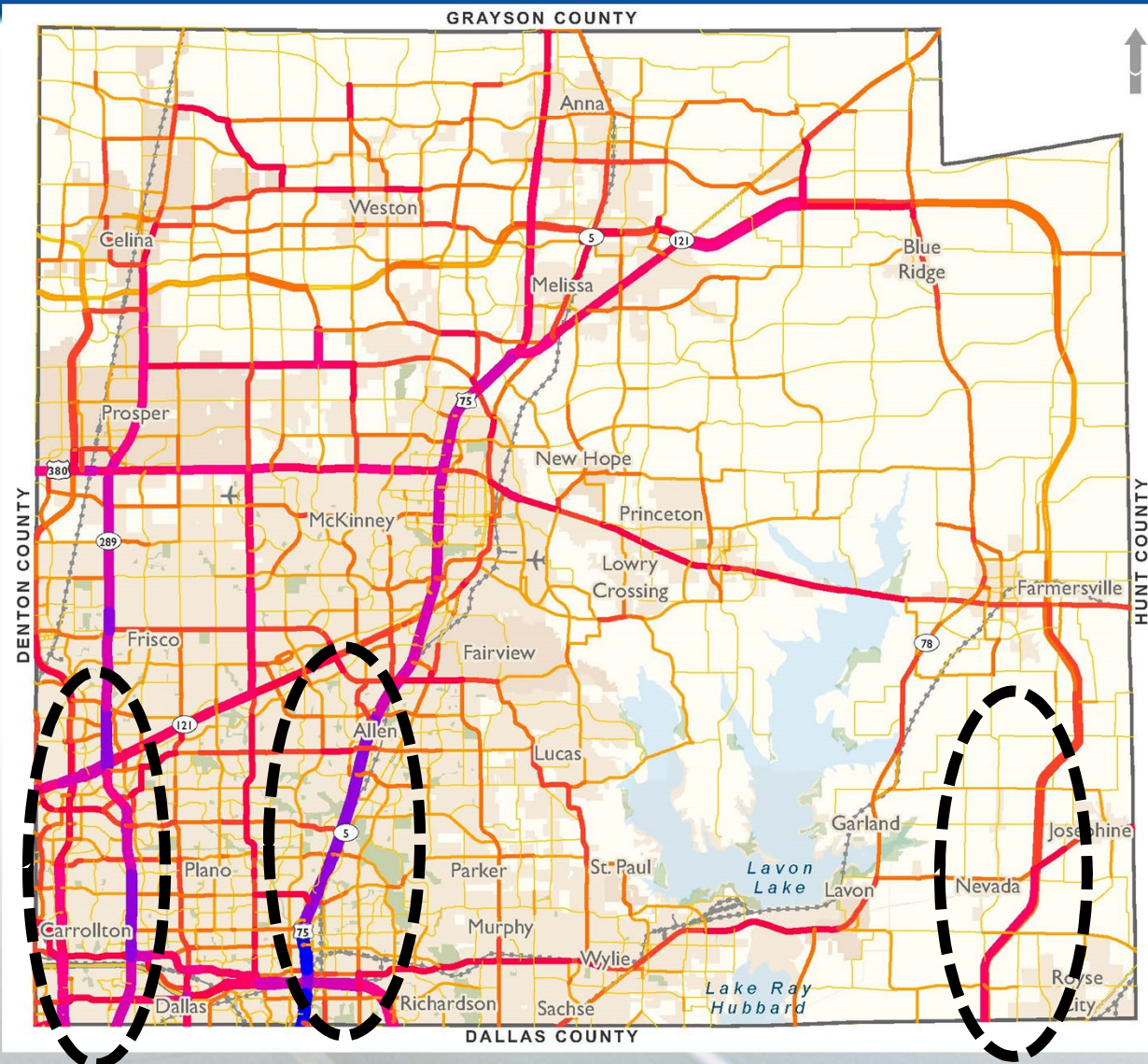
Daily Directional Volumes

- 0 - 4,335
- 4,335 - 11,886
- 11,886 - 21,975
- 21,975 - 35,157
- 35,157 - 53,153
- 53,153 - 76,918
- 76,918 - 105,824
- 105,824 - 145,587
- 145,587 - 199,969
- 199,969 - 316,345

