



2017 ANNUAL REPORT ON TRAFFIC CONGESTION IN THE DENVER REGION

Presented by:

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Topics

1. DRCOG Congestion Management Program and VMT growth
2. Traffic congestion on major roadways
3. Performance of recently completed projects
4. What will transportation be like in 2040



1. CONGESTION MANAGEMENT PROGRAM AND VMT GROWTH

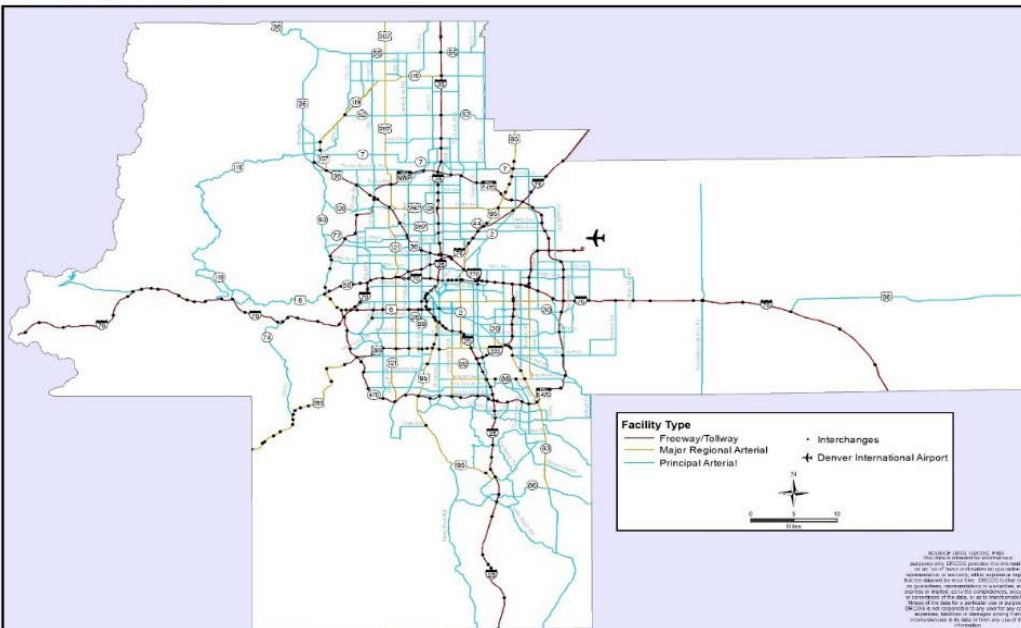


DRCOG Congestion Management Process

- MPOs are federally required to monitor congestion.
- DRCOG Annual Reports on Congestion since 2006
 - Report regional vehicle (VMT) and person (PMT) miles traveled
 - Roadway network info: physical traits, traffic volumes, transit routes
 - Used for TIP and RTP planning and project evaluation

Figure 3

DRCOG Regional Roadway System



2017 ANNUAL REPORT ON ROADWAY TRAFFIC
CONGESTION IN THE DENVER REGION

October 2018



On an average weekday in the Denver region in 2017...

15 million person-trips

(110 mil. PMT)



13 million person-trips
in motor vehicles



2 million pedestrian/bicycle trips

9 million vehicle trips

(83 mil. VMT)

