



**I-70 East ROD 1:
Phase 1 (Central 70 Project)**

Updates to Traffic Technical Report

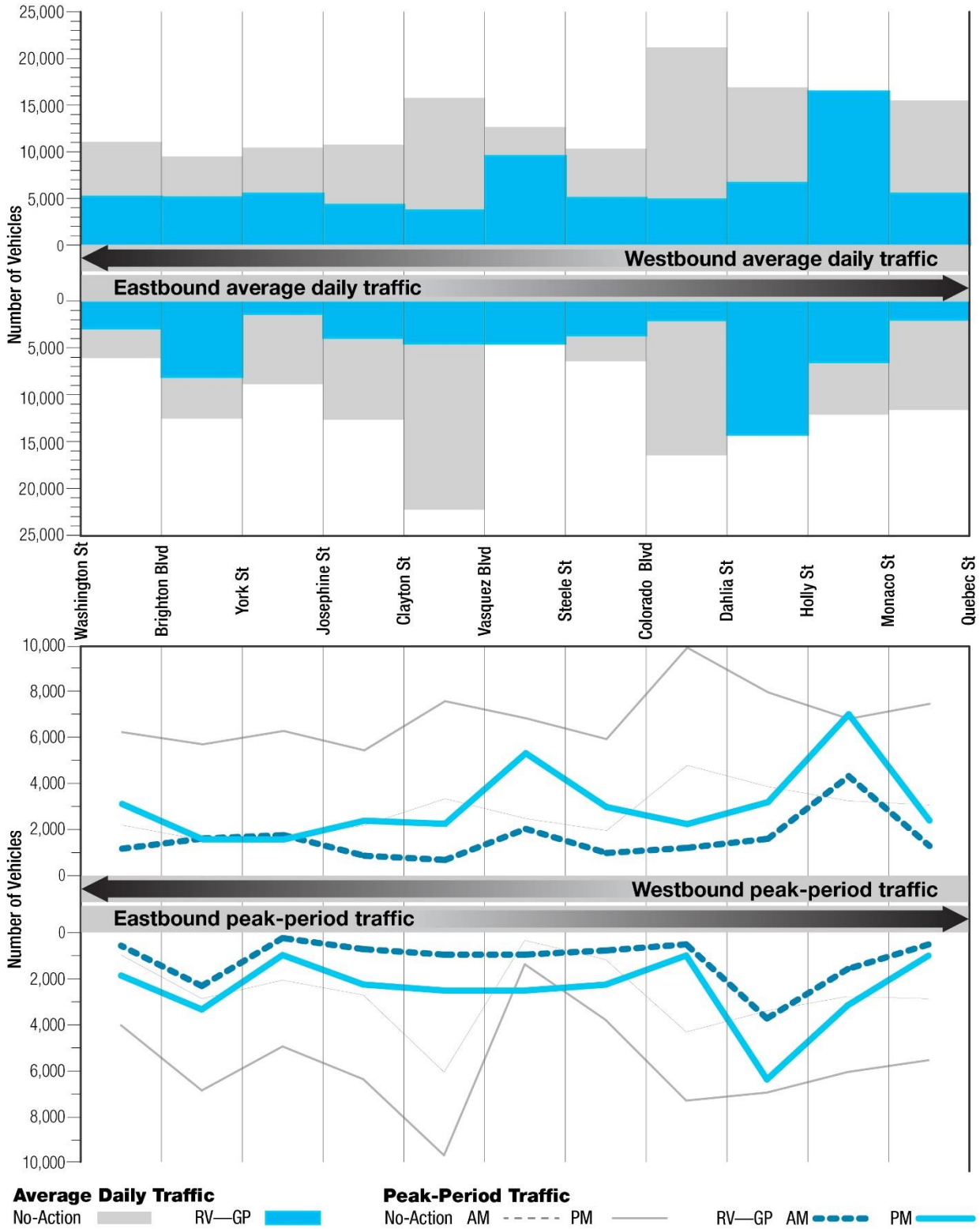
January 2017

This document has been prepared to provide clarifications to the Traffic Technical Report (Attachment E of the I-70 East Final Environmental Impact Statement [EIS]). There are no changes to the analysis or the results discussed in the report, but the following list provides updates to the report. The strikethrough text represents deletion of a word or a phrase from the original text while the underlined text shows the new text.