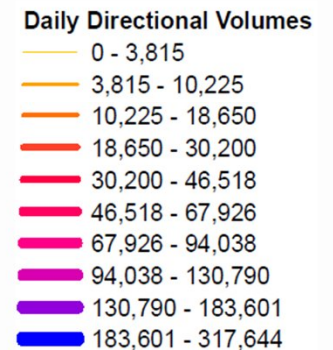


3.1M Unconstrained Modeling Results

Heavy Demand to South



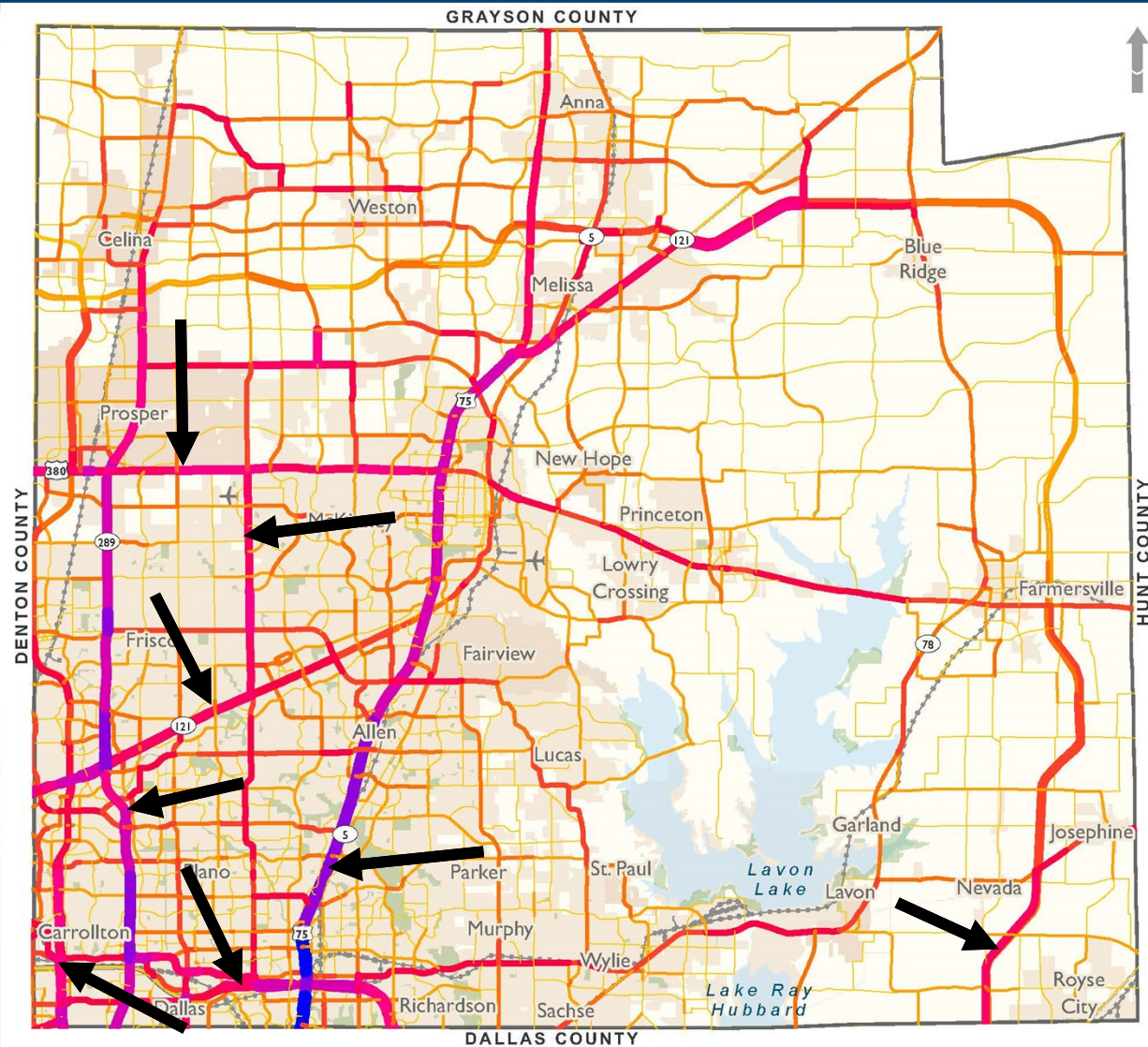
CCMP 3.4M





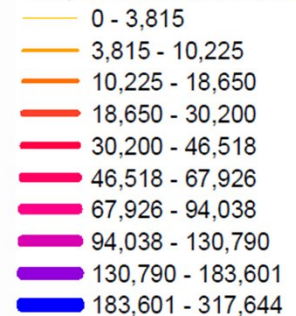
3.1M Unconstrained Modeling Results

Roadways with Heaviest Demand



CCMP 3.4M

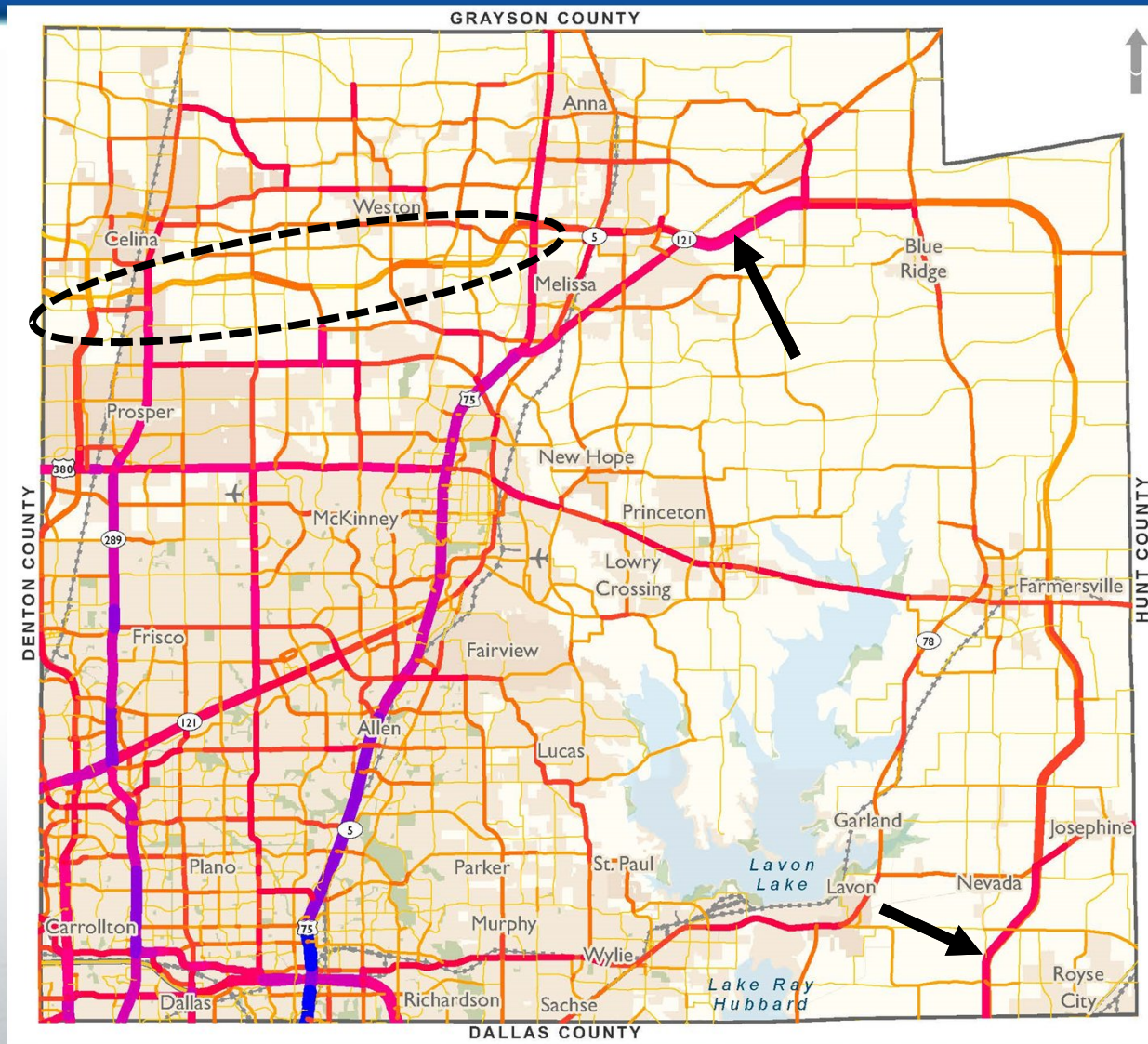
Daily Directional Volumes





3.1M Unconstrained Modeling Results

Outer Loop



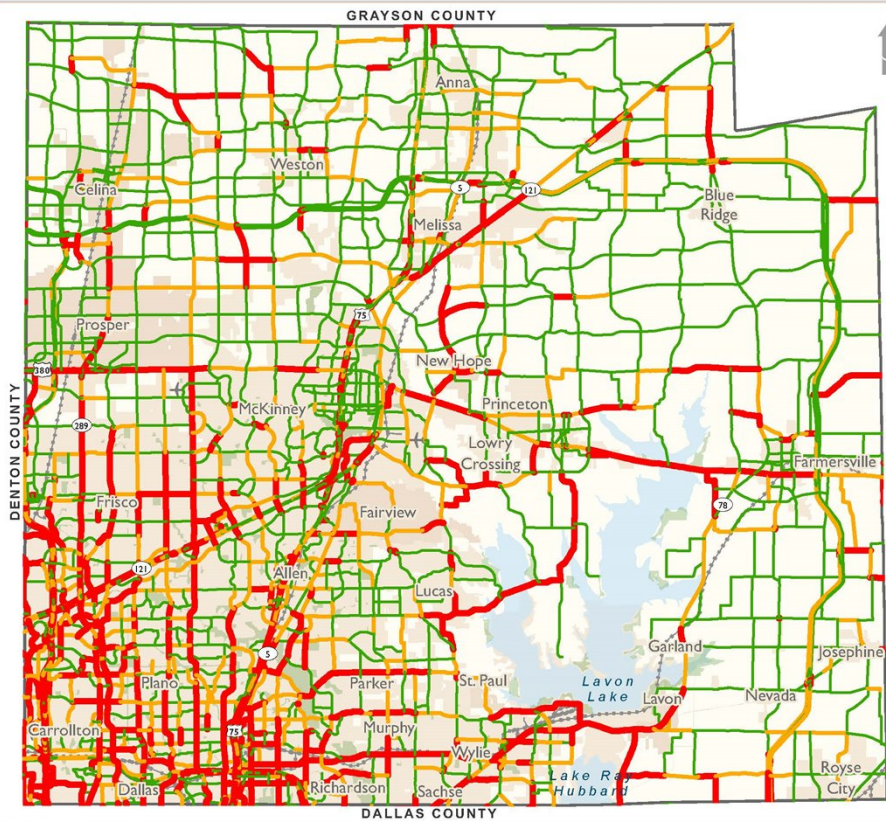
CCMP 3.4M

Daily Directional Volumes

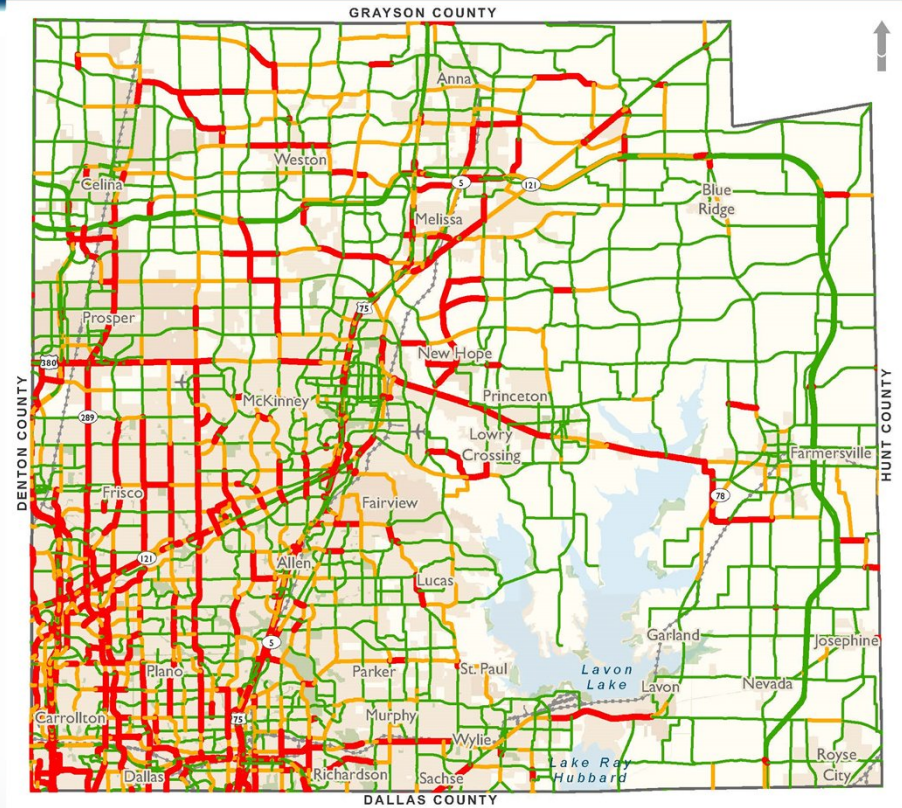
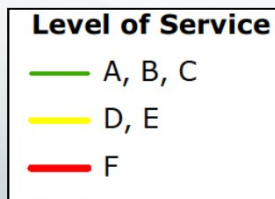
- 0 - 3,815
- 3,815 - 10,225
- 10,225 - 18,650
- 18,650 - 30,200
- 30,200 - 46,518
- 46,518 - 67,926
- 67,926 - 94,038
- 94,038 - 130,790
- 130,790 - 183,601
- 183,601 - 317,644



