



## **SOUTHWEST ENERGY EFFICIENCY PROJECT**

*Saving Money and Protecting the Environment Through More Efficient Energy Use*

### **Comments on the I-70 East SDEIS, Submitted on Behalf of Conservation**

#### **Colorado and the Southwest Energy Efficiency Project**

October 31, 2014

We would like to submit the following comments, on behalf of Conservation Colorado and the Southwest Energy Efficiency Project.

We are not opposed to the concept of lowering and partially covering the highway in order to reduce impacts on the adjacent neighborhood. We also strongly support the use of managed lanes as a mechanism to manage congestion over the long term. This is a far better approach than simply adding additional “free” capacity.

However, there are several issues that we would like to comment on. What follows is a brief summary; each issue is then explained in more detail.

#### **Summary of Concerns**

- 1) First, we are concerned with the size of the proposed highway expansion. The SDEIS appears to assume that both per capita and total traffic will grow significantly faster in the future than it has for the last 10 years. If current traffic trends continue the proposed expansion from 6 lanes to 10 lanes over much of the corridor may not be needed. The traffic projections do not appear to take into account recent trends towards Coloradan’s owning fewer cars, expanding their use of transit, and driving less. Since impacts on the surrounding neighborhood could be reduced by making the project narrower, and costs could be reduced, we believe that it would be problematic to build a wider roadway than is needed.
- 2) Second, we are concerned that there appears to have been no analysis of options that add fewer lanes. In addition, it appears that most of the benefit from the project is due to the use of tolling to manage congestion, rather than due to the addition of lanes. We would like to request that the analysis consider adding only 1 additional managed lane in each direction, and examine options with no additional lanes that instead convert one or more existing lanes to managed lanes.
- 3) Third, we are concerned by the absence of any analysis of the potential for bus rapid transit (BRT) in the managed lanes. The discussion of managed lanes on page 3-46 in the Summary of Project Alternatives states that managed lanes will promote use of RTD buses. However, the SDEIS does not seem to contemplate any addition of either express bus or BRT service. BRT service requires not only access to the managed lanes, but appropriate stations, and appropriate treatments to allow access to those stations. We would request that this be analyzed in the FEIS. One reason for this is equity – while managed lanes have great value from a transportation perspective, they are primarily used by higher income travelers. Including BRT in the managed lanes brings benefits to travelers with a much broader range of incomes.



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4) Fourth, we believe that additional explanation and analysis is needed of particulate concentrations in the analysis of air quality impacts, in order to accurately assess the impact of the project on the people who live and go to school in the immediate vicinity of I-70. We do not have a depth of expertise in this area, but believe that other organizations will be submitting comments with greater technical depth, and would encourage that these be taken seriously.

5) Fifth, we are concerned with the analysis of greenhouse gas emissions in the Air Quality Technical Report. The report compares project level emissions to total global emissions, and concludes that they are insignificant by comparison. This is a specious comparison – by this logic, no actions below a global climate agreement would be significant. This flies in the face of the multiple steps the federal government is taking to reduce emissions. Within the DRCOG region, the adopted 2035 Metro Vision regional plan calls for a 60% reduction in transportation sector GHG emissions by 2035; we would suggest that the emissions from this project be analyzed to see whether they meet the regional targets.

### **1) We are concerned that the proposed highway expansion is larger than is needed**

The SDEIS forecasts that between 2012 and 2035, Vehicle Miles Travelled (VMT) for the study area will grow from 15,243,000 to 25,026,000, an increase of 64%.<sup>1</sup> It also projects that, for the Preferred Alternative (PA), VMT on the I-70 East corridor will grow from 1,586,000 to 2,935,000, an increase of 85%. Over the same period of time, the study area's population is expected to grow 41% and employment is expected to grow 59%.<sup>2</sup>

These projections of VMT growing at a faster rate than population are inconsistent with regional trends since 2006. The figure below (from DRCOG's 2012 Annual Report on Traffic Congestion in the Denver Region<sup>3</sup>) shows that VMT per capita has actually been falling in the region since 2006. At the state level, annual VMT per capita has fallen from a high of 10,123 in 2005 to 9,016 in 2012, an eleven percent decline. This decline in VMT per capita means that even as the region and state have added hundreds of thousands of new residents, total regional and state VMT has remained relatively flat. The DRCOG report notes that "2012 marks the sixth straight year of a relatively flat level of VMT, the longest period of non-growth in VMT since the invention of the automobile." The aggressive growth in VMT projected in the SDEIS cannot be attributed to more aggressive population and employment growth in the study area. DRCOG's 2035 Metro Vision Regional Transportation Plan forecasts growth rates of 48% for population and 63% for employment for the region between 2010 and 2035<sup>4</sup>, so study area growth rates are slightly lower than the regional average. The SDEIS assumes that neither the current VMT nor VMT per capita trends continues and that VMT growth follows its pre-2006 pattern.

