

# MVIC Recommended Measures Supplement

Reference Material for [MVIC Recommended Metro Vision Measures from June 2015](#)

The following is a summary of measures and targets previously recommended by MVIC for inclusion in *Metro Vision*. The summary includes trend information as previously provided to MVIC, as well as data updates since that time.

Measure	2040 Target	Baseline
1 Share of the region's housing and employment located in urban centers	Housing: 25 percent	10.0 percent (2014)
	Employment: 50 percent	36.3 percent (2014)
2 Housing density within the urban growth boundary/area (UGB/A)	25 percent increase from 2014	1,200 units per square mile (2014)
3 Surface transportation related greenhouse gas emissions per capita	60 percent decrease from 2010	26.8 pounds per capita (2010)
4 Non-SOV (single occupancy vehicle) mode share to work	35 percent	25.1 percent (2014)
5 Daily vehicle miles traveled (VMT) per capita	10 percent decrease from 2010	25.5 daily VMT per capita (2010)
6 Average travel time variation (TTV) (peak vs. off-peak)	Less than 1.30	1.22 (2014)
7 Person delay per trip	No more than 2 minutes	1.7 minutes (2015)
8 Number of traffic fatalities	Less than 100 annually	185 (2014)

**Please note:** Staff is suggesting a substitute measure for 7b that takes advantage of more regular reporting and data observations.

Measure	2040 Target	Baseline
7b Alt. Daily person delay per capita	Less than 10 minutes	6 minutes (2014)

# 1: Share of the region’s housing and employment located in urban centers

Measure	2040 Target	Baseline
1 Share of the region’s housing and employment located in urban centers	Housing: 25 percent	10.0 percent (2014)
	Employment: 50 percent	36.3 percent (2014)

**Regional Objective Alignment:** 3. Increase housing and employment in urban centers.

**Data Updates:** 2014 baseline housing information previously reported used an interim version of the 2014 Master Housing Dataset. Baseline (above) and baseline informed trend to 2040 (below) reflect the use of the final dataset.

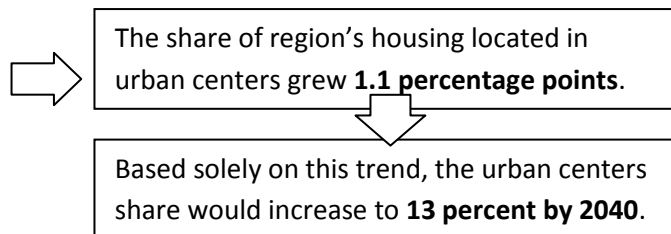
## Background

- *Metro Vision 2035* included as “50% of new housing and 75% of new employment located in urban centers between 2005 and 2035.”<sup>1</sup>
- Similar metric used in the *Metro Vision 2020 Framework* (1995) in advance of *Metro Vision 2020*, but only focused on employment.

## Recent Trends

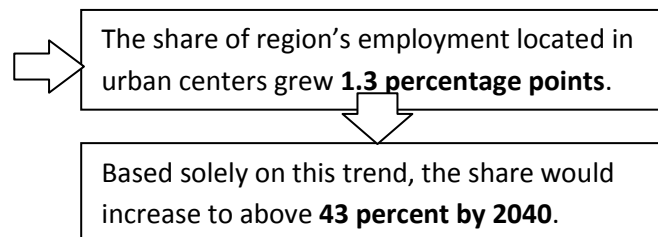
### Between 2006 and 2014:

- Housing in urban centers<sup>2</sup> grew 20%
- Housing in the entire region grew 7%



### Between 2005 and 2014:

- Employment in urban centers<sup>3</sup> grew 18%
- Employment in the entire region grew 14%



## Other Considerations

### New urban centers:

- A projection based only on recent trends does not take into account the designation of new urban centers throughout the region.

<sup>1</sup> Available employment datasets do not distinguish between employment moving within the region and new jobs created, or jobs moving into the region from outside the region – therefore it is not possible to track “new” employment.