Constrained Modeling Results



CCMP 2.1M

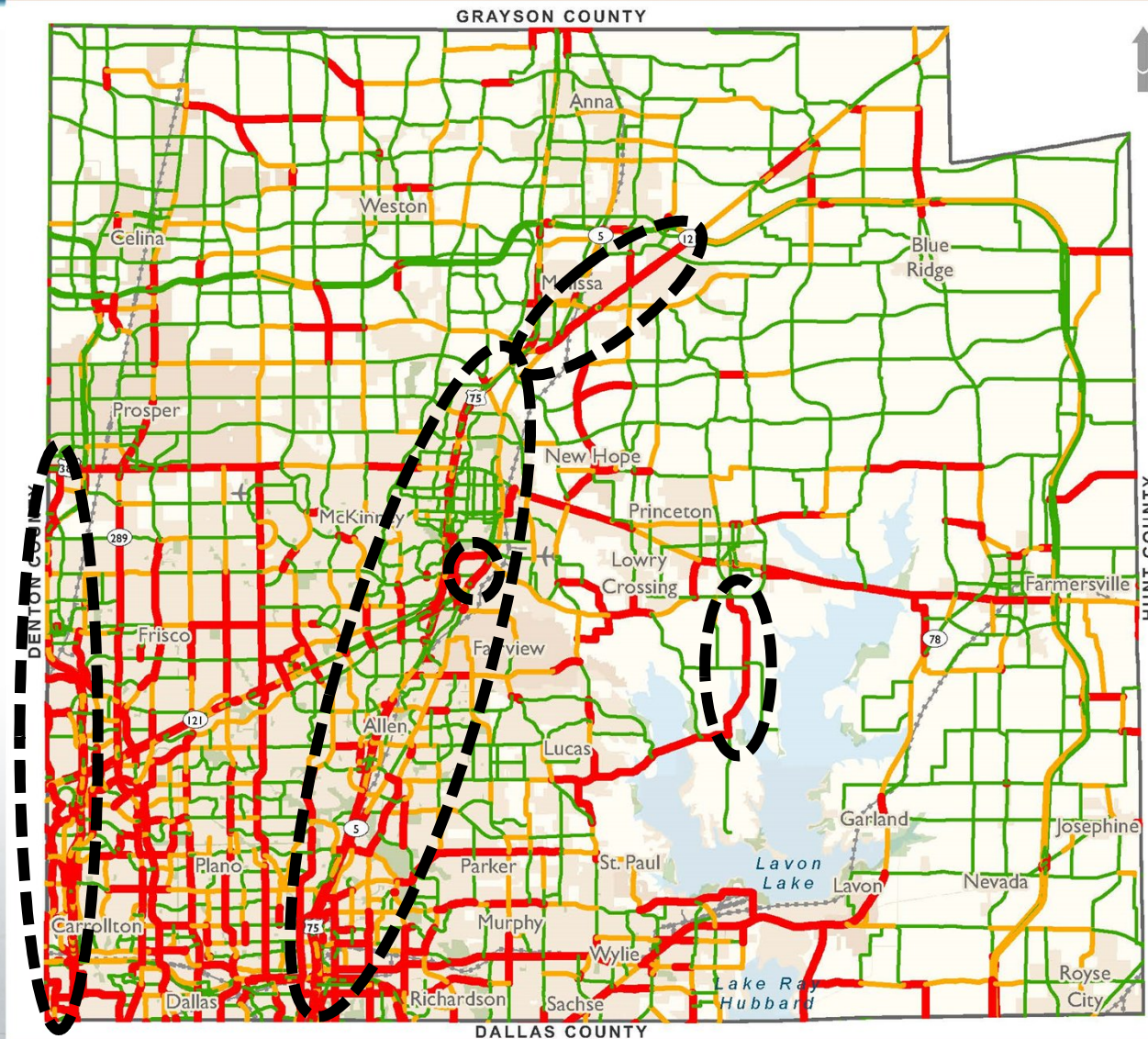


CCMP 3.4M

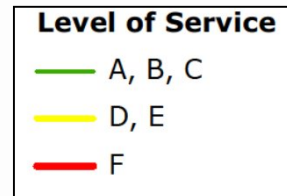


Constrained Modeling Results

Congested North-South Roadways



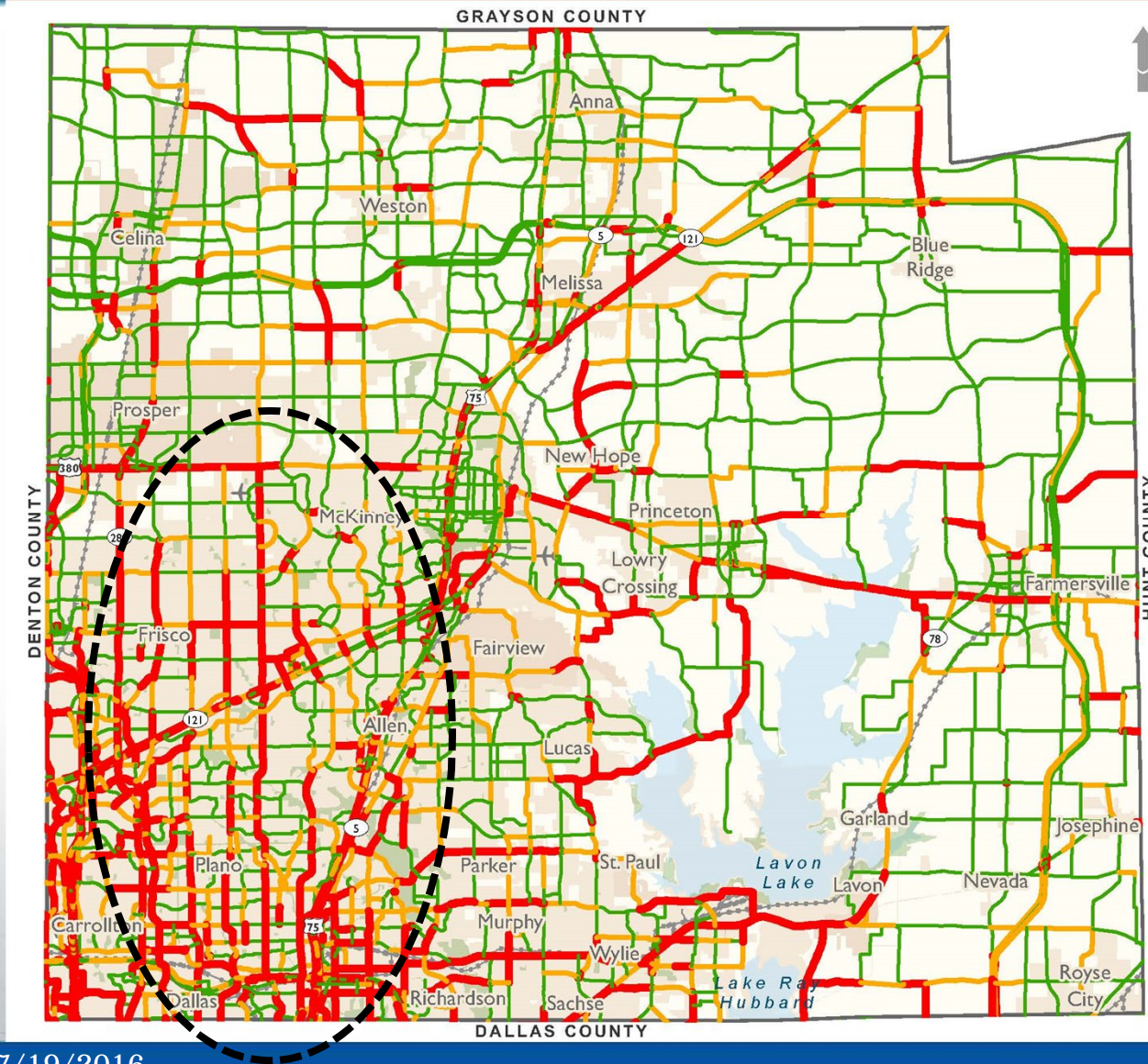
CCMP 2.1M



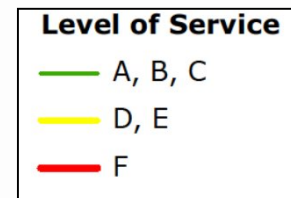