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<sup>1</sup> This is based on the Partial Covered Lower Alternative with Managed Lanes, Modified Option. VMT details come from the Traffic Technical Report, Attachment E, Sections 3.4.1 and 6.4.1.

<sup>2</sup> SDEIS Executive Summary

<sup>3</sup> DRCOG. 2013. Annual Report on Traffic Congestion in the Denver Region. <https://drcog.org/node/178>

<sup>4</sup> DRCOG 2035 Metro Vision Regional Transportation Plan. <https://drcog.org/programs/transportation-planning/regional-transportation-plan>

Figure 1. Denver Region Weekday VMT (2001-2012)

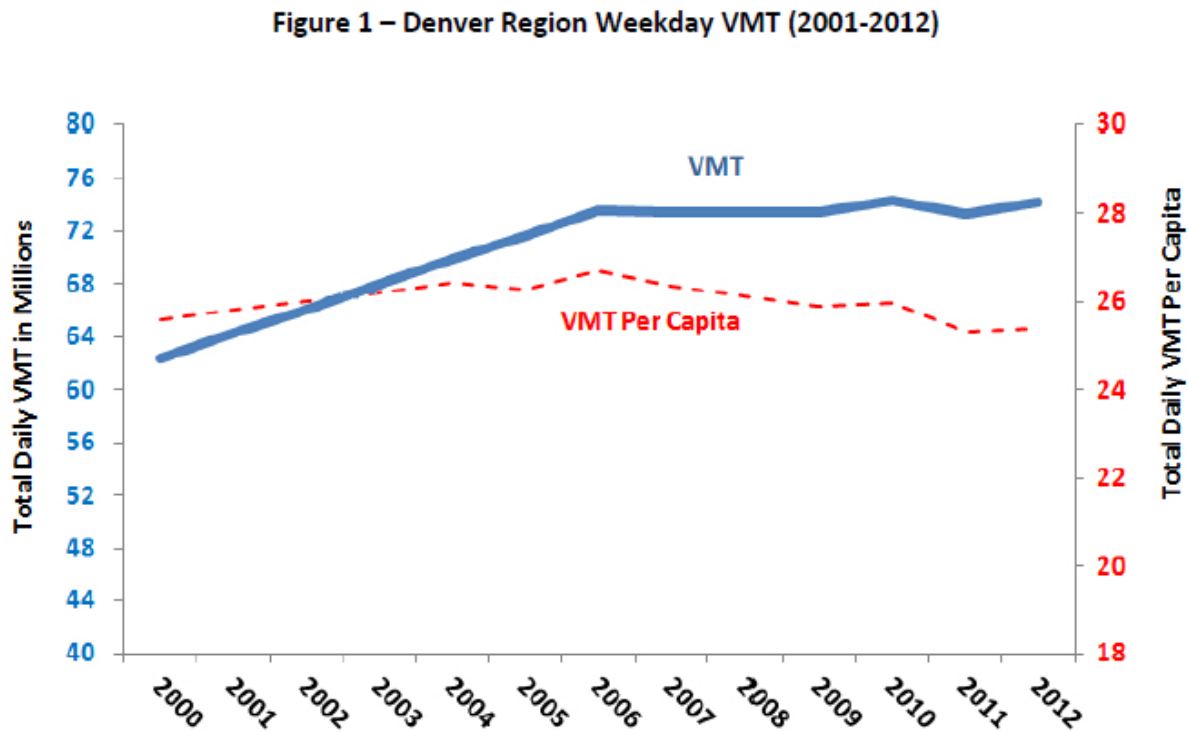


Table 1 shows the historic rate of VMT growth in Colorado compared to the forecast for the Preferred Alternative in the SDEIS.

Table 1. Historical Average VMT Growth Rates Compared to SDEIS Projections

	Average Percent Change
Statewide VMT Growth Rate (2004-2012) <sup>5</sup>	0.28%
SDEIS VMT Study Area Projection (2012-2035)	2.1%
SDEIS VMT I-70 Corridor Projection (2012-2035)	2.6% <sup>6</sup>

For another comparison, SWEEP examined the three continuous traffic counters set up in or near the study's corridor to better understand traffic volume trends in the area. There are three continuous counters located in or near the study area on I-70 at Sheridan Blvd, Colorado Blvd and east of E-470. While traffic

<sup>5</sup> The statewide numbers come from the FHWA's Highway Statistics Series, Table VM-2.

<http://www.fhwa.dot.gov/policyinformation/statistics.cfm>.