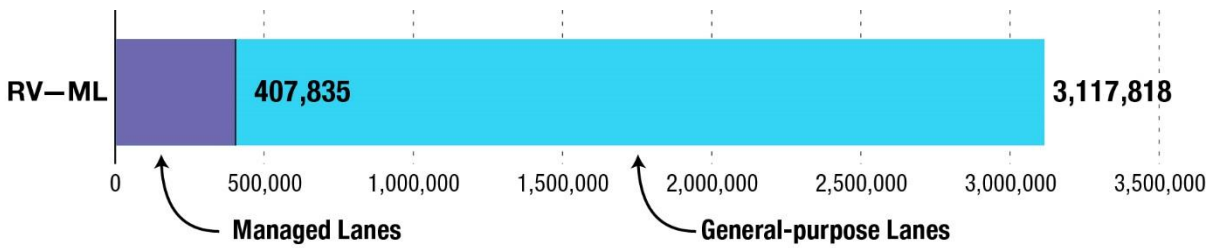
Attachment E, Traffic Technical Report, Section 6.1.2.4, Dahlia Street, Holly Street, Monaco Street, first paragraph, fourth and fifth sentences (page 81) now reads:

Eastbound I-70 drivers wanting to access Dahlia Street will exit at Colorado Boulevard and use the extension of ~~46th Avenue South~~ Stapleton Drive South across Colorado Boulevard. Westbound vehicles from Dahlia Street will use the new ~~46th Avenue North~~ Stapleton Drive North and travel to the Colorado Boulevard interchange to access westbound I-70.

Attachment E, Traffic Technical Report, Figure 73, RV-GP: 46th Avenue and Stapleton Drive North/South volumes has been replaced by the following figure.



Attachment E, Traffic Technical Report, Figure 80, RV-ML: I-70 VMT by lane type has been replaced by the following figure.



Attachment E, Traffic Technical Report, Appendix F, Comparison between 2035 and Adopted 2040 DRCOG Model Volumes on I-70 Technical Memorandum has been revised. The updated memorandum is included in Appendix A of this document.

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Appendix A

Comparison between 2035 and Adopted 2040 DRCOG Model Volumes on I-70 Technical Memorandum

January 2017

TECHNICAL MEMORANDUM

To:	Project Files		
From:	David Sprague	Email:	David.sprague@atkinsglobal.com
Phone:	303-221-7275	Date:	12/1/16
Ref:	I-70 East EIS	cc:	Carrie Wallis
Subject:	Comparison of 2035 to updated 2040 DRCOG model volumes on I-70		

1. Introduction

During the development of the I-70 East Environmental Impact Statement (EIS) there have been several adopted regional travel demand models (TDM). The I-70 East project team has analyzed the potential need to re-evaluate the results of the environmental resource analyses by changing from the 2035 TDM, which was used to complete the Final EIS and the Interchange Access Request (IAR), to the 2040 TDM (updated in the summer 2016). The project team has completed such an analysis multiple times during the duration of the project for each change to the TDM. The purpose of this memorandum is to summarize the previous efforts at comparing 2035 and 2040 model results as well as summarizing the current efforts to complete another comparative analysis due to recent updates to the 2040 TDM.