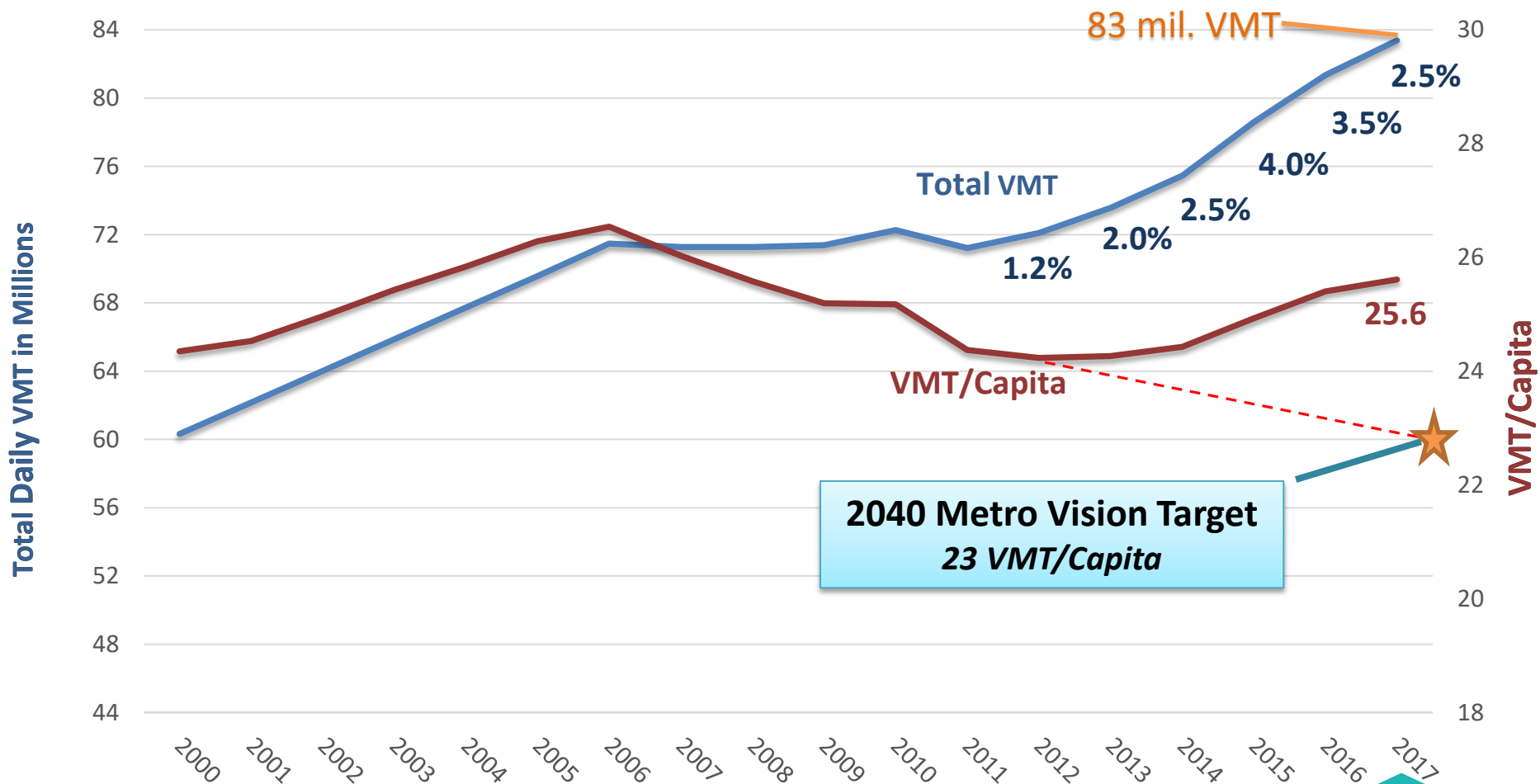


250,000+ hours of extra
congestion delay



VMT Trends

Average Daily VMT in the Denver Region (2000 – 2017)



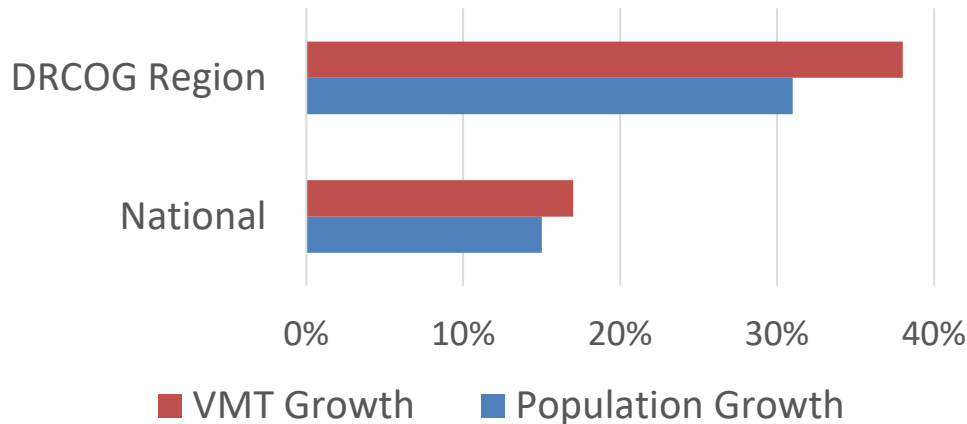


Why is VMT Increasing?

- booming economy
- population and job growth
- housing prices/longer commutes
- more package deliveries
- construction activity