<sup>6</sup> The 2.72% growth rate was arrived at by taking the base year VMT, 1,586,000 and determining what rate of annual growth would be necessary to meet the projected 2035 VMT of 2,935,000 in the Preferred Alternative.



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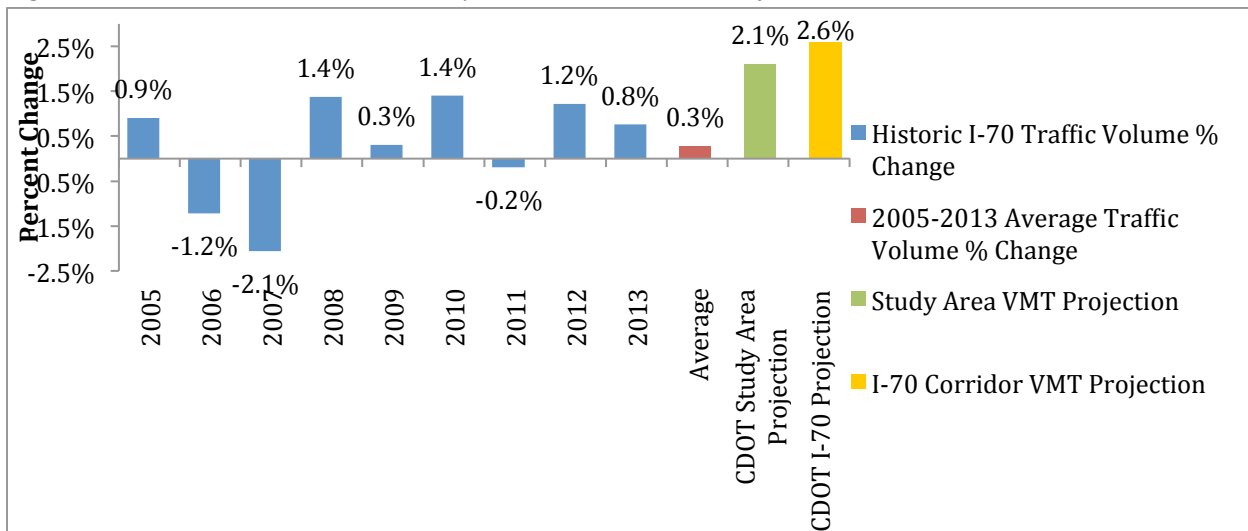
count data exists prior to 2004, there are significant gaps in the data in 2002 and 2003 for two of the counters so 2004 was used as a starting point.

Table 2. Growth in Traffic Volume at Continuous Traffic Counter Stations In or Near Study Corridor

	Average Growth in Traffic Volumes 2004-2013 <sup>7</sup>
Sheridan Blvd	0.33%
Colorado Blvd	-0.04%
East of E-470	1.65%
Weighted Average	0.28%

Figure 2 shows the weighted average of the annual percent change of the three continuous traffic counters between 2005 and 2013. The average VMT growth projection that the SDEIS makes for the PA is significantly higher than the growth in traffic volumes experienced in any single year in the corridor over the last nine years and an order of magnitude higher than the average growth over these years.<sup>8</sup> This average may in fact overstate growth as the only continuous counter located in the study area at Colorado Blvd has experienced a slight decline in traffic volumes between 2005 and 2013.

Figure 2. Historic Traffic Volumes Compared to Future VMT Projections for the I-70 East Corridor



Projecting forward, the aggressive VMT growth rates assumed by the SDEIS leads to the conclusion that by 2035 there will be significantly higher levels of VMT on the I-70 East corridor and in the study area than seen today. However, if the projections were made using recent travel trends there would be much lower 2035 VMT in the area. Figures 3 and 4 show just how large the difference is for both projected I-70 VMT and projected study area VMT.

<sup>7</sup> CDOT, OTIS <http://dtdapps.coloradodot.info/otis/>

<sup>8</sup> Since traffic volumes and VMT are not directly comparable we have converted both to annual percent change which gives an idea of the rate of growth of travel demand.