This memorandum provides a discussion on the background and history of the various TDMs used during the development of the EIS. Next, the memorandum provides a discussion on the progression of comparative analyses that have been completed for comparing 2035 TDM and 2040 TDM results, including the most recent analysis that was completed due to updates to the 2040 TDM that occurred in 2016. Then, the memorandum includes a discussion on the potential impact to environmental resources should the project make a change from the 2035 TDM to the 2040 TDM. In addition, the memorandum provides a brief discussion regarding the potential impact to the project schedule and costs if a change in TDM was made at this time. Finally, a short concluding section is provided that summarizes the results of the analysis and decision.

2. Travel Demand Model Background

During project scoping, in 2002, the project team identified the Denver Regional Council of Governments (DRCOG) regional transportation plan (RTP) as the basis for future travel forecasts within the study area. This has been confirmed throughout the project and Federal requirements require National Environmental Protection Act (NEPA) studies to use the current adopted regional travel demand model for analysis purposes. The DRCOG RTP, and associated TDM, includes anticipated population and employment growth for every municipality within the DRCOG boundaries as well as fiscally-constrained roadway improvements. The TDM also accounts for planned and programmed transit improvements in the region.

At the start of the I-70 East Draft EIS process, the project was using the 2025 TDM volumes, but due to the duration of the project, the analyses were updated to include use of the 2030 TDM volumes at the time the Draft EIS was released in 2008. In 2012, the project began the Supplemental Draft EIS analysis at which time the analyses were updated to use the 2035 TDM. In 2014, the Supplemental Draft EIS analyses were updated again with the most current version of the 2035 TDM (Compass 5.0, 2014 Cycle 2) and the Supplemental Draft EIS was published in August of 2014. During the development of the Supplemental Draft EIS the project team was made aware that the 2040 TDM was expected to be adopted in 2015. The project team also learned that the 2040 TDM would use a different methodology compared to the 2035 TDM when

forecasting future traffic volumes. The 2035 TDM traffic forecasting was based on a trip-based procedure which was called the "Compass" TDM. In contrast, the 2040 TDM traffic forecasting is activity based and is called the "Focus" model. Both the "Compass" and "Focus" TDMs are regional models that use projected land use data including population and employment growth to project future traffic conditions, but the "Focus" TDM is more sensitive to parameters such as behavioral changes and local transit systems compared to the "Compass" model. It is worth noting that both the "Compass" TDM and the "Focus" TDM include programmed roadway and transit projects including the FasTracks corridors.

As soon as the project team learned of the soon to be adopted 2040 TDM a decision was made to perform a comparative analysis between the 2035 and 2040 TDM volumes. This comparative analysis was completed in March 2014, a full year prior to the actual adoption of the 2040 TDM. The adoption of the 2040 TDM occurred in early 2015, which was well after the completion of the Supplemental Draft EIS and after the start of the Final EIS and IAR processes. The I-70 East Final EIS was released in January 2016 and the IAR was submitted to FHWA in the spring of 2016 with preliminary acceptance granted in July 2016. However, the project team learned that the adopted 2040 TDM contained update data and new traffic projections compared to the TDM that the project team used to perform the previous comparative analysis. This prompted the project team to complete a second comparative analysis between the 2035 and 2040 TDM traffic volumes in August 2015.

It should be noted that prior to summer 2016 the ability to run the "Focus" model was not readily achievable by much of the consulting industry, including the I-70 East project team. In addition, the I-70 East Phase 1 project was not added to the RTP or included in the base roadway network of the 2040 TDM until March 2016. Furthermore, the 2040 TDM underwent additional updates and refinements between February 2015 (initial date of adoption) and the summer of 2016, which was well after the release of the Final EIS and the completion and preliminary approval of the IAR. These changes to the 2040 TDM prompted the project team to complete a third comparative analysis between the 2035 and 2040 TDM volumes, which is the primary subject of this memorandum.