Constrained Modeling Results

Congested North-South Roadways



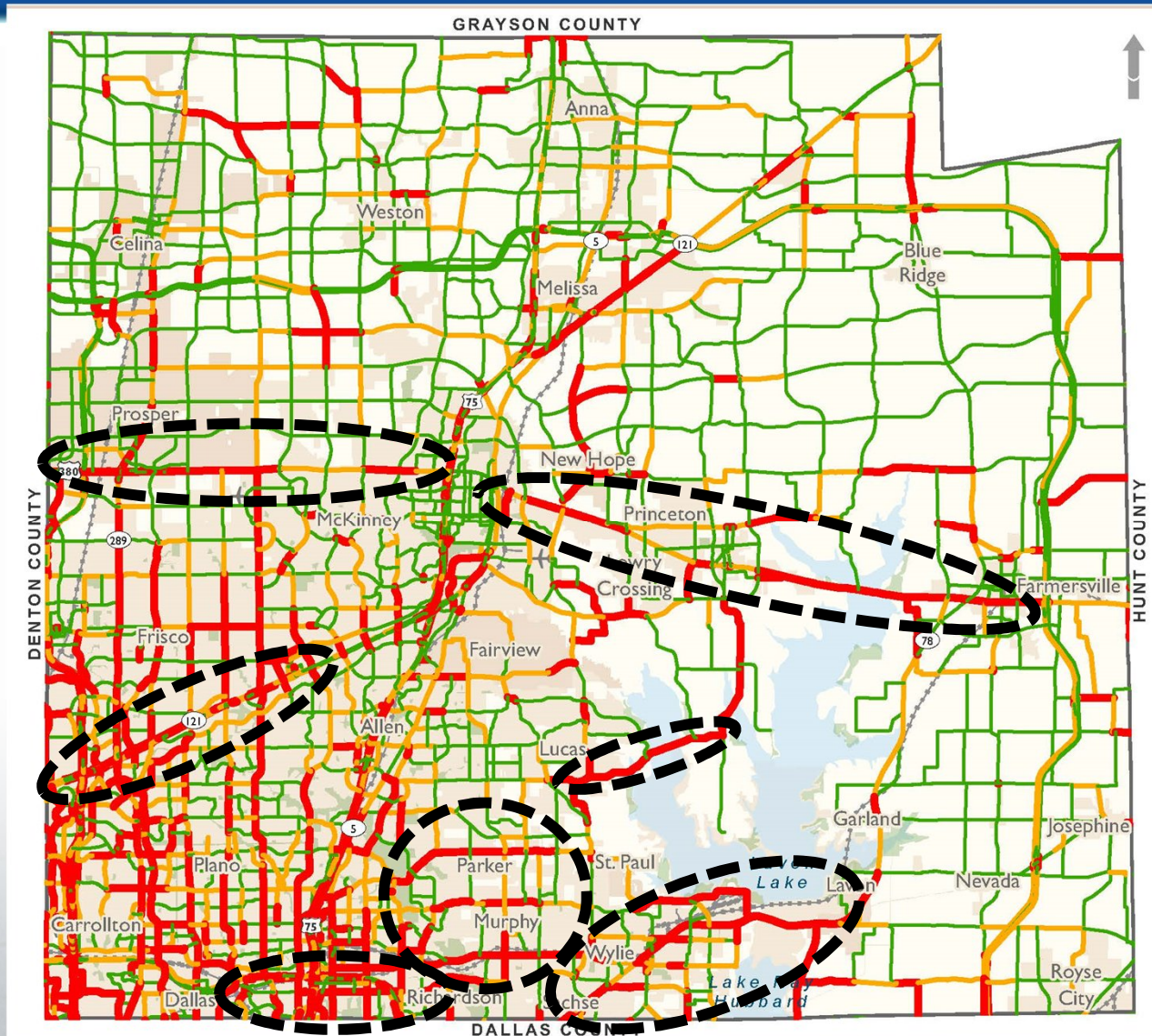
CCMP 2.1M





Constrained Modeling Results

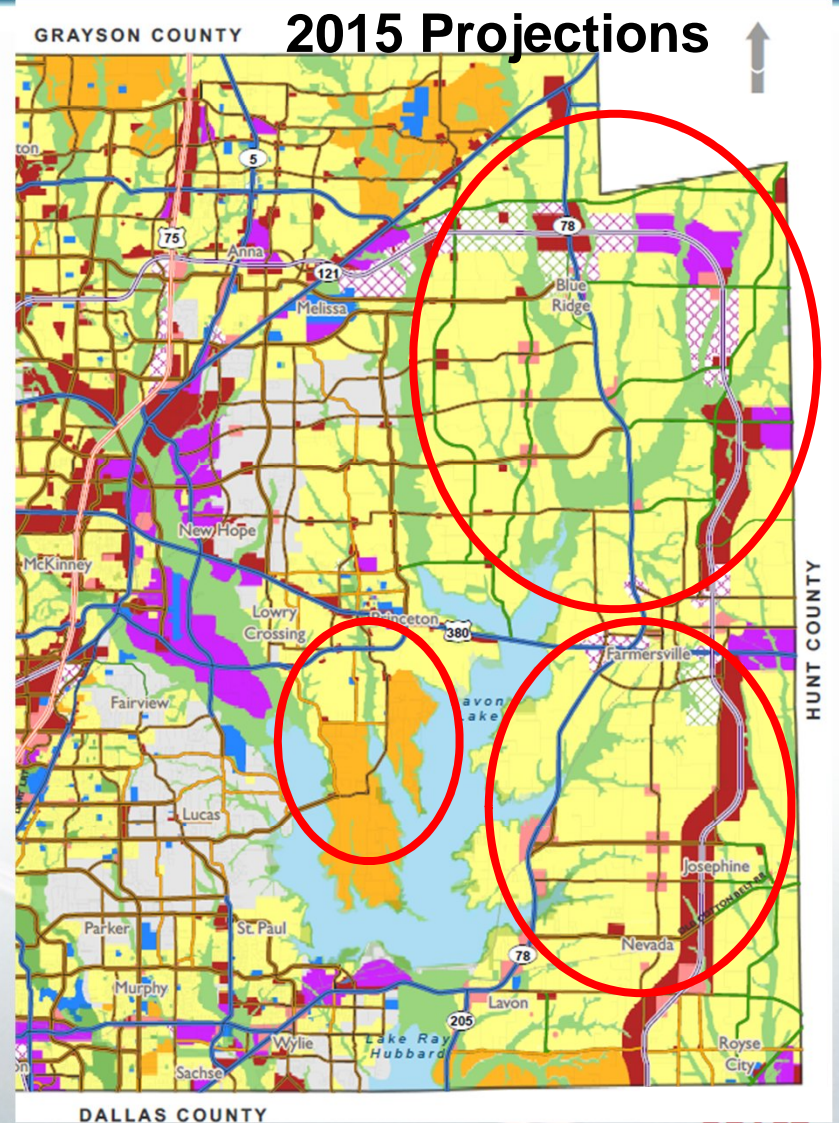
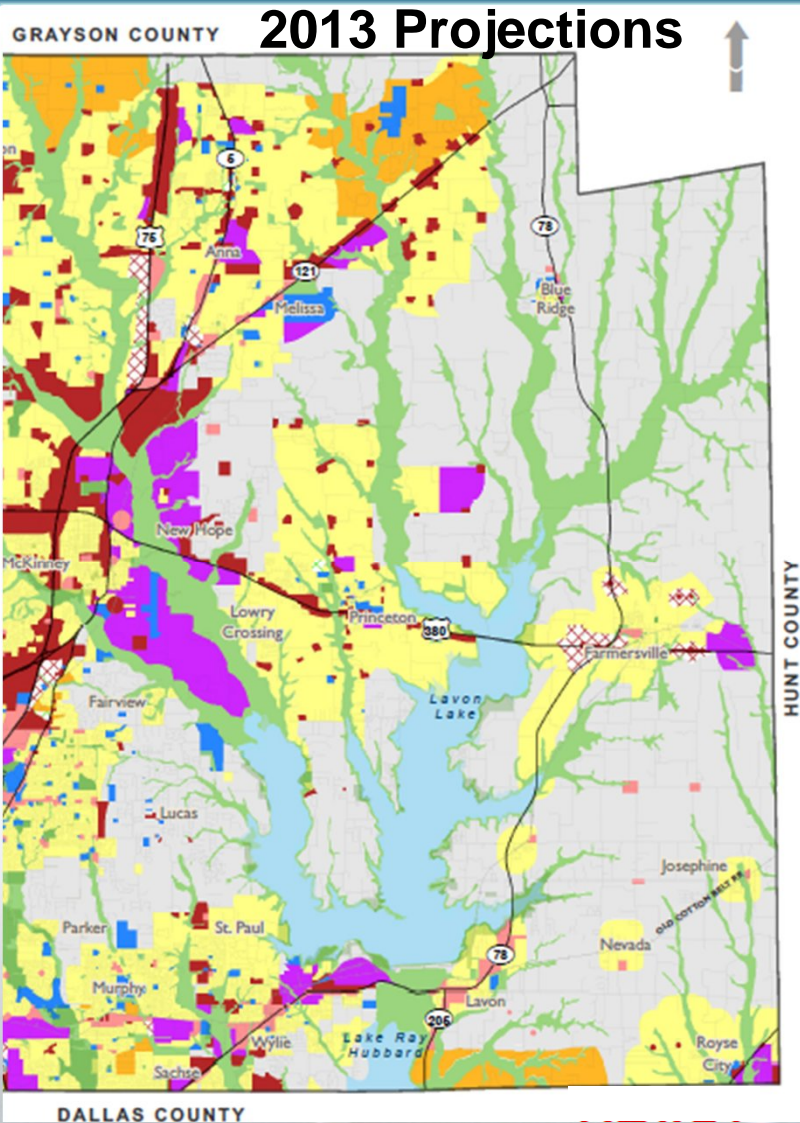
Congested East-West Roadways