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Figure 3. Projections for I-70 Corridor VMT

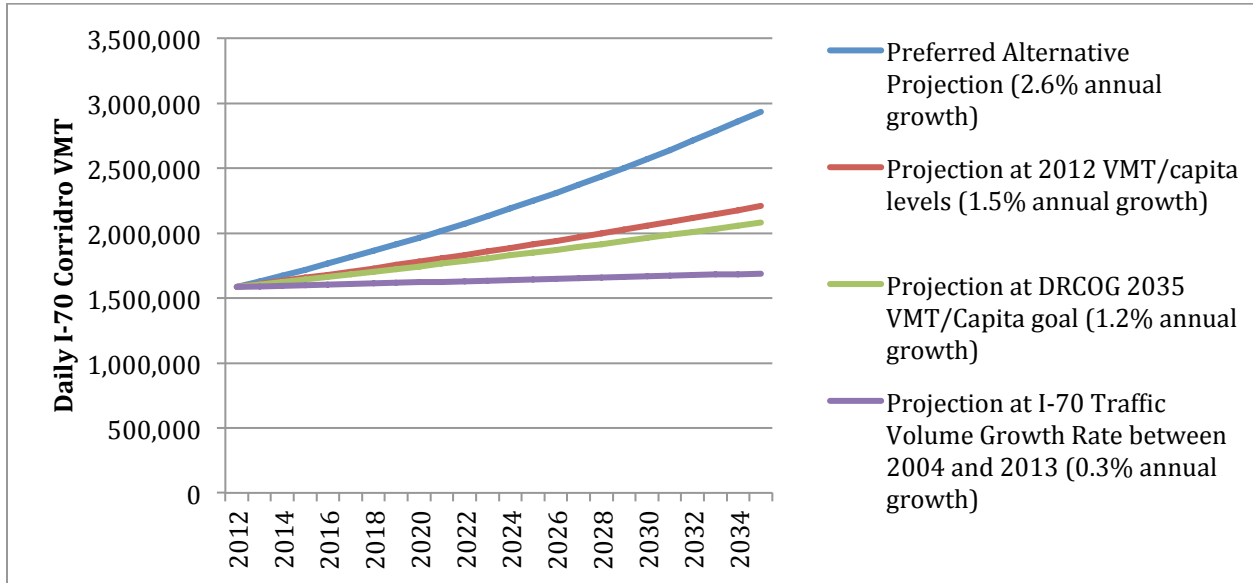


Figure 4. Projections for Study Area VMT

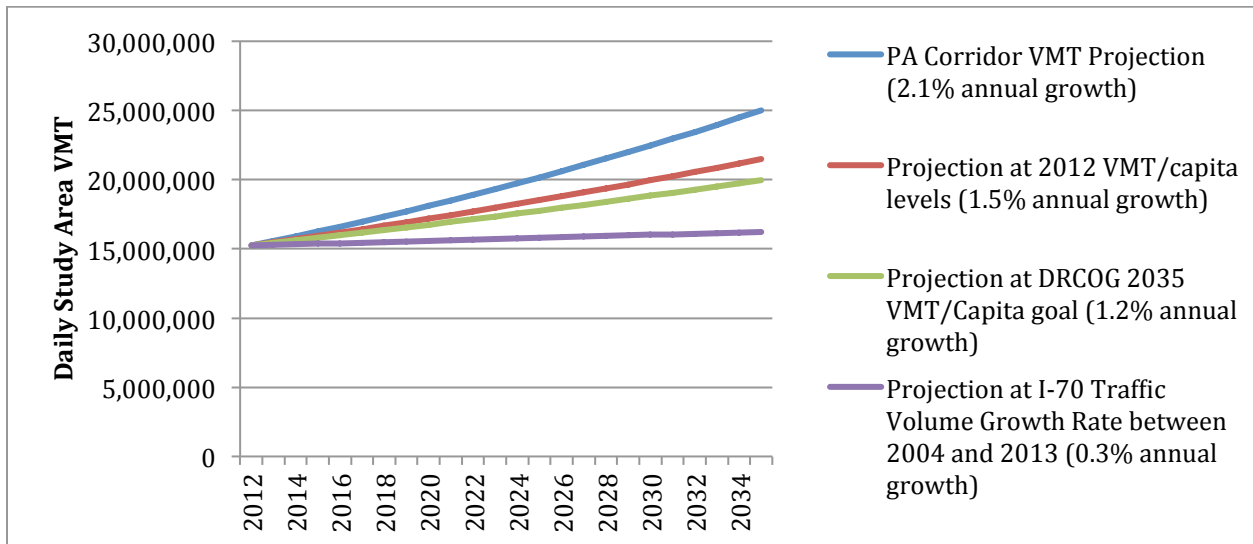


Table 3 compares the VMT projections in the PA to the additional VMT growth scenarios that are more consistent with recent changes in VMT growth. Even if VMT/capita remains flat between 2012 and 2035, rather than continuing to decline, there would be 725,000 fewer daily VMT on the corridor compared to the



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PA. To put that in perspective, under the PA, there are expected to be 482,000 daily VMT on the four new managed lanes.