<sup>2</sup> This analysis includes all urban centers through 2014, even for past years before their designation.

<sup>3</sup> This analysis includes all urban centers through 2014, even for past years before their designation.

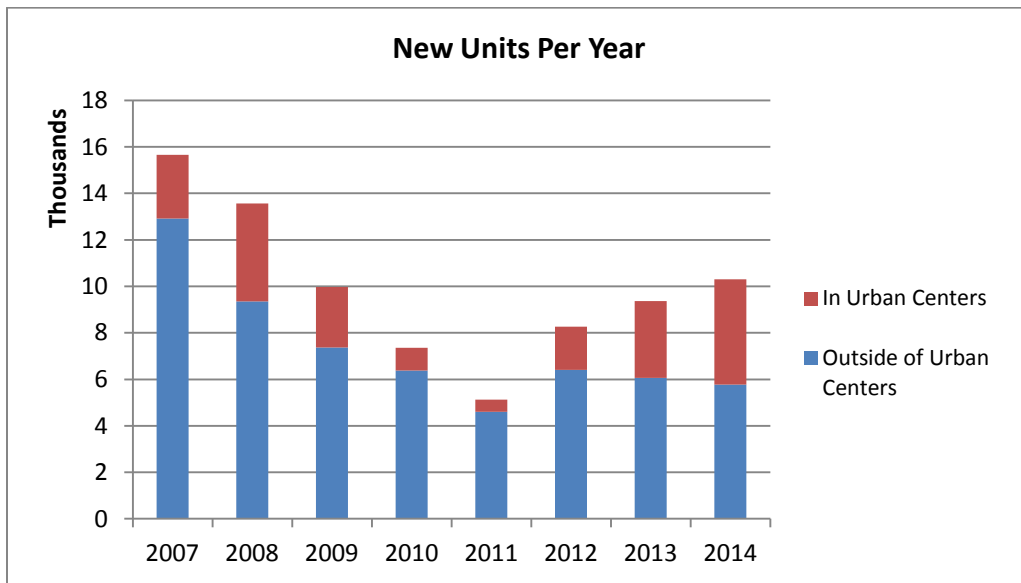
- Newly designated urban centers have the potential to capture a significant share of existing and future housing and employment. For example, 39 FasTracks stations have no associated urban center as of 2016.

**Adjusting urban center boundaries:**

- Previous urban center designation criteria were focused on employment, but the criteria have evolved to include a mix of uses that includes housing. Few of the long-standing centers have reevaluated their boundaries to include immediately adjacent areas of where housing is concentrated.

**Accelerating urban center growth:**

- The period used to document trend information for housing growth in urban centers includes the recession and related declines in housing production. A closer inspection of the data reveals significant variations within the trend period:
  - 2007-2011 shows the peak housing construction and the slow down brought on by recession.
  - 2012-2014 shows the recovery taking hold, including a growing share of housing being constructed in urban centers.



**Lessons learned from scenario analysis:**

- In 2013 DRCOG staff explored five “what-if” scenarios to determine how changing planning assumptions, including land use patterns and transportation investments, would affect future outcomes. Two of the five scenarios assumed that the region would accommodate a significant share of growth in urban centers. Key highlights from the two scenarios are described below:
  - Scenarios that focused growth in urban centers and in areas well-served by transit reduced VMT per capita. Scenarios that did not focus on housing and employment growth in urban centers showed VMT per capita increasing or remaining flat when compared to current assumptions.
  - The two center-focused growth scenarios had the highest percentage of trips to work via non-SOV modes when compared to other modeled scenarios. These scenarios also showed the greatest decrease in GHG emissions per capita.

## **MVIC Considerations**

### ***Measure alternatives considered by MVIC:***

- MVIC considered an alternative measure proposed by the Metro Vision Plan Advisory Committee (MVPAC), “Share of the region’s housing and employment located in urban centers or within ½ mile of a rapid transit station or ¼ mile of a high-frequency bus stop”
  - MVIC indicated support to keep measuring the MVPAC alternative, but at the time did not recommend making it a measure with a 2040 target.
  - **Note:** Staff is suggesting a version of this measure that considers just the high frequency transit proximity as a measure under Agenda Item 6.