Growth since 2000





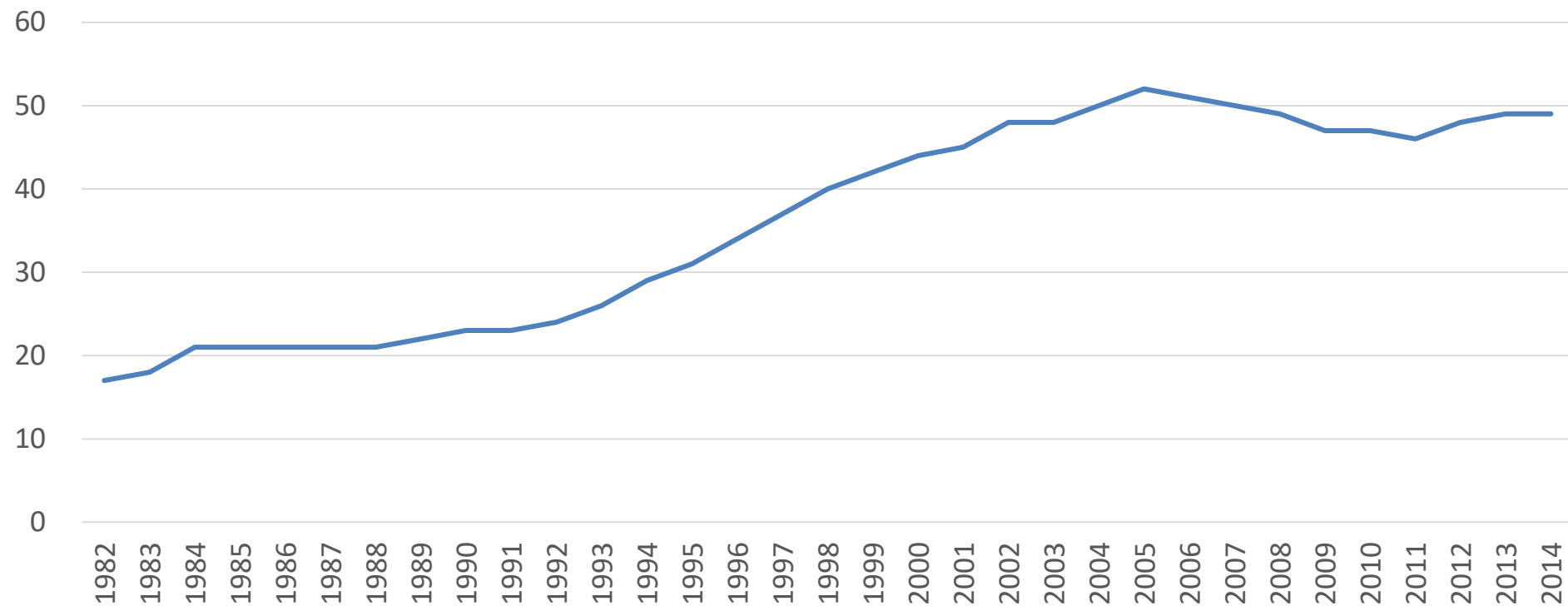
2. TRAFFIC CONGESTION ON MAJOR ROADWAYS



Congestion trends in the Denver region

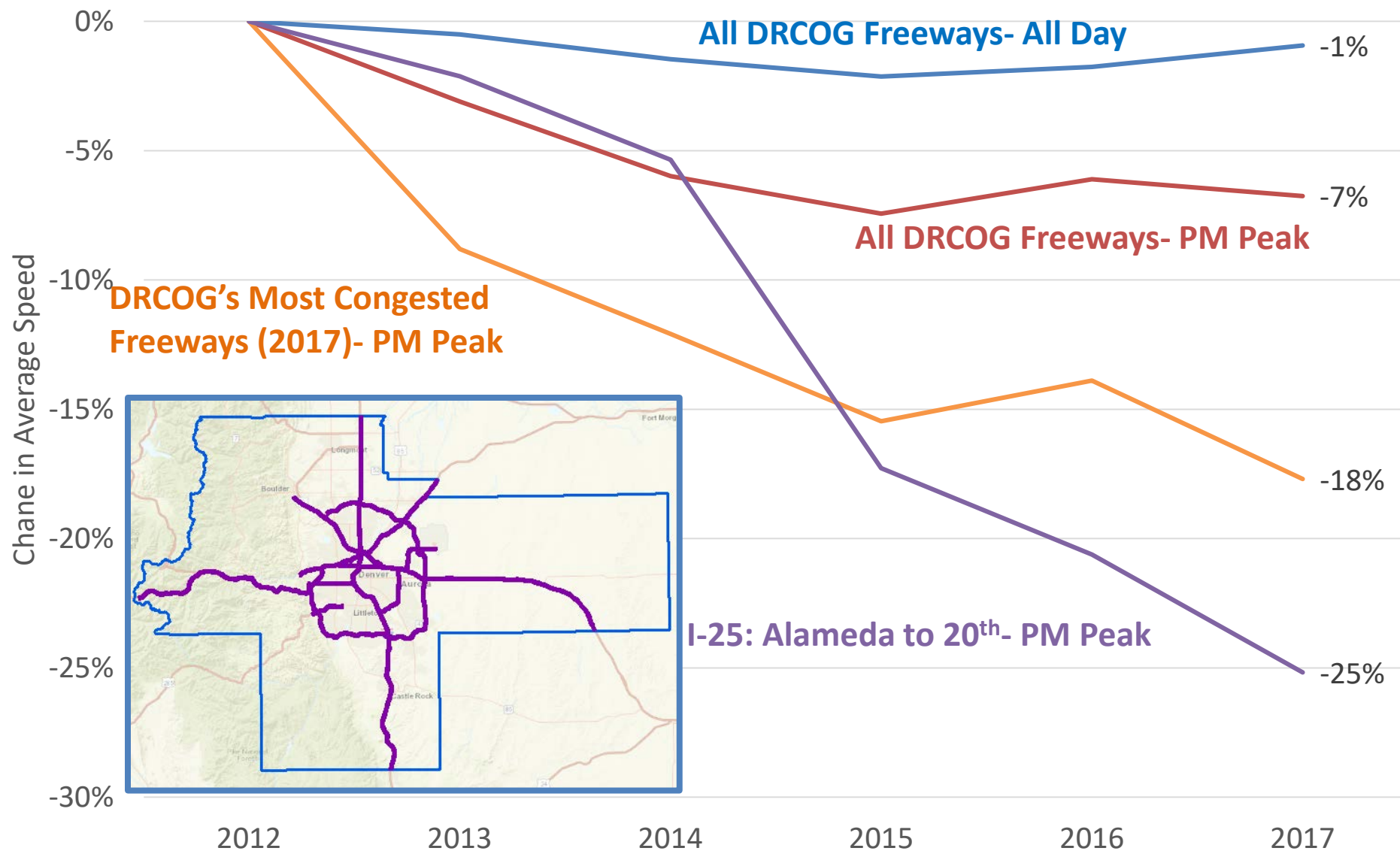
- Regionwide vs. site specific
- Trends vary by location, time of day, time of year

Regionwide Annual Hours of Delay per Commuter (Texas Transportation Institute)