CCMP 2.1M



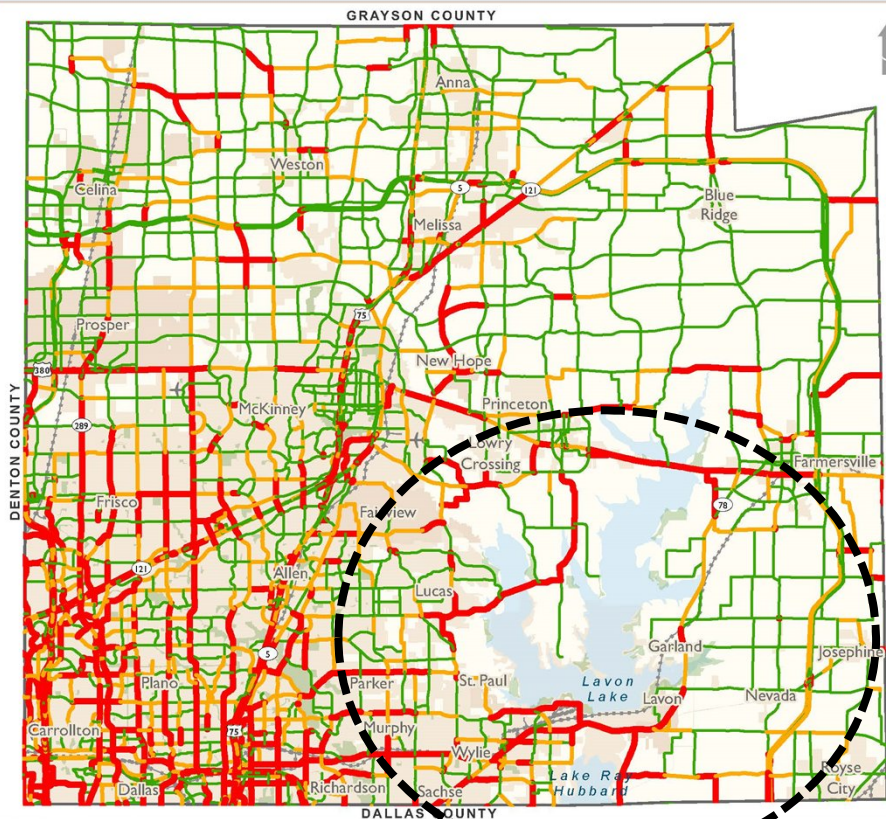
Demographic Analysis Results



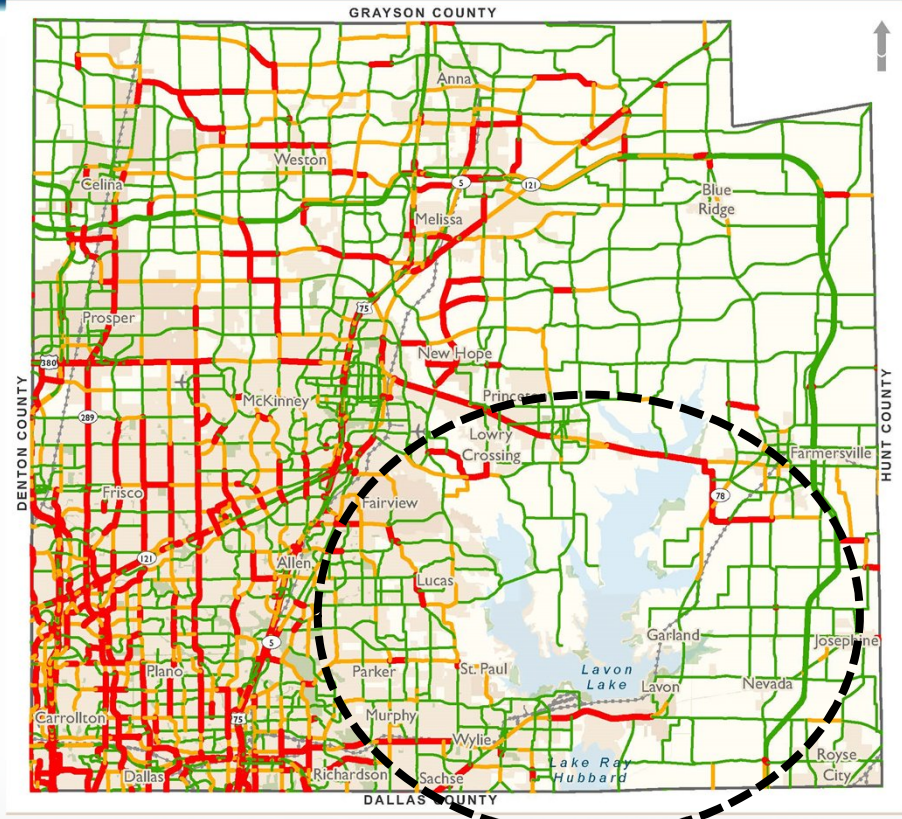
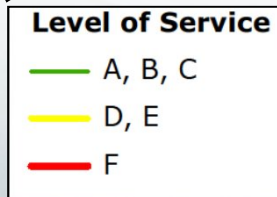