Table 3. Comparison of PA Projections with SWEEP Sensitivity Analysis

	2035 Projected Corridor VMT	VMT Reduction Compared to PA	2035 Projected Study Area VMT	VMT Reduction Compared to PA
SDEIS Projection (PA)	2,935,000	-	25,026,000	-
Projection at 2012 VMT/Capita levels	2,210,000	725,000	21,500,000	3,526,000
Projection at 2035 DRCOG VMT/Capita goal	2,081,882	853,118	19,982,352	5,043,648
Projection at 10-yr Average Corridor Growth Levels	1,689,478	1,245,522	16,237,521	8,788,479

The aggressive VMT projections in the SDEIS also seem to conflict with estimates in CDOT's Draft Statewide Plan. In this draft it is stated that VMT per capita 'is now projected to stay constant' and that 'total VMT continues to grow at approximately the same rate as population...between 2012 and 2040.'<sup>9</sup> If CDOT is assuming that statewide VMT is set to grow at the same rate as population for the purposes of the statewide Plan, why is it assumed that it will grow at between 56% (study area) and 109% (I-70 corridor) faster than population growth for the SDEIS?

While the larger growth on the corridor than the study area may be reasonable, since the expanded highway would draw some traffic that would otherwise take place on other streets within the study area, this cannot explain the large background increase projected for the entire study area.

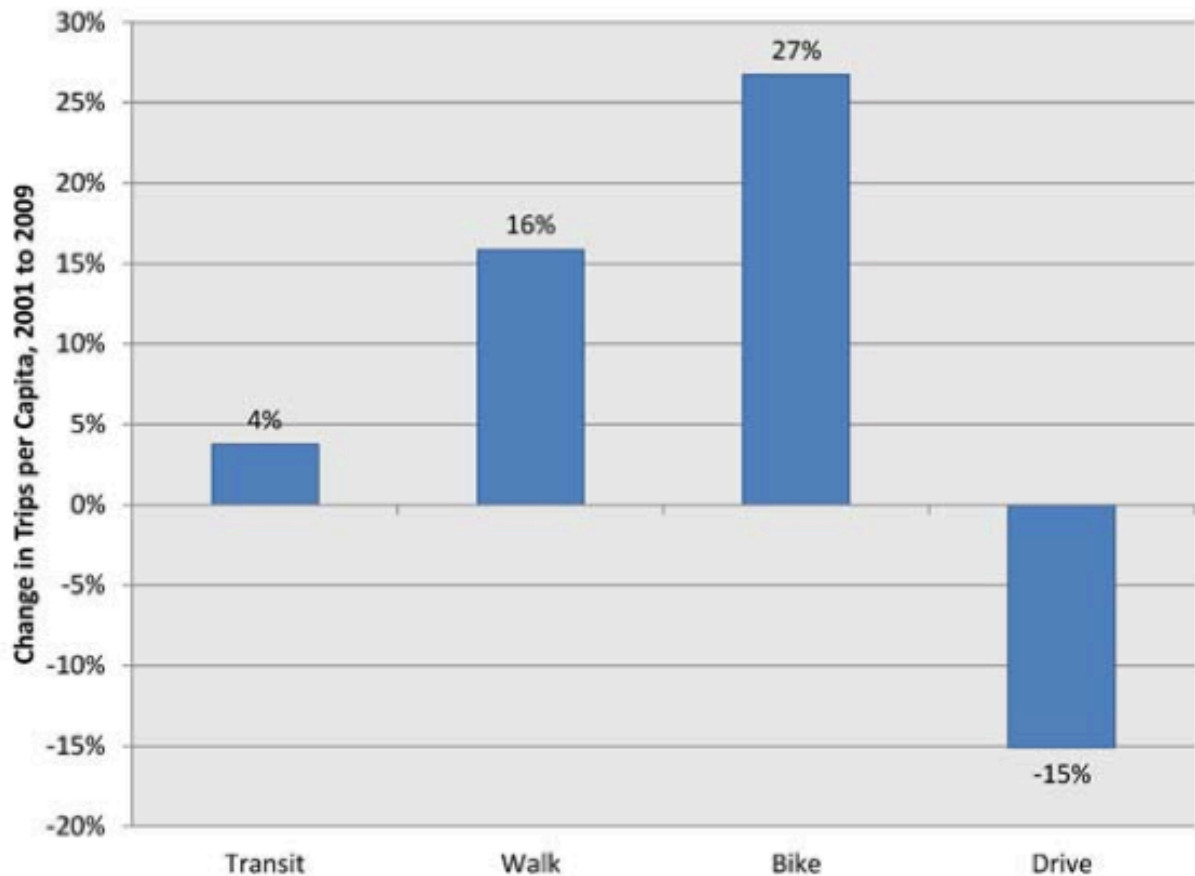
A related question is to what extent the DRCOG travel model used in this SDEIS is using up to date data. For example, have the results of the 2010 Front Range Travel Counts study been used to update the parameters in the model? Or does the model continue to rely on older data from the 2003 travel counts that do not reflect the changing travel preferences of the last decade?