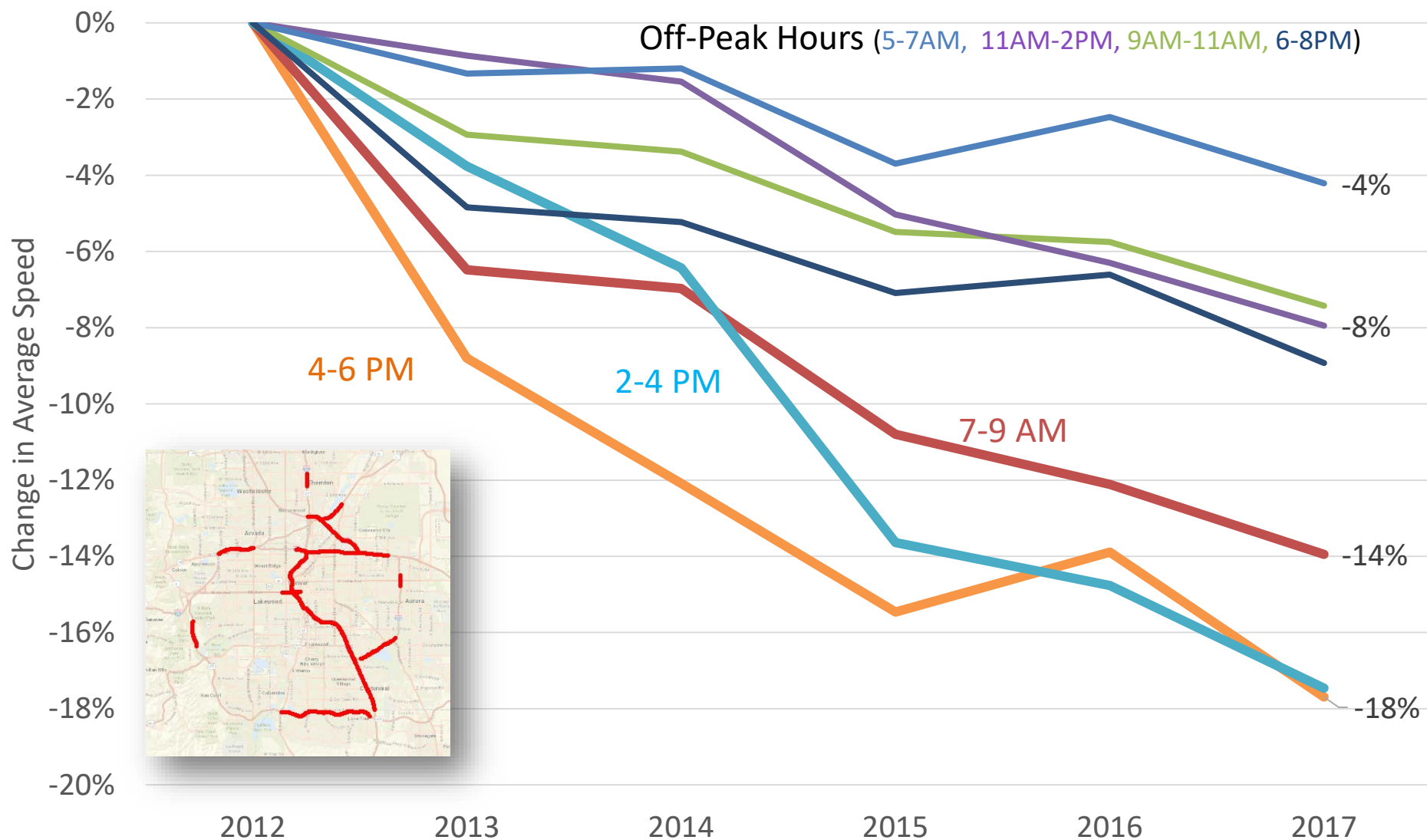


DRCOG annual average freeway speeds compared to 2012





What time of day is congestion getting worse- On DRCOG's Busiest Freeways





Congestion Mobility Score

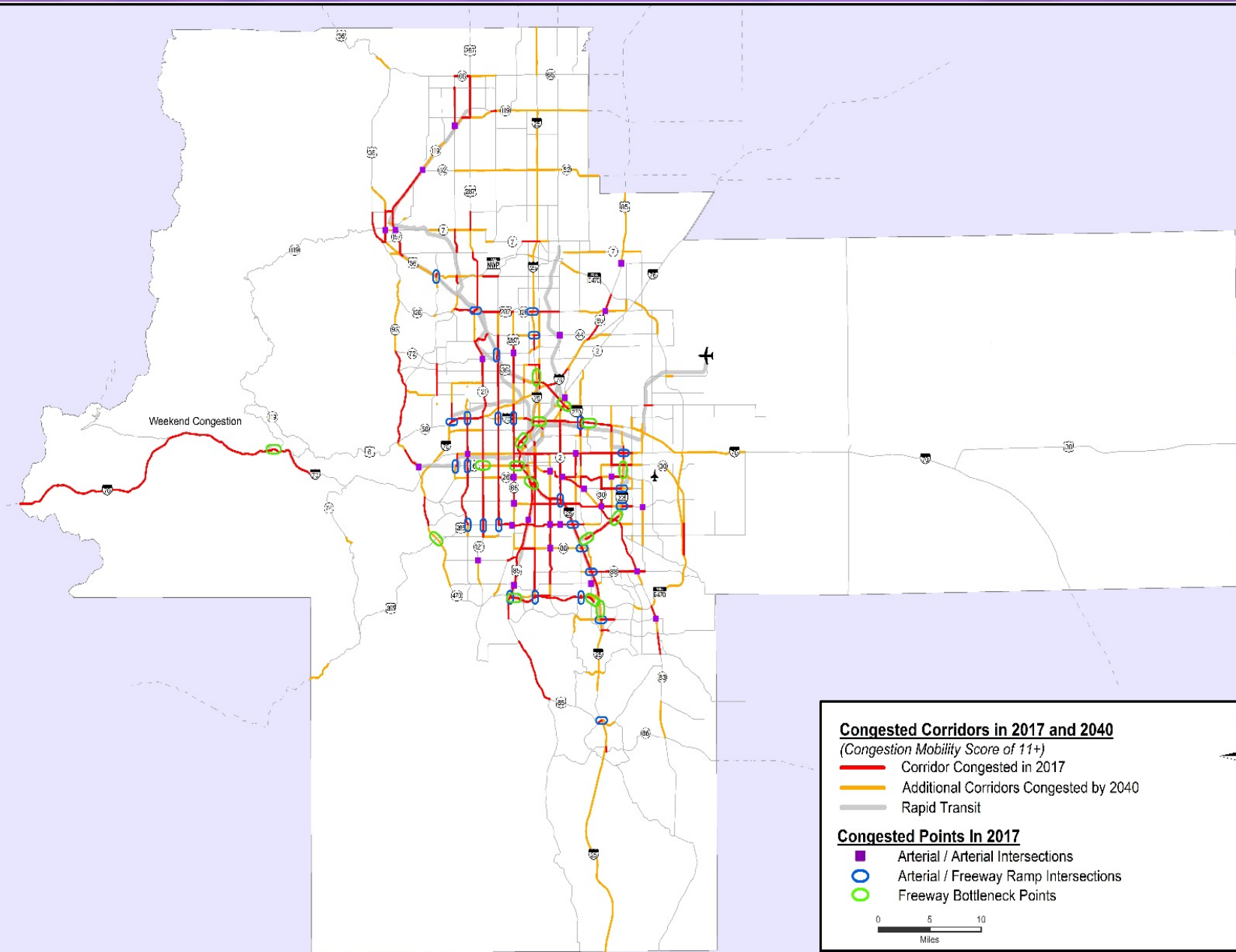
Scores for road segments; four performance measures:

- **severity:**
How bad does congestion get on the roadway during rush hour?
- **duration:**
How many hours per day is the roadway congested?
- **magnitude:**
How many people (traffic volume) are impacted by congestion on the roadway?
- **reliability:**
How often do crashes or incidents occur on the roadway?



Key Congested Locations in 2017 and 2040

Segments with a Congestion Mobility Score 11 or higher



Congested Corridors in 2017 and 2040

(Congestion Mobility Score of 11+)

- Corridor Congested in 2017
- Additional Corridors Congested by 2040
- Rapid Transit

Congested Points In 2017

- Arterial / Arterial Intersections
- Arterial / Freeway Ramp Intersections
- Freeway Bottleneck Points

0 5 10
Miles



How to Mitigate Congestion



How to Mitigate Congestion



Avoid it

Real-Time Information
Extra Night in Mountains
Flexible Work Hours
Telework

Adapt to it

Mobility Choices:

- *Alternative modes*
- *Transit, Walk, Bicycle*
- *Car/Vanpool*

Real-Time Information
Efficient Land Use Designs

Alleviate it

Add Lanes / Capacity

Improve Operations:

- *Traffic Signals*
- *Signing and Striping*
- *Access Management*
- *Incident Management*

Expand Transit Facilities



3. PERFORMANCE OF RECENTLY COMPLETED PROJECTS



Congestion Mitigation Toolkit Summary

1. Active roadway management

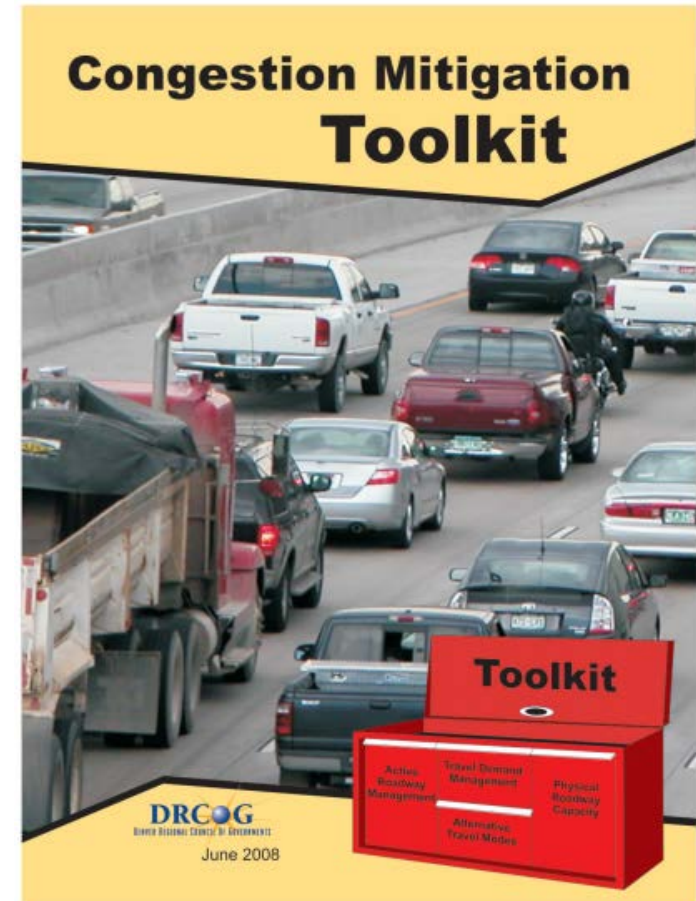
- A. Traffic signal timing/coordination/equipment
- B. Ramp meters
- C. Access management
- D. Incident management and response
- E. Traveler information mechanisms
- F. Electronic toll collection (ETC)
- G. Roadway signage
- H. Communication connections and surveillance

2. TDM/non-SOV travel options

- A. Transit service and facility expansion
- B. Transit queue-jump lanes and signal priority
- C. Parking and curbside management
- D. Telework and flexible work schedules
- E. Ridesharing services
- F. Off-street multi-use trails (pedestrian and bicycle)
- G. On-street bicycle treatments
- H. Efficient land use and development practices

3. Physical roadway capacity

- A. Intersection turn lanes
- B. Acceleration/deceleration lanes
- C. Hill-climbing lanes
- D. Grade-separated railroad crossings
- E. Interchange redesigns
- F. Roundabout intersections
- G. Managed lanes (toll express, HOV, etc.)
- H. New travel lanes (widening), new roadways