Constrained Modeling Results

Impact of Mixed-Use Along E Outer Loop



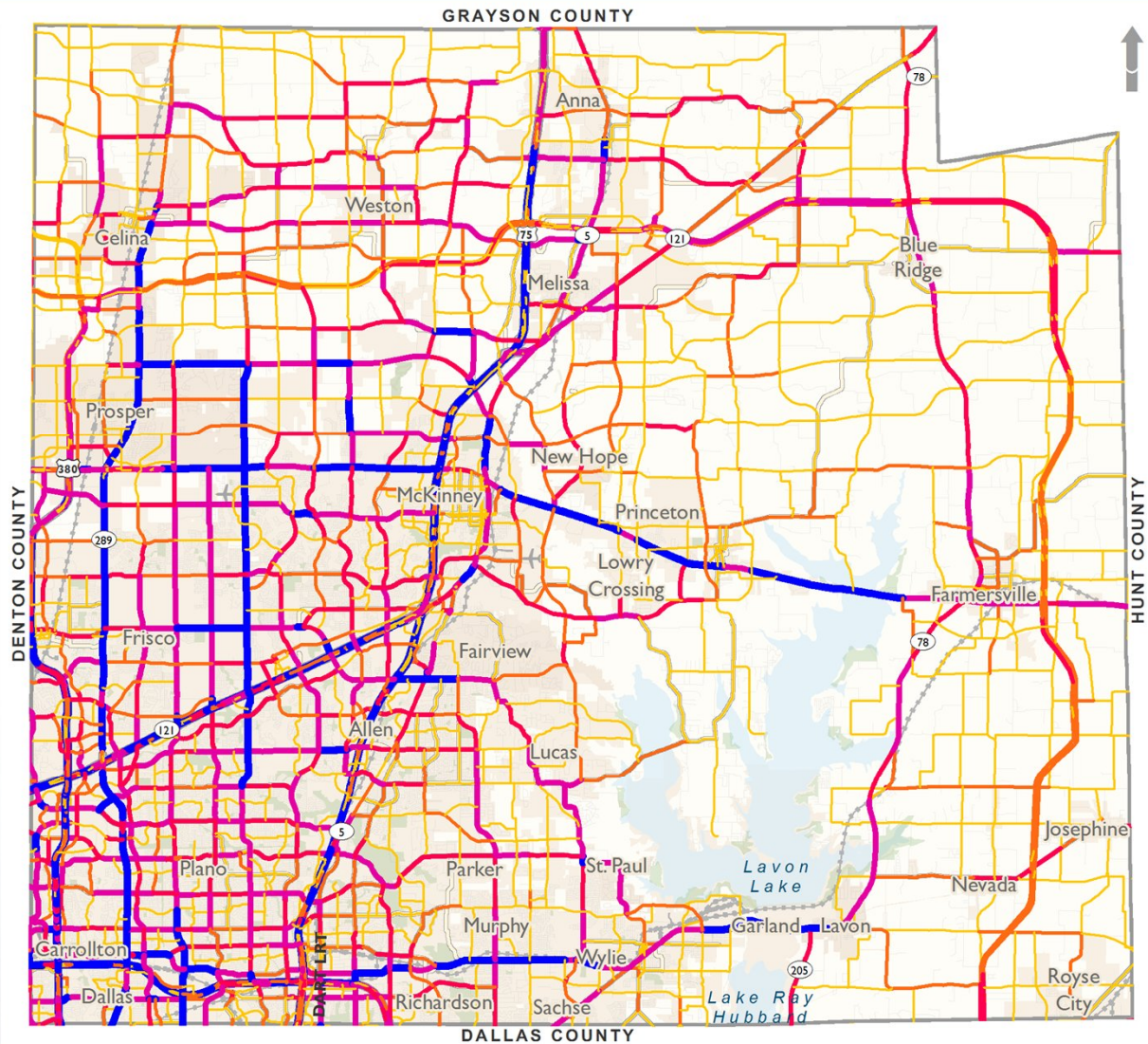
CCMP 2.1M



CCMP 3.4M



Thoroughfares That May Need To Be More Than Six Lanes



CCMP 3.4M

Average Daily Traffic (ADT)

- 0 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- 30,001 - 50,000
- 50,001 - 200,000

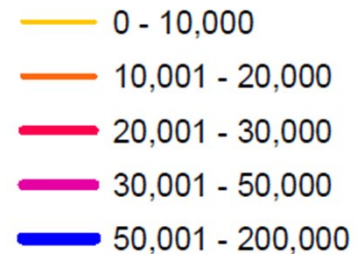


CONCLUSIONS

What do we get out of this effort?
What does this tell us that we did not already know?

CCMP 3.4M

Average Daily Traffic (ADT)





- December, 2014 Commissioners Court...
 - determined from comparison with Dallas County that Collin County needed more limited access roadways (LARs)
 - determined that a “strategic” approach was necessary for transportation planning



Planning Strategically

- **Partner with all transportation agencies in the County**
- **Get assistance of NCTCOG**
- **TO determine what has to be done to provide mobility at build-out.**
- **It will appear to be an overwhelming task – will require everyone to accomplish it**



Planning Strategically

So what can Collin County do to start planning strategically for transportation?

- Resist the urge to plan for tomorrow or even 2035. Think “BUILD- OUT” when planning.
- Develop an “un-restrained” build-out scenario
- Develop build-out plan with TxDOT, Cities, transit agencies and with COG’s assistance
- Start measuring all actions to determine if they contribute to build-out plan



Planning Strategically

Adjusted build-out scenario

- **Develop alternative build-out scenario**
 - **Develop pop and emp projections assuming no restraints in transportation or water or sewer**
 - **Run “un-constrained” travel demand model for build-out**
- **If concept is approved, will follow-up with consultant scope**



Planning Strategically

Identify Major Corridors for NCTCOG Assistance

Central, N-S (US 75/SH 5)

Central E-W (US 380)

Outer Loop

Southeast (SH 78)

West N-S (DNT/Preston)




- December, 2014 Commissioners Court...
 - determined from comparison with Dallas County that Collin County needed more limited access roadways (LARs)
 - determined that a “strategic” approach was necessary for transportation planning
 - authorized travel demand modeling and development of second demographic projection scenario



- October, 2015: consultant presented second demographic scenario: 3.1M pop, 1.6M empl
- November, 2015: consultant began work with NCTCOG on travel demand modeling
- February 1, 2016: Commissioners Court identified and prioritized LARs



- Two of the strategic planning steps have been accomplished:



Planning Strategically

Adjusted build-out scenario

- Develop alternative build-out scenario
 - Develop pop and emp projections assuming no restraints in transportation or water or sewer
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- If concept is approved, will follow-up with consultant scope



Planning Strategically

Identify Major Corridors for NCTCOG Assistance

- Central, N-S (US 75/SH 5)
- Central E-W (US 380)
- Outer Loop
- Southeast (SH 78)
- West N-S (DNT/Preston)



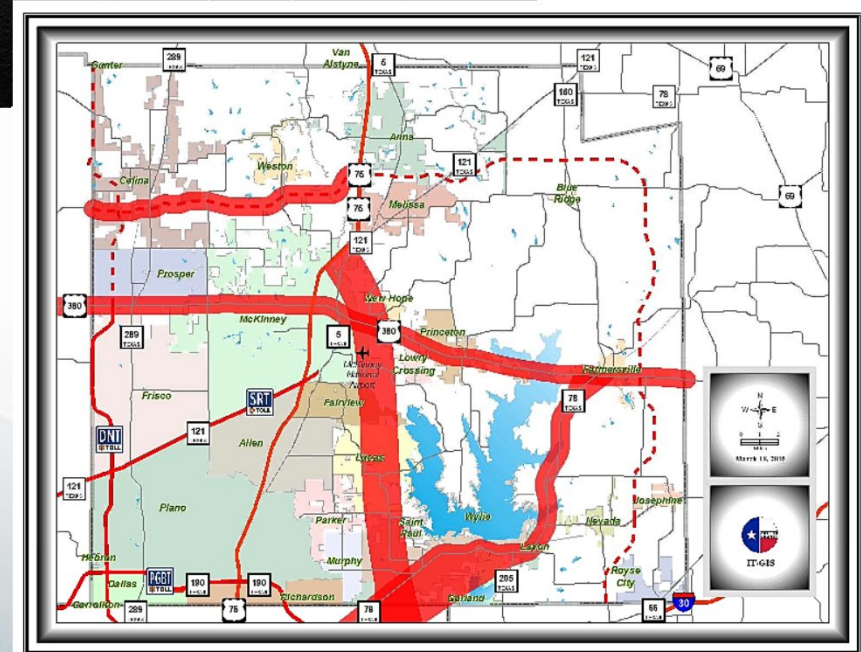
- Judge and Com Webb met with COG & TxDOT
 - they will analyze corridors
- Members of Court are presenting to cities & other organizations