There are a number of reasons to expect that the trend towards lower levels of driving will continue in the future. Most important, the largest decreases in per capita driving are occurring among younger people. The following chart, taken from the report *Millennials In Motion: Changing Travel Habits of Young Americans and the Implications for Public Policy*,<sup>10</sup> illustrates just how significantly travel behavior is changing among younger Americans.

<sup>9</sup> 2014. CDOT. Statewide Plan Committee. <http://www.coloradodot.info/about/transportation-commission/meeting-agenda.html>

<sup>10</sup> US PIRG and Frontier Group, <sup>10</sup> Millennials In Motion: Changing Travel Habits of Young Americans and the Implications for Public Policy, 2014, available at <http://uspirg.org/reports/usp/millennials-motion>

**Figure 2. Change in Number of Trips per Capita among 16 to 34 year-olds, 2001 to 2009<sup>12</sup>**



Note that if the levels of traffic in 2035 are in fact substantially lower than projected, then many of the benefits of the project will be significantly reduced. In particular, if the traffic volumes are substantially lower than projected, then the impact of the project on congestion levels, vehicle hours of delay and travel times will be much smaller than projected.

At the same time, the negative impacts of the project on the surrounding neighborhood, and the project cost, could both be decreased by reducing the number of lanes, and reducing the width of the project.

We would recommend that the project be re-analyzed using traffic modeling that incorporates actual traffic behavior over the last decade.

### **2) We are concerned that there appears to have been no analysis of options that add fewer lanes.**

The options considered include a no action rebuild of the viaduct, and multiple options which add 2 additional lanes in each direction. As described in the analysis in section 1 above, we believe that the proposed expansion may be larger than can be justified by reasonably expected levels of future traffic.





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The addition of lanes should also be considered from a financial point of view. The PA has an estimated capital cost of either \$1.81 billion (Basic Option) or \$1.89 billion (Modified Option). To date, only \$1.17 billion of potential funding has been identified in the SDEIS for the project. There are also significant opportunity costs to such an expensive expansion of I-70. In a world of declining VMT per capita and falling funding for transportation projects, major highway expansions may not represent the most prudent investment of the state's limited transportation funds. As CDOT has limited resources it makes sense to carefully evaluate potential projects based on their mobility benefits per dollar invested. .

For example, a recent report by SWEEP identified the potential for a regional BRT system in the Denver metro area which could potentially provide region wide benefits for a cost comparable to this single proposed project.<sup>11</sup>

There is another important factor that should be considered – the impact of autonomous and connected vehicles on highway capacity. This is a topic of significant uncertainty, but has potentially large implications for the long-term need for greater highway capacity. Much of the justification for the proposed expansion is based on potential vehicle demand in the 2035 timeframe; it is reasonable to anticipate that there will be significant penetration of these new vehicle technologies by this time. While there are significant uncertainties on the impact on total VMT, with the potential for both reductions and increases, there are many reasons to believe that these technologies will increase the capacity of existing highways, reduce congestion by lowering crash rates and eliminating much of the resulting incident related congestion, smooth flow around bottlenecks, and reduce required lane widths, allowing the same highway cross section to be striped for more lanes.<sup>12</sup> We would recommend that these factors be incorporated into a sensitivity analysis before any final decisions are made on making significant investments in adding lanes.

We would suggest that additional options be considered including one in which only one additional managed lane is added in each direction, and one in which no additional lanes are added, but one lane in each direction is converted from a general purpose to a managed lane.

### **3) We are concerned by the lack of analysis of the potential for BRT in the managed lanes.**

The discussion of managed lanes on pages 3-46 in the Summary of Project Alternatives states that managed lanes will promote use of RTD buses. However, the EIS does not seem to contemplate any addition of either express bus or BRT service.

This is an important omission from an environmental justice perspective. SWEEP has conducted analysis of the demographics of users of toll lanes, users of HOV lanes, and bus riders in the Denver area, and reported on these in the 2014 paper *Managed Highway Lanes in Colorado: Everyone Benefits from Including Carpools*

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<sup>11</sup> Toor and Salisbury, *Considering a Regional Network of Bus Rapid Transit in the Denver Metro Area*, SWEEP, 2014, available at <http://www.swenergy.org/publications/category.aspx?CategoryID=4>

<sup>12</sup> Hendrickson et al, *Connected and Autonomous Vehicles 2040 vision*, Pennsylvania Department of Transportation, 2014, available at <https://sportal.dot.pa.gov/Planning/MPMS/Download/Connected%20Autonomous%20Vehicles%202040%20Vision%20-%20Final%20Report%20-%202017-10-14.pdf>



and Public Transit<sup>13</sup> The following charts illustrate the enormous difference in demographic characteristics of toll payers and bus riders.