### ***Target alternatives considered by MVIC:***

- MVIC considered no alternative targets

### ***Other MVIC considerations:***

- Committee members asked for more information on the trend to help evaluate the target, which is included above.

## 2: Housing density within the urban growth boundary/area

Measure	2040 Target	Baseline
2 Housing density within the urban growth boundary/area (UGB/A)	25 percent increase from 2014	1,200 units per square mile (2014)

**Regional Objective Alignment:** 2. Contain urban development within the Urban Growth Boundary/Area (UGB/A).

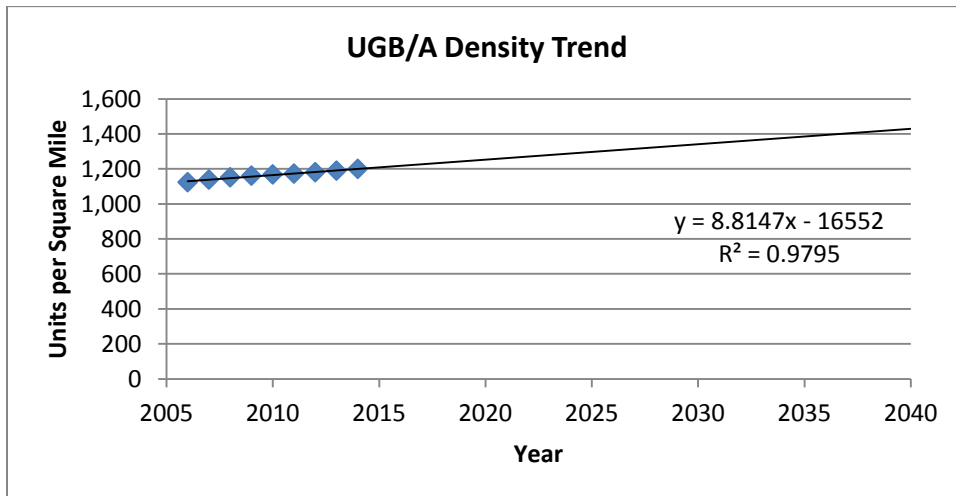
**Data Updates:** 2014 baseline housing information previously reported used an interim version of the 2014 Master Housing Dataset. Baseline (above) and baseline informed trend to 2040 (below) use of the final dataset.

### Background

- *Metro Vision 2035* included as “10% increase in density between 2000 and 2035”<sup>4</sup>
- Preferred scenario from the *Metro Vision 2020 Framework* (1995) achieved a 10% increase in urban density when compared to historical development trends (projected based on 1990-1995 data)
- Target closely tied to the extent of the future urban growth boundary/area (UGB/A).
- Target from past *Metro Vision* documents predates FasTracks and the region’s rapid transit build-out, which is expected to have an impact on urban density. Based on existing trends, MVPAC suggested the more ambitious target (25% increase).

### Recent Trends

- Following a linear projection based on the density increase between 2006 and 2014, density within the 2035 UGB/A would **increase<sup>5</sup> by**
  - **27%** between 2006 and 2040
  - **23%** between 2010 and 2040
  - **19%** between 2014 and 2040



<sup>4</sup> The 2035 target did not specify what geography would see the density increase.

<sup>5</sup> These trends hold the current 980.1 mi.<sup>2</sup> 2035 UGB/A constant. Any future changes to the spatial extent of the UGB/A will impact measurement.

***Measure alternatives considered by MVIC:***

- MVIC considered no alternative measures

***Target alternatives considered by MVIC:***

- MVIC considered no alternative targets

***Other MVIC considerations:***

- Committee members asked for more information on the trend to determine if the target was too ambitious. That trend information is provided above.
- Committee members asked what the impact of increasing density would have on other proposed measures.
  - In 2013 DRCOG staff explored five “what-if” scenarios to determine how changing planning assumptions, including land use, would affect future outcomes. Scenarios that increase density in strategic locations result in less congestion and travel time when compared to those that do not.