DRCOG region Transportation Improvement Program projects completed: 2008-2017

- Active roadway management projects (\$50m+)
 - Signal timing
 - Intelligent transportation systems
 - Transportation operations
- Transportation demand management/non-SOV travel choice projects
 - Transit (\$3b+)
 - FasTracks support
 - Bus service expansion
 - Transportation demand management (~\$40m)
 - Way to go
 - Transportation management associations
 - Bicycle and pedestrian (~\$75m)
 - 40+ new facilities
 - 7 over/underpasses



waytogo
A program of DRCOG





DRCOG region Transportation Improvement Program projects completed: 2008-2017

- Freeways/managed lanes (\$800m+) includes:
 - U.S. Route 36 toll express/bus rapid transit
 - North I-25 interim managed lanes, U.S. Route 36 to 120th Avenue
 - I-25, Ridgeway Parkway to County Line Road
 - I-225, Parker Road to Second Avenue
- Arterial streets (\$200m+) includes:
 - Colfax/17th avenues at I-225
 - Parker Road at Arapahoe Road interchange
 - Foothills Parkway (State Highway 157), Valmont Road to SH 119
- Railroad grade separations (\$120m+):
 - Pecos Street over railroad
 - Peoria Street over railroad/Smith Road
 - Wadsworth Boulevard under railroad/Grandview Ave



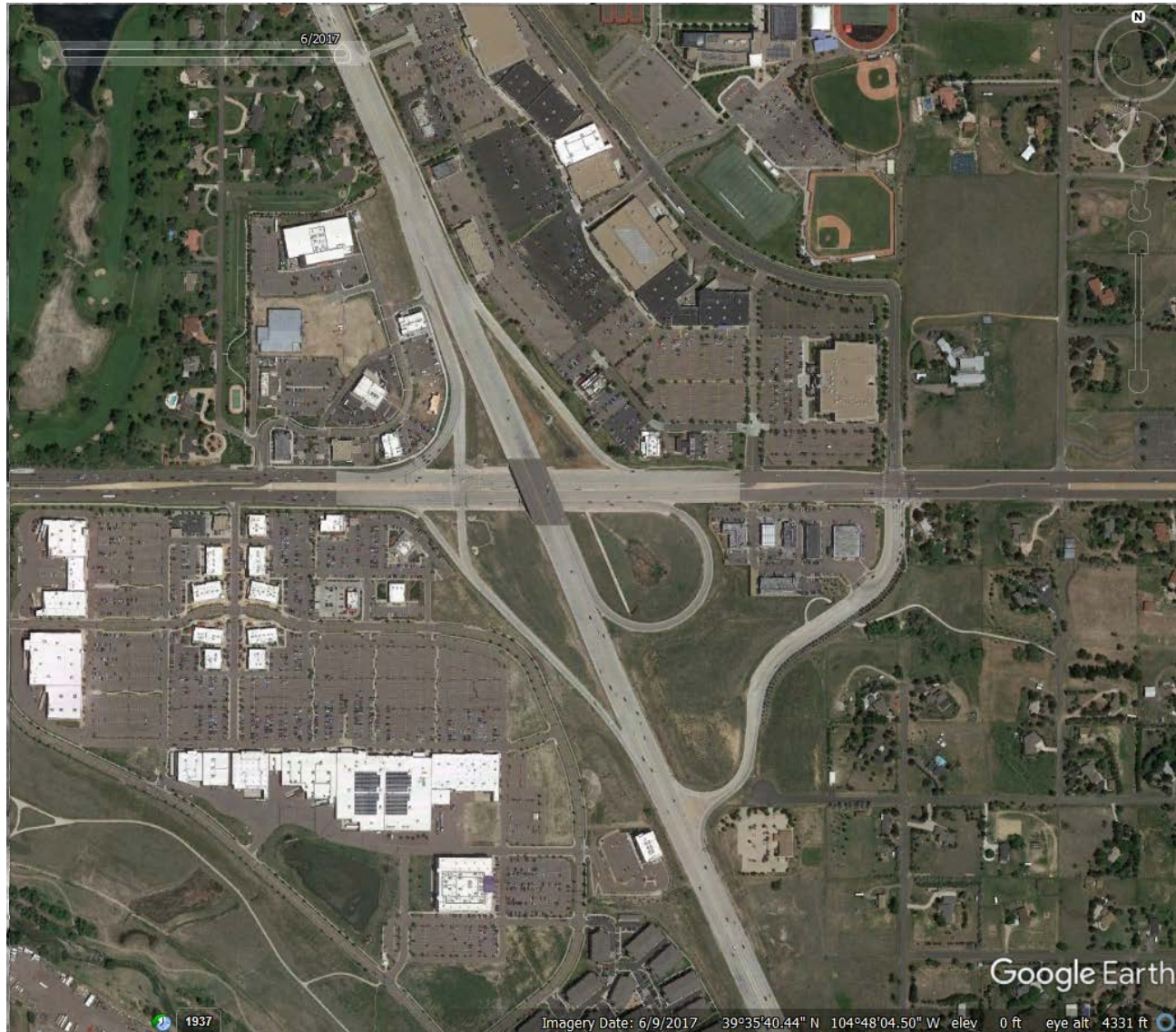


Pecos St. before (2007); construction (2010); completed project





Parker and Arapahoe- Long ago (1955); before construction (2005); completed project