Figure 5. Demographics of I-25 Express Lane Users Compared to General Population by Household Income<sup>14</sup>

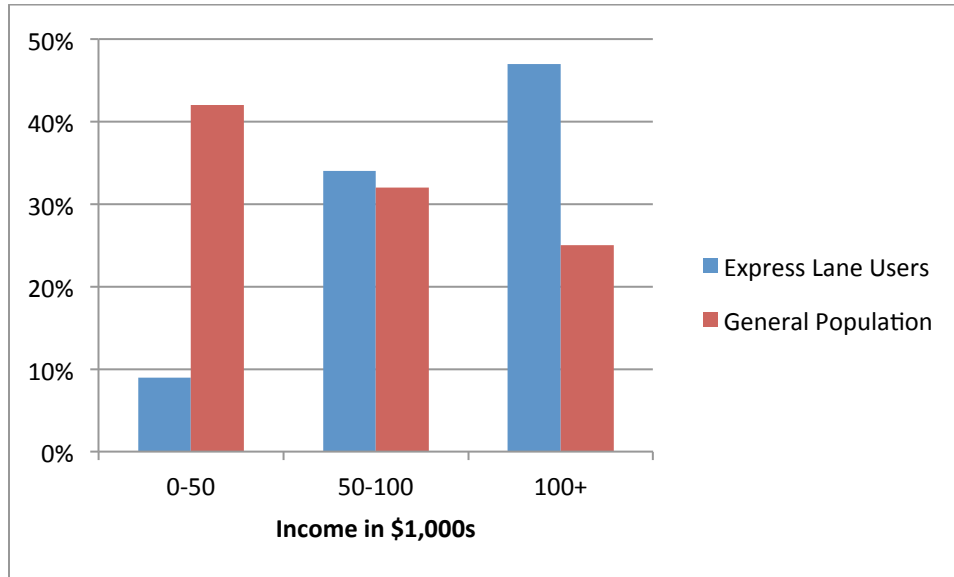
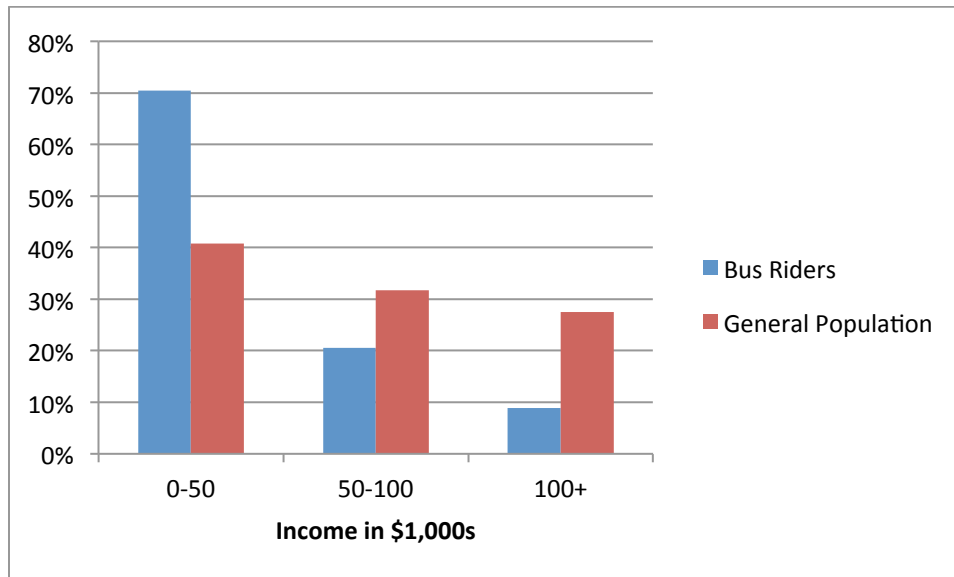


Figure 6. Demographics of RTD Bus Ridership Compared to General Population by Household Income<sup>15</sup>



<sup>13</sup> Toor and Salisbury, Managed Highway Lanes in Colorado: Everyone benefits from Including Carpools and Public Transit, SWEEP, 2014, available at:

[http://www.swenergy.org/publications/documents/Managed\\_Lanes\\_in\\_CO\\_April\\_2014.pdf](http://www.swenergy.org/publications/documents/Managed_Lanes_in_CO_April_2014.pdf)

<sup>14</sup> Corona Research. 2008. HOV/Express Lane User Study. Exhibit 6-8, Household Income.