Planning Strategically

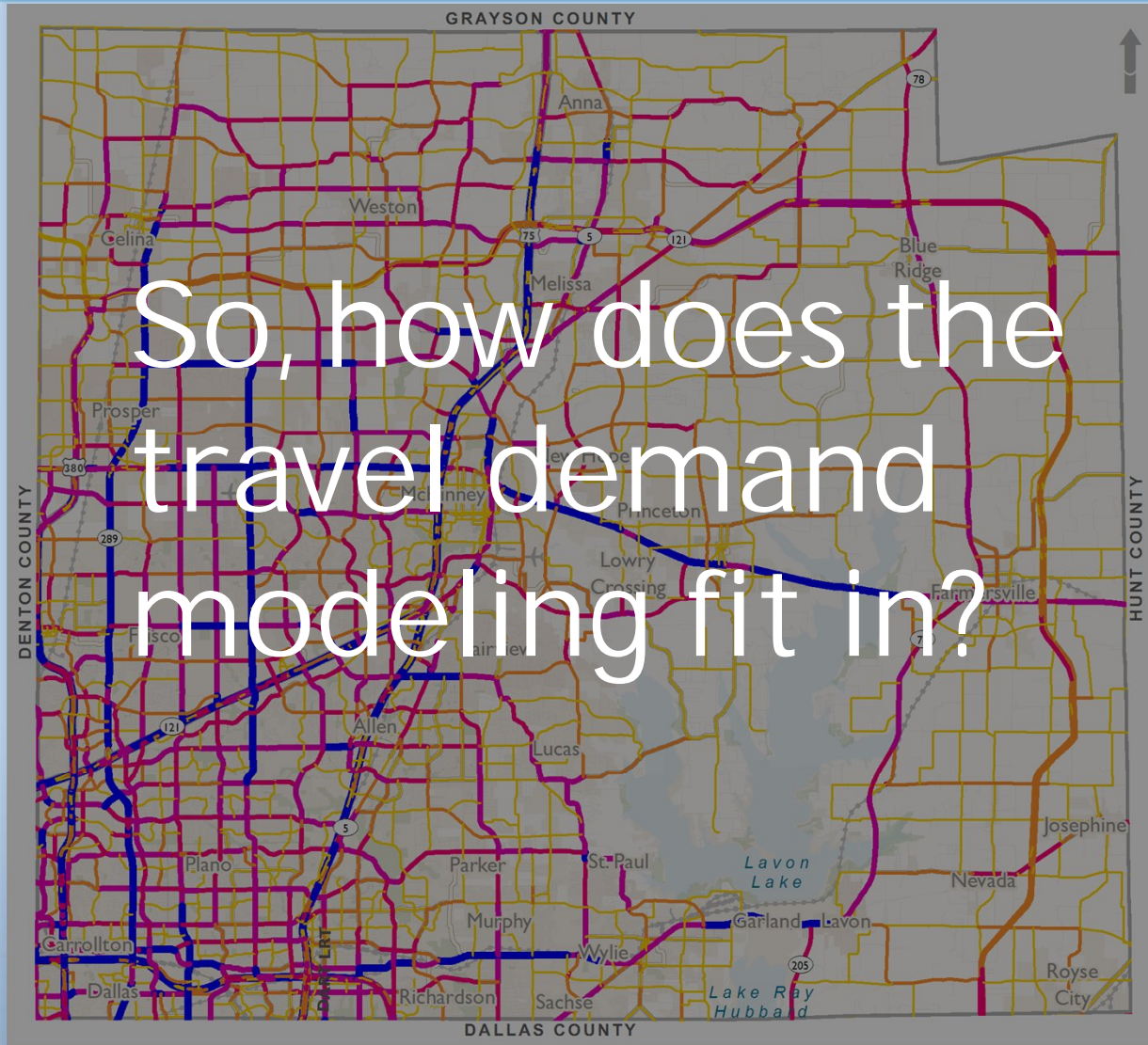
Identify Major Corridors for NCTCOG Assistance

- Central, N-S (US 75/SH 5)
- Central E-W (US 380)
- Outer Loop
- Southeast (SH 78)





CONCLUSIONS



So, how does the travel demand modeling fit in?

CCMP 3.4M

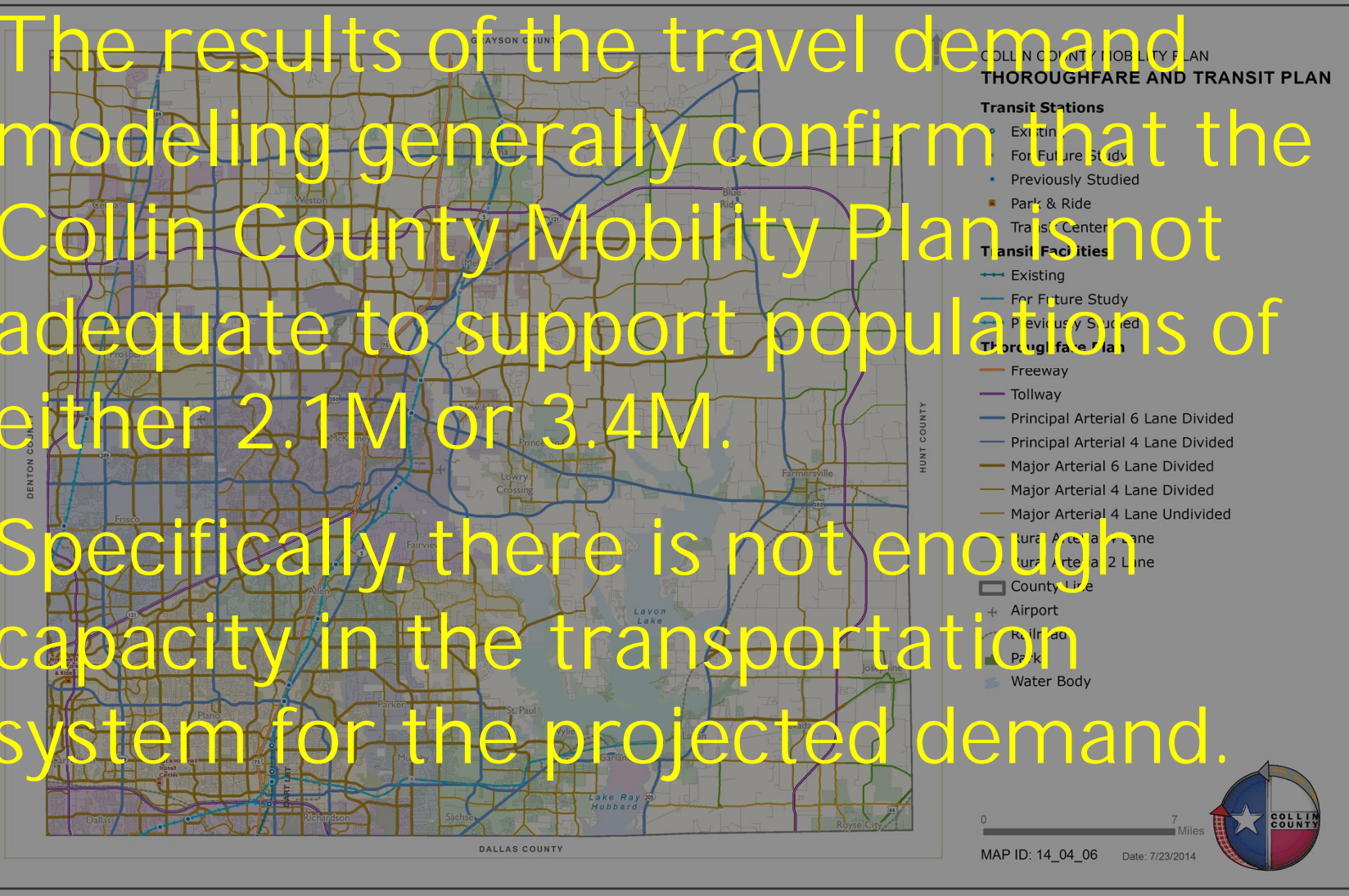
Average Daily Traffic (ADT)

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- 20,001 - 30,000
- 30,001 - 50,000
- 50,001 - 200,000



CONCLUSIONS


The results of the travel demand modeling generally confirm that the Collin County Mobility Plan is not adequate to support populations of either 2.1M or 3.4M. Specifically, there is not enough capacity in the transportation system for the projected demand.