### 3: Surface transportation related greenhouse gas emissions per capita

Measure	2040 Target	Baseline
3 Surface transportation related greenhouse gas emissions per capita	60 percent decrease from 2010	26.8 pounds per capita (2010)

**Regional Objective Alignment:** 6a. Improve air quality and reduce greenhouse gas emissions.

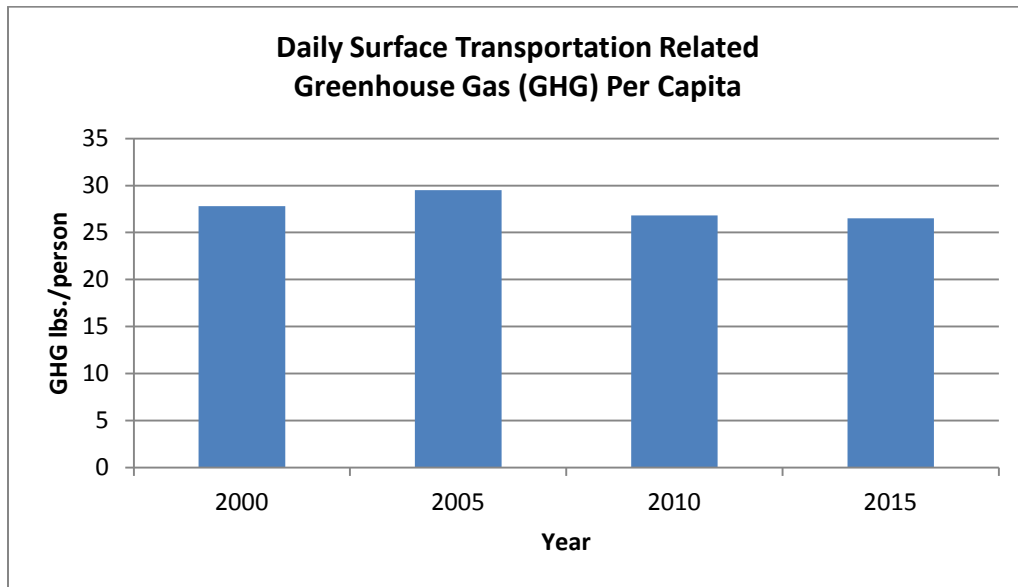
**Data Updates:** There are no data updates available at this time.

#### Background:

- Surface transportation related to greenhouse gas (GHG) emissions are associated with the burning of motor vehicle fuels.
- *Metro Vision 2035* established a target to decrease greenhouse gas emissions per capita by 60% between 2005 and 2035.

#### Recent Trends

- The region has been experiencing reductions in GHG per capita, since 2005.



#### Other Considerations

- Projections to 2040 include a reduction in fuel burned because of more efficient engines and an increase in the number of alternative fuel motor vehicles (e.g., electricity and natural gas).
- The previously recommended target aims for further decreases due not only to improved fuel economy but also aspires for changes from local and regional action toward *Metro Vision* outcomes and objectives.

## **MVIC Considerations**

### ***Measure alternatives considered by MVIC:***

- MVIC asked the Transportation Advisory Committee (TAC) to consider: reducing *surface transportation related greenhouse gas emissions* (total GHG vs. per capita)
  - TAC discussed, and acted to recommend the original proposal.
  - MVIC moved forward with TAC's recommendation to stay with the per capita approach.

### ***Target alternatives considered by MVIC:***

- MVIC discussed a higher target: 70 percent decrease between 2010 and 2040
  - Committee members discussed public comment urging a higher target based on reductions forecast to result from federal fuel efficiency standards, as well as the impact of meeting the proposed target to reduce vehicle miles traveled per capita.
    - Current air quality model projections factor in federal fuel efficiency standards, as noted above.
    - Considering current air quality model projections, MVIC moved forward with the target as originally proposed (60% decrease).