<sup>15</sup> Source: RTD 2011 Customer Satisfaction Survey, Demographic Comparisons, Annual Household Income; US Census. Table B19011: Household Income in the Past 12 Months, 2007-2011 American Community Survey 5-Year Estimates for the Denver-Aurora-Boulder Combined Statistical Area.



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The surrounding neighborhood has a median income of \$38,000, and 62% of households have an income below the Denver median of \$55,000<sup>16</sup>, implying that the most directly impacted populations are at an income level that is unlikely to directly benefit from the addition of managed lanes without a significant transit element. In order to make this a project that serves everyone, rather than primarily upper income residents, there should be an evaluation of the potential for expanded bus service or BRT in the managed lanes

BRT requires more than simply providing the lanes, but rather requires an integrated design process that includes transit stations along the corridor, slip ramps or other means for buses to access the stations, and provision of appropriate IT infrastructure to serve the station. None of this appears to have been considered in this EIS.

Now, it is the case that the East Line train to DIA parallels I-70, and it is possible that there would be significant overlap in transit markets. But without an analysis that considers the broader regional context, and potential transit travel sheds, it is premature to simply ignore the potential for BRT and design a highway that may not have the appropriate infrastructure for BRT.

#### **4) We believe that additional discussion and analysis is needed of air quality impacts.**

The surrounding neighborhoods have some of the highest levels of air pollution in Denver, and currently suffer from poor health outcomes compared to the region as a whole. The SDEIS does address local air quality impacts at hotspots along the highway, but the discussion and analysis should be expanded in two areas.

First is in the explanation of the variation in the projected concentrations of PM10 among the alternatives. All of the build alternatives are modeled to have almost identical emissions of PM10, but there are large differences shown for the concentrations of PM10 in the hotspot analysis. In a verbal discussion with CDOT project staff this was described as being due to some of the alternatives having more of the traffic slightly further away from the hotspots, and due to the impact of emissions being concentrated into specific locations due to the covers in the lowered and partially covered options. While these are plausible explanations, there is virtually no discussion of this in the EIS, and no data shown to allow the claim to be evaluated. We would request a much more in depth discussion of how and why the concentrations vary among the alternatives, including information on how concentrations would be affected under different wind conditions.

Second, while there is a brief discussion of PM2.5 emissions, there is no discussion of projected concentrations of PM2.5. We would request a hotspot analysis of PM2.5 concentrations similar to that performed for PM10.

#### **5) We are concerned with the analysis of greenhouse gas emissions in pages 53 and 54 of the Air Quality Technical Report.**

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<sup>16</sup> Piton Foundation, Community facts , Elyria Swansea neighborhood,  
[http://www.piton.org/index.cfm?fuseaction=CommunityFacts.Summary&Neighborhood\\_ID=885](http://www.piton.org/index.cfm?fuseaction=CommunityFacts.Summary&Neighborhood_ID=885)



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The report compares project level emissions to total global emissions, and concludes that they are insignificant by comparison. This is a specious comparison – by this logic, no actions below a global climate agreement would be significant. This flies in the face of the multiple steps the federal and state governments are taking to reduce emissions – all of which have, by themselves, a very small impact on total global emissions. Within the DRCOG region, the adopted 2035 Metro Vision regional plan calls for a 60% reduction in transportation sector GHG emissions by 2035; we would suggest that an appropriate question would be whether emissions associated with the project alternatives track with the regional targets; that is, will emissions associated with the I-70 expansion meet the region wide target of a 60% reduction? The report instead projects that 2035 emissions under the proposed alternative would grow from 4,064 tons per day to 5,306 tons per day, a 30% **increase**. We would request that alternatives be examined that would decrease GHG emissions.

### Conclusion

The VMT projections being made by CDOT in the SDEIS are very aggressive and do not seem to have taken into account shifts in travel demand over the last decade. If they are projecting too much VMT that means that at least one of the problems that the PA might be trying to solve, increased VMT and congestion in the corridor might not actually be a problem.

If there is a good possibility of significantly less VMT in the region and on the corridor by 2035, CDOT should reconsider the necessity of expanding I-70 at all or possibly examine the possibility of only adding one additional managed lane along the corridor. There does not appear to be a discussion in the SDEIS or in previous EISes of the need for two versus one new lane along I-70. Even if only one managed lane was added, it would still have almost half the volume (452,000 compared to 835,000) that each general purpose lane would be projected to have in CDOT's projections. CDOT should also consider the possibility of managing any future VMT increases by creating managed lanes on existing capacity. In addition, CDOT should examine the potential for BRT in the managed lanes, and should ensure that the project design addresses infrastructure improvements that might be necessary such as bus slip ramps and BRT stations.

Thank you for the opportunity to comment on the I-70 East SDEIS.

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