Development of a “Comprehensive Master Plan”

Next step: working with cities, TxDOT, transit agencies and COG, develop a “comprehensive master plan” for mobility that will be adequate for build-out



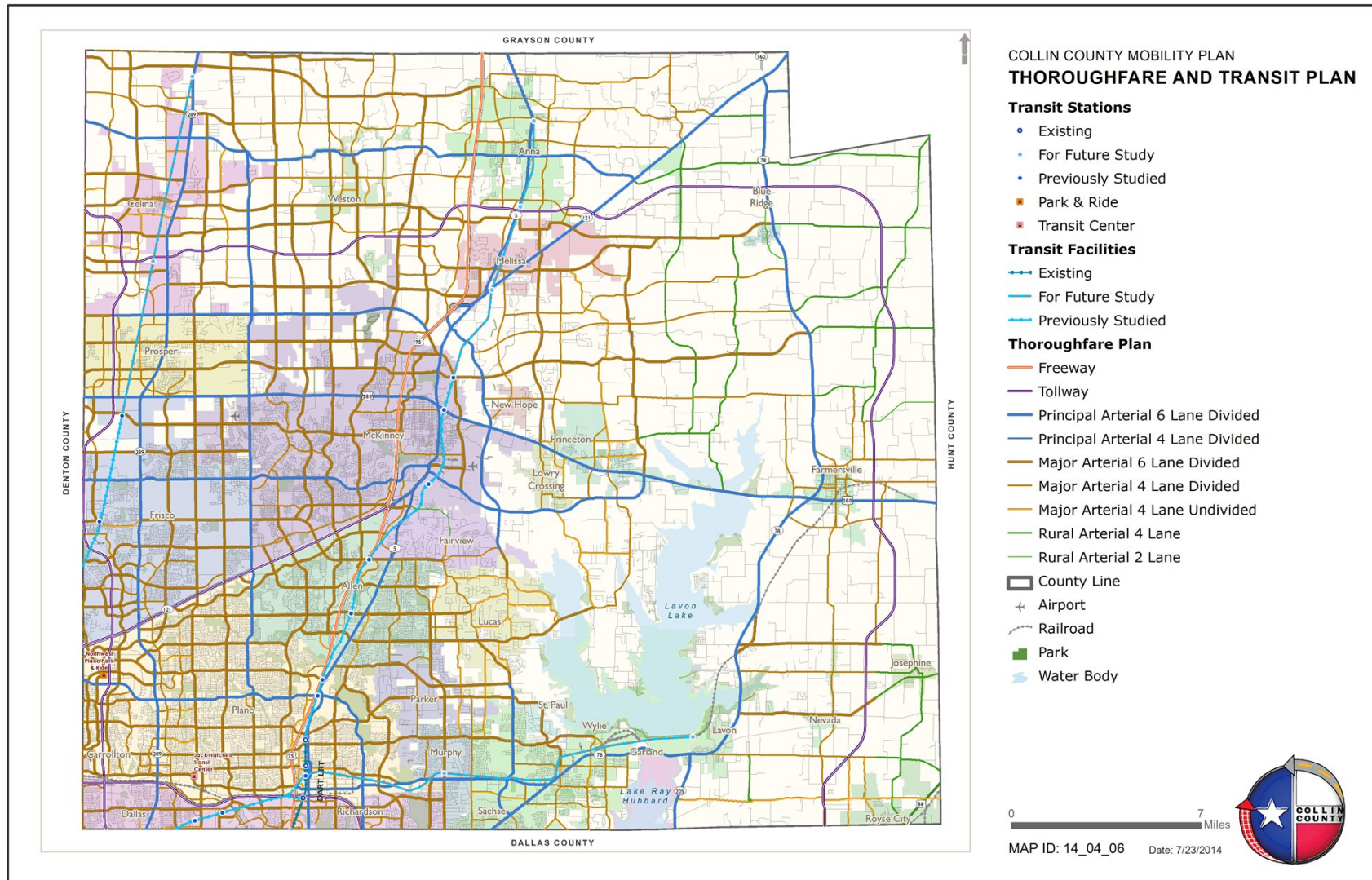
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- Start measuring all actions to determine if they contribute to build-out plan



Development of a “Comprehensive Master Plan”





Development of a “Comprehensive Master Plan”

Set up a “process” to work with other transportation agencies

Next Steps

- Develop process for cities, TxDOT, transit agencies and NCTCOG to work together on build-out plan

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Build-Out Travel Demand Modeling

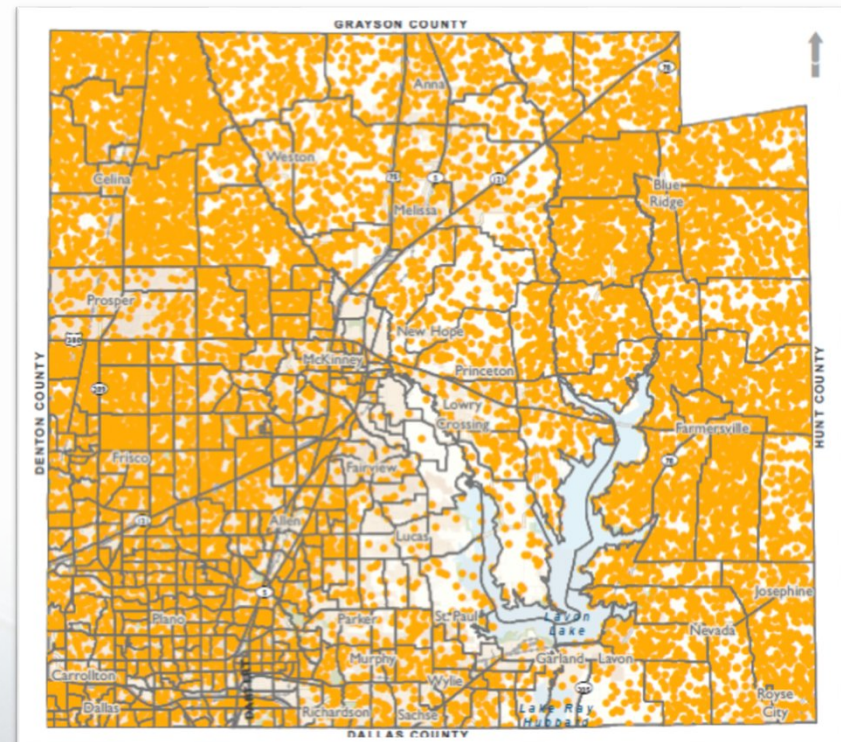
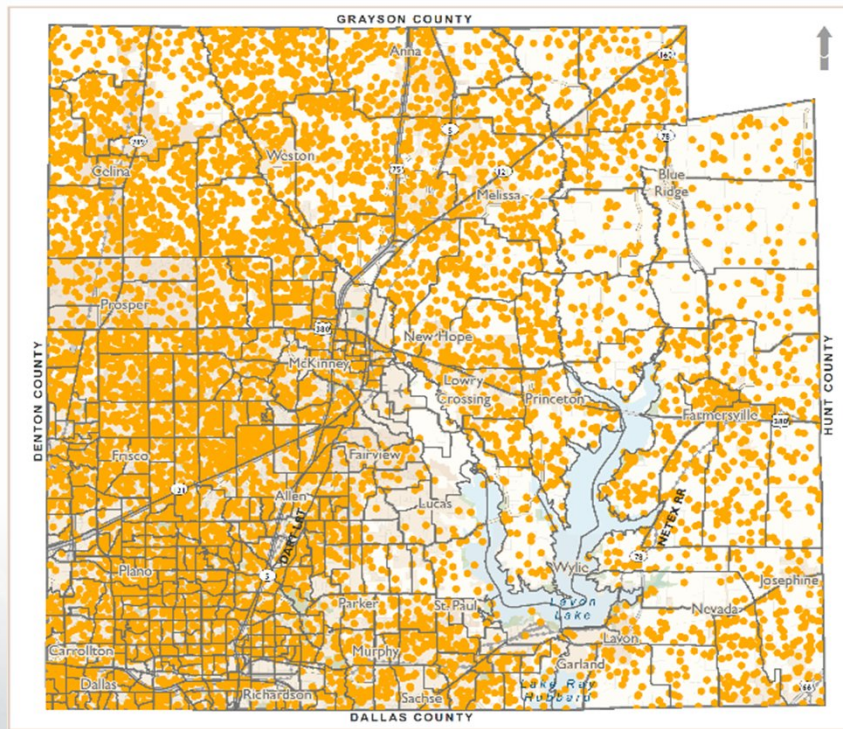
DISCUSSION



Population Density Maps

2.1 M

3.4 M





Employment Density Maps

1.2 M

1.6 M