### ***Other MVIC considerations:***

- MVIC discussion centered on the alternatives discussed above.



## 4: Non-single occupancy vehicle mode share to work

Measure	2040 Target	Baseline
4 Non-SOV (single occupancy vehicle) mode share to work	35 percent	25.1 percent (2014)

**Regional Objective Alignment:** 4. Improve and expand the region’s multimodal transportation system, services and connections.

**Data Updates:** The baseline (above) and trend data (below) have been updated to reflect the latest available data from the American Community Survey (ACS).

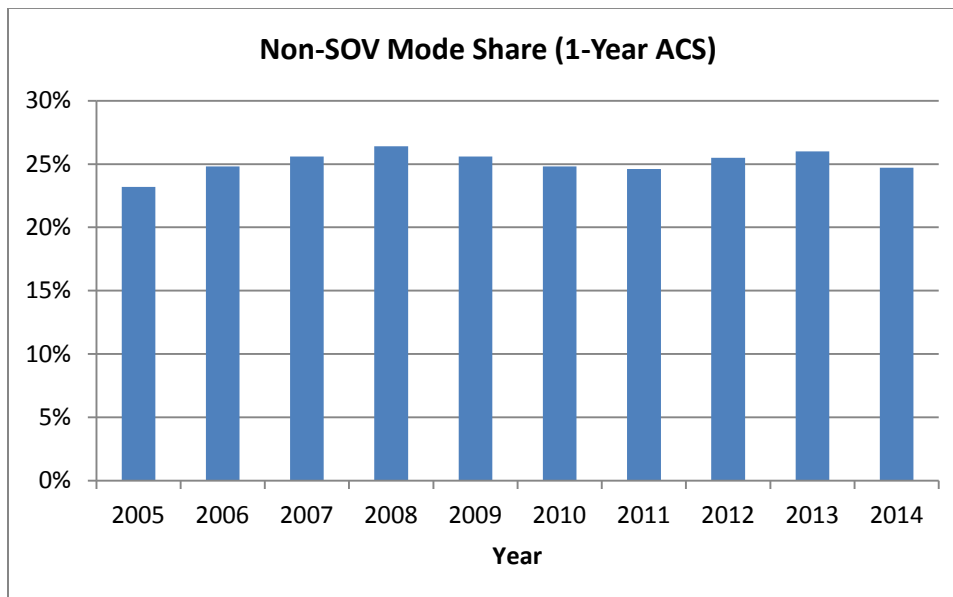
### Background:

- *Metro Vision 2035* included a target for single occupancy vehicle (SOV) mode share: “65% of trips to work by SOV” by 2035.
- MVPAC asked to invert the measure from *Metro Vision 2035* to allow language around the measure be positive, but did not change the intent or percent of commute trips desired to be via non-SOV modes.
- The data available to track this measure comes from the Census Bureau, which only measures work trips.

### Recent Trends

#### **1-Year ACS 2005-2014 (does not include Weld, Broomfield, Clear Creek, or Gilpin counties)**

- Non-SOV mode share to work has risen overall between 2005 and 2014, but there is no discernible trend.
- The largest percentage of non-SOV travel was experienced in 2008 at 26.4%



**5-Year ACS 2010-2014 (entire region)**

- The below numbers reflect a five year rolling average, but cover the entire region.
- Similar to the 1-Year numbers, they also show no discernible trend.

<b>Table: 5-Year ACS</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Non-SOV Mode Share</b>	25.4%	25.4%	25.3%	25.2%	25.1%

**MVIC Considerations:**

**Measure alternatives considered by MVIC:**

- MVIC considered no alternative measures

**Target alternatives considered by MVIC:**

- MVIC asked TAC to consider a higher target, anticipating the impact of FasTracks build out.
  - TAC discussed, and acted to recommend the original proposal.
  - MVIC moved forward with TAC’s recommendation to stay with the originally proposed target (Non-SOV trips accounting for 35% of trips to work).