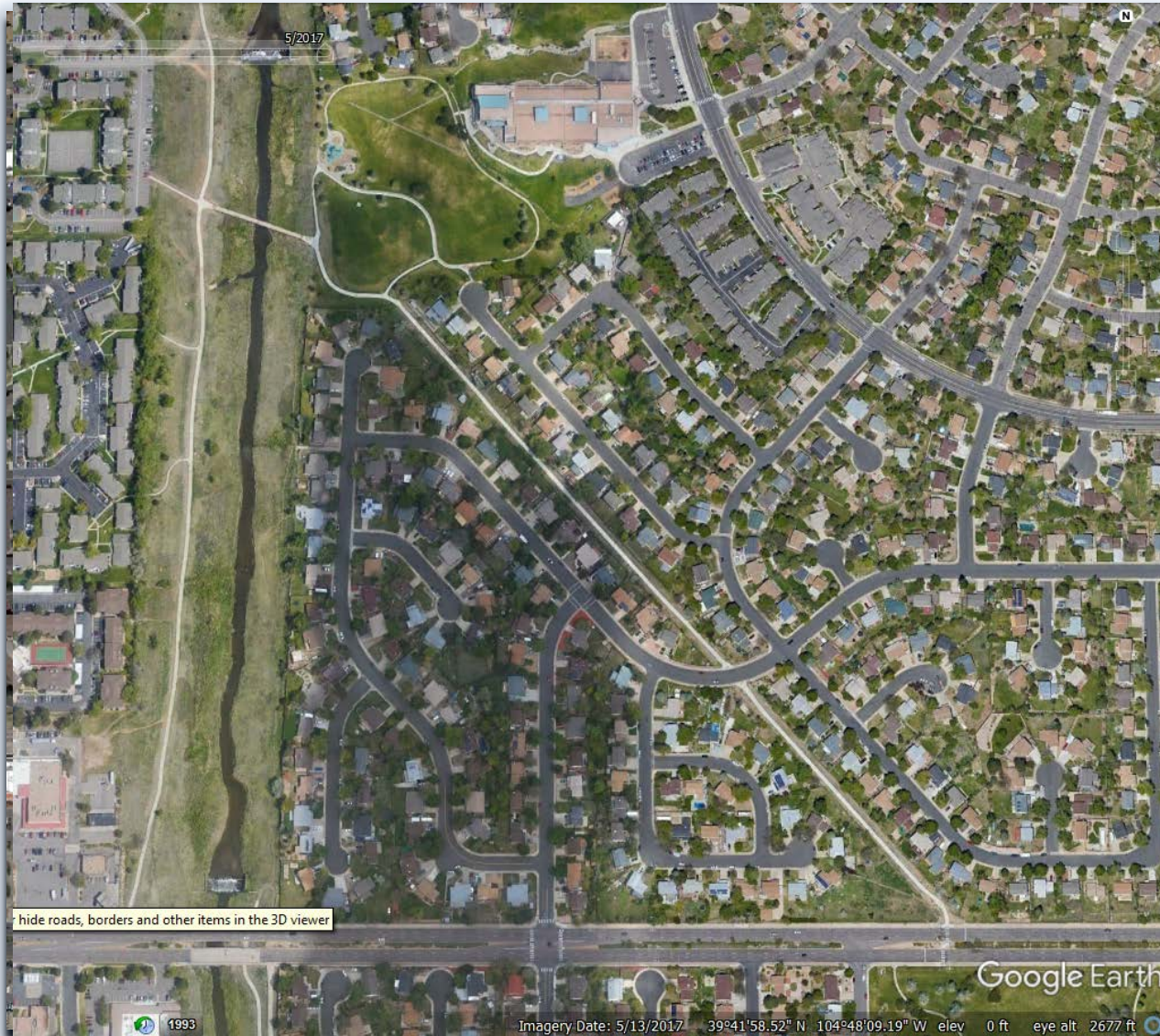


Broadway / Euclid underpass before (2005); completed project





Tollgate Creek multi-use trail: before (2011); completed project





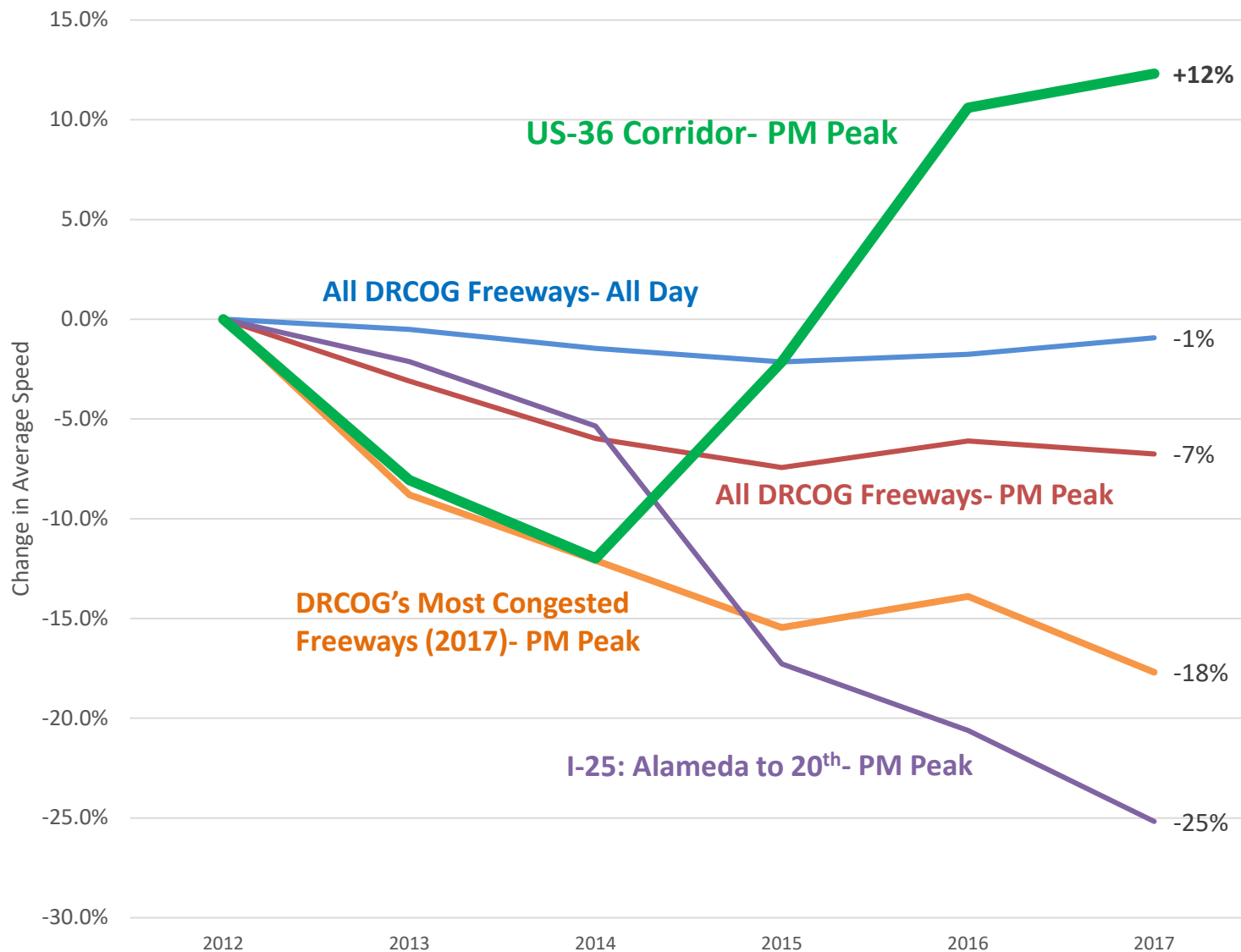
Regional benefits of the projects

- Used DRCOG's Focus Regional Travel Demand Model
- 18,500 person hours of delay per day reduced
- 6% less of travel mileage in severely congested conditions



Results of US-36 toll express/bus rapid transit project

DRCOG annual average freeway speeds compared to 2012





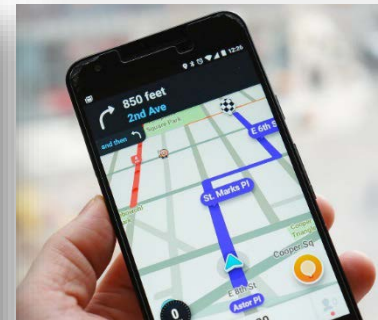
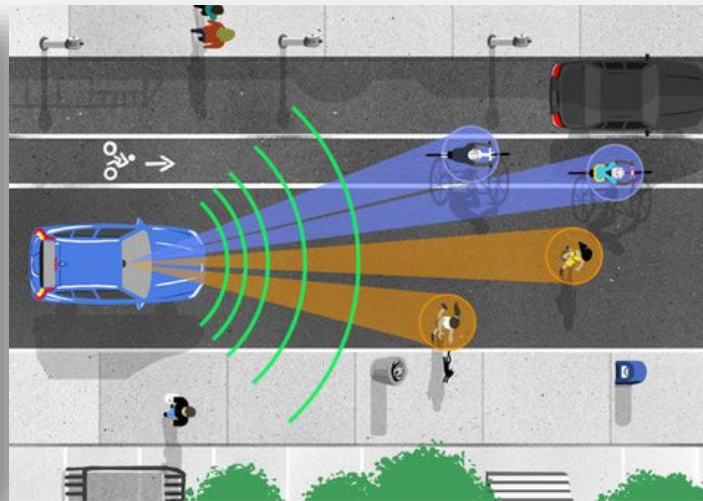
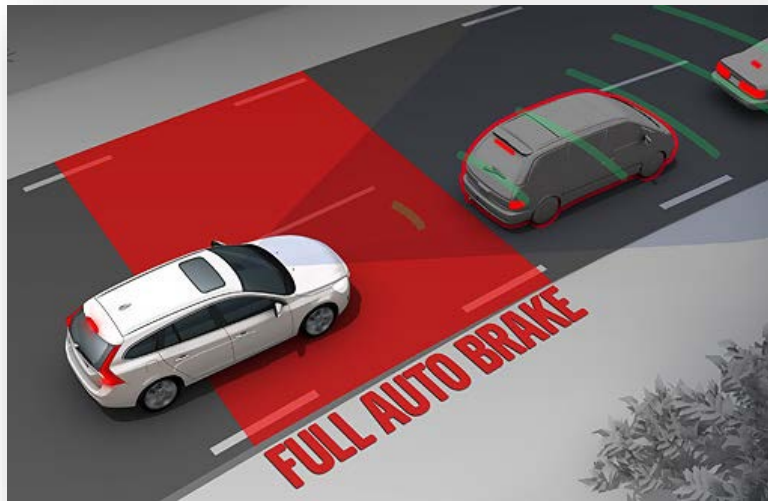
Special Congestion Topic

4. WHAT WILL TRANSPORTATION BE LIKE IN 2040




New technologies and innovation

- Advanced safety systems
- New travel modes and mobility services
- Travelers and shippers making better decisions using real-time information





Connected Vehicles (CVs)

- "V2X" 
- Vehicle to vehicle (V2V) communication
 - Vehicle to infrastructure (V2I) communication
 - Safety benefits – crash & incident reduction/avoidance
 - Travel reliability benefits





Automated Vehicles (AVs)

- Various levels of human driver operation: driver control with vehicle assistance (new cars today) --> full automation
- Various location settings: general purpose lanes to fixed guideways
- Various services: private vehicle, fleets, transit
- Collaboration of trucking industry, technology companies and government agencies (FHWA, NHTSA)





Considerations With Vehicle Technologies

- How will the capacity for carrying vehicles on the region's roadways change?
 - Increase? (closer vehicle spacing)
 - Decrease? (longer gaps for safety)
- Will VMT increase? (if increased roadway capacity entices more travel)
- Will alertness level of drivers decrease? (if overly dependent on new technology)
- How can multi-passenger HOV travel be increased? (such as shared rides and transit)
- How do we coordinate all of this?



QUESTIONS? COMMENTS?