**Other MVIC considerations:**

- Committee members expressed concern over how suburban and rural communities could participate, especially without control over transit investments.
  - Staff illustrated the impact of carpooling and vanpooling from these communities. Carpooling/vanpooling is the highest non-SOV mode to work.
  - Staff also illustrated the distribution of multimodal projects over recent Transportation Improvement Program (TIP) cycles to show that participation has been spread throughout the region.

## 5: Daily vehicle miles traveled per capita

Measure	2040 Target	Baseline
5 Daily vehicle miles traveled (VMT) per capita	10 percent decrease from 2010	25.5 daily VMT per capita (2010)

**Regional Objective Alignment:** 4. Improve and expand the region’s multimodal transportation system, services and connections.

**Data Updates:** The baseline aligns with the latest data and methods in the Congestion Mitigation Program (CMP) process. Trend information below now also represents the latest reporting as a part of the CMP process.

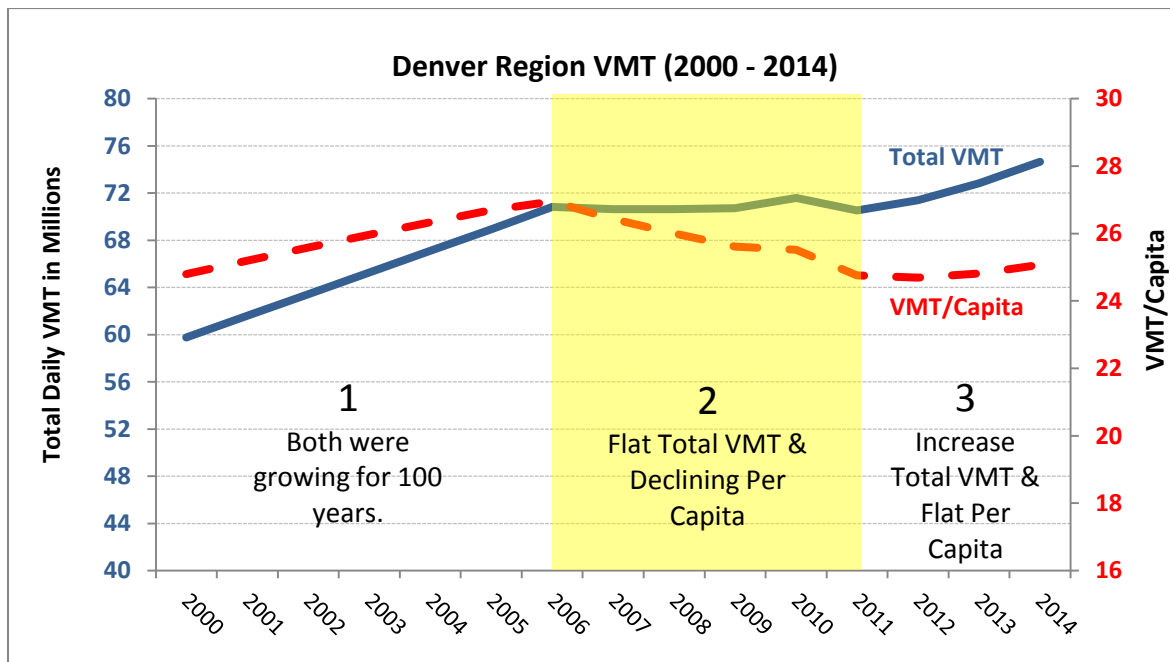
### Background:

- A reduction in per capita VMT would help the region meet various *Metro Vision* outcomes and objectives.
- *Metro Vision 2035* included a target for a “10% decrease in daily VMT per capita between 2005 and 2035.”

### Recent Trends

Analysis based on *2014 Annual Report on Roadway Traffic Congestion in the Denver Region*

1. For 100 years, both VMT and VMT per capita grew.
2. By the mid-2000s, total VMT was flat while VMT per capita declined.
3. More recently, total VMT has increased while VMT per capita has not grown.



## **MVIC Considerations**

### ***Measure alternatives considered by MVIC:***

- MVIC considered no alternative measures.

### ***Target alternatives considered by MVIC:***

- MVIC considered no alternative targets.

### ***Other MVIC considerations:***

- There was little discussion of this proposed measure at MVIC. There was strong support to keep the measure and target as proposed.

## 6: Average travel time variation (TTV)

Measure	2040 Target	Baseline
6 Average travel time variation (TTV) (peak vs. off-peak)	Less than 1.30	1.22 (2014)

**Regional Objective Alignment:** 5. Operate, manage and maintain a safe and reliable transportation system.

**Data Updates:** The baseline aligns with the latest data and methods in the Congestion Mitigation Program (CMP) process. Forecast information below now also represents the latest reporting as a part of the CMP process.

### Background:

- The TTV measures how much longer a trip will take in rush hour than in non-rush hour. For example, a rush hour trip in 2014 took 22% longer than during non-rush hour, on average.
- DRCOG produces periodic reports on congestion in the region as a part of its CMP process, which includes additional congestion measures.
- Traffic congestion is one of the topics covered by the national performance goals created by Congress.

### Recent Forecast:

- Travel time variation is forecast to increase from 1.22 in 2014 and to 1.36 in 2040.

### MVIC Considerations:

#### **Measure alternatives considered by MVIC:**

- MVIC originally considered “Severely congested roadways on the Regional Roadway System (RRS).”
  - Based on conversations with stakeholders, staff also presented MVIC with the TTV alternative, which looks at how much longer the average peak trip takes when compared to the same trip during off-peak travel times (i.e. baseline shows the average trip took 22% longer)
- MVIC asked TAC to consider the original proposal and the TTV alternative.
  - TAC discussed, and acted to recommend the TTV alternative.
  - MVIC moved forward with TAC’s recommendation.

#### **Target alternatives considered by MVIC:**

- MVIC considered no alternative targets

#### **Other MVIC considerations:**

- Committee members asked why the 2040 target was higher than the baseline.
  - The CMP forecasts a TTV increase
  - The target recognizes an increase because of population growth, but with the region seeking to limit the increase.
- MVIC considered whether this measure was needed in addition to the more intuitive delay measure (see #7 described below).
  - MVIC voted to recommend both congestion measures be retained as measures.

## 7: Person delay per trip

Measure	2040 Target	Baseline
7 Person delay per trip	No more than 2 minutes	1.7 minutes (2015)

**Staff suggest using an alternative to this measure.** No trend information was previously made available to MVIC during its discussion of this item.

### MVIC Considerations

#### **Measure alternatives considered by MVIC:**

- MVIC originally considered “Severely congested roadways on the Regional Roadway System.”
- MVIC asked TAC to consider “Person hours of delay” or another measure of commute travel time in addition to the original proposal.
  - TAC discussed, and acted to recommend the above proposal of “Person delay per capita.”
  - MVIC moved forward with TAC’s recommendations to include “Person delay per capita.”

#### **Target alternatives considered by MVIC:**

- MVIC considered no alternative targets

#### **Other MVIC considerations:**

- Committee members asked staff to make sure that all mode trip types were included in the calculation.

### **\*\*Staff Suggestion\*\* 7 Alternate: Daily person delay per capita**

Measure	2040 Target	Baseline
7 Alt. Daily person delay per capita	Less than 10 minutes	6 minutes (2014)

**Regional Objective Alignment:** 5. Operate, manage and maintain a safe and reliable transportation system.

**Data Updates:** The baseline comes directly from the Congestion Mitigation Program (CMP) process. Forecast information below also represents the latest reporting as a part of the CMP process.

### **Background:**

- Staff suggests this substitute for the TAC/MVIC recommended “Person Delay per Trip”
- The staff suggestion relies on observed data collected annually as part of the CMP process - therefore it is more responsive to annual changes (compared to the above “Person Delay per Trip,” which relies on modeled data).

### **Recent Forecast:**

- Daily person delay per capita for an average weekday is forecast to increase from 6 minutes in 2014 to 10 minutes in 2040.

## 8: Number of traffic fatalities

Measure	2040 Target	Baseline
8 Number of traffic fatalities	Less than 100 annually	185 (2014)

**Regional Objective Alignment:** 5. Operate, manage and maintain a safe and reliable transportation system.

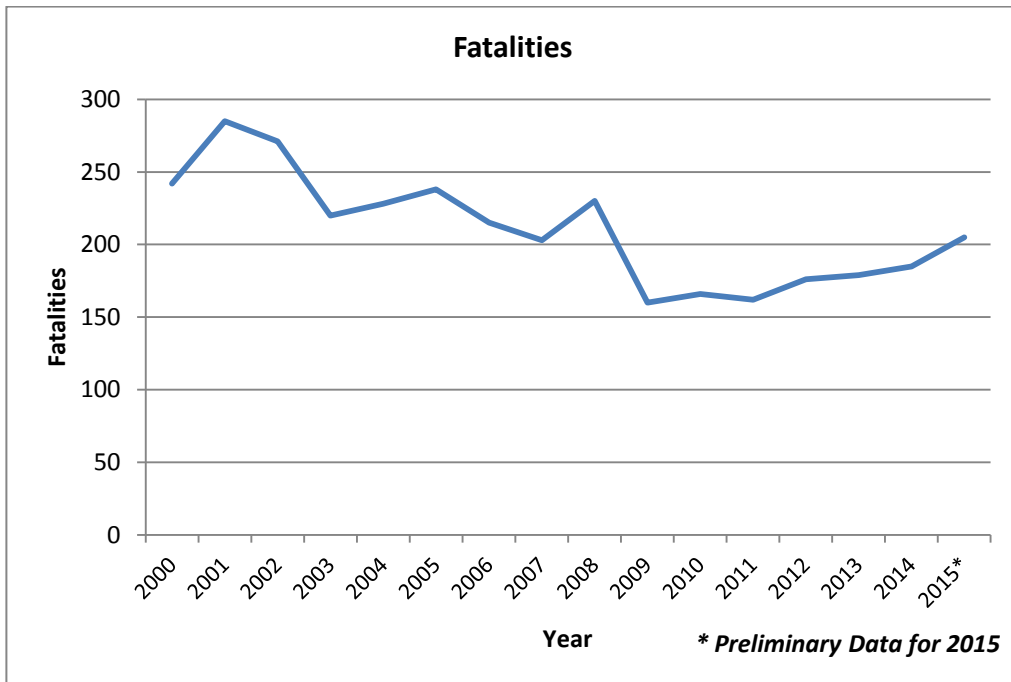
**Data Updates:** The baseline (above) and trend data (below) have been updated to reflect the latest available data from the Fatality Analysis Reporting System (FARS), as well as a preliminary observation for 2015.

### Background:

- DRCOG produces periodic reports on traffic safety in the region, covering various metrics in addition to traffic fatalities.
- Traffic safety is one of the topics covered by the national performance goals created by Congress.

### Recent Trends:

- Since 2000, the annual number of traffic fatalities in the region has declined.
- Improvements in vehicle technology, emergency response, and other safety improvements will likely help continue this trend.



## **MVIC Considerations**

### ***Measure alternatives considered by MVIC:***

- MVIC considered no alternative measures.

### ***Target alternatives considered by MVIC:***

- MVIC asked TAC to consider if the proposed target was reasonable and how it should be determined.
  - TAC discussed, and acted to recommend the original proposal.
  - MVIC moved forward with TAC's recommendations.
- Some committee members expressed support for an aspirational target of zero (0).

### ***Other MVIC considerations:***

- There was little discussion of this proposed measure at MVIC.