3. Comparative Analyses

As previously mentioned, the project team has completed several comparative analyses between the projected traffic volumes from the 2035 TDM (used in the Final EIS and IAR analyses) and the 2040 TDM. The purpose of these comparative analyses was to respond to several underlying questions including:

- How do the updated 2040 TDM volumes compare to the 2035 TDM volumes and should the project team make a switch to the updated 2040 TDM?
- Would the updated 2040 TDM volumes result in a need for fewer lanes on I-70 between Brighton Boulevard and Quebec Street?
- Would the updated 2040 TDM volumes result in different environmental impacts?
- What impact would switching to the updated 2040 TDM have on the overall schedule for the Record of Decision (ROD)?

The following is a summary of the past comparative analyses and a discussion of the current comparative analysis in an effort to provide answers to these questions.

3.1. Original comparative analysis (during Supplemental Draft EIS)

In March of 2014, Atkins compared the traffic volumes from the DRCOG 2040 TDM with those from the 2035 TDM, which was being used for all traffic analyses in the I-70 East Supplemental Draft EIS. At the time of this comparative analysis, the 2040 TDM was not adopted, but DRCOG had preliminary traffic projections for a 2040 No-Action network, which did not include any improvements to I-70. The 2040 TDM volumes were provided to the project team by DRCOG staff for use in this comparative analysis. These volumes were then compared to the traffic volumes from the 2035 TDM for an identical No-Action roadway network. As a result

of this comparative analysis, it was concluded that the 2035 volumes were generally higher than the 2040 volumes, the lower 2040 volumes did not result in a reduction in the number of required lanes on I-70, the differences in volumes between the models would not produce additional impacts, but changes from the 2035 to the 2040 volumes would result in a long delay in the schedule for the EIS. As a result, the project team, including CDOT and FHWA, concluded that there was no justification for the project to make a change to the 2040 TMD volumes for purposes of completing the on-going Supplemental Draft EIS. However, it was noted that the volumes from the 2040 TDM used in this comparative analysis were considered preliminary, because the model had not been officially adopted by the DRCOG board and the project team would complete another comparative analysis when the 2040 TDM was adopted.

3.2. Second comparative analysis (during Final EIS)

In August of 2015, the project team completed another comparative analysis between the traffic volumes from the 2040 TDM, adopted in February 2015, to the 2035 volumes that were being used to complete the Final EIS and IAR analyses. For this analysis, the 2040 TDM provided by DRCOG included improvements to I-70 between Brighton Boulevard and Quebec Street in the form of two managed lanes in each direction of travel. At the time these improvements were based on the I-70 project description included in the DRCOG long range transportation plan, but did not represent any of the alternatives being evaluated in the Final EIS or IAR. In order to conduct an equivalent comparison of traffic volumes, the 2035 TDM roadway network was modified to match that of the 2040 TDM, thus creating a new alternative in the 2035 TDM. Changes were done to the 2035 TDM because the project team was able to modify the "Compass" version of the TDM but was unable to modify the "Focus" version or the 2040 TDM. Based on the comparative analysis, it was concluded that the 2035 volumes were generally higher than the 2040 volumes, the lower 2040 volumes would not result in a reduction in the number of required lanes on I-70, the differences in volumes between the models would not produce additional impacts, but changes from the 2035 to the 2040 volumes would result in a long delay in the schedule for the Final EIS. As a result, the project team, including CDOT and FHWA, concluded that there was no justification for the project to make a change to the 2040 TMD volumes for purposes of completing the on-going Final EIS and IAR.

3.3. Third comparative analysis (during ROD)

In the summer of 2016, DRCOG notified the I-70 East project team that improvements had been made to the 2040 TDM resulting in more refined traffic volumes with a higher confidence level. Some of the changes included better modeling of the volumes in the managed lanes, correction of identified errors in the base coding, and the new DRCOG No-Action roadway network was changed to better reflect the Phase 1 project as described in the Final EIS. As a result, the project team obtained the newly updated 2040 TDM and once again performed a comparative analysis between the 2035 TDM traffic volumes used to complete the Final EIS and IAR with those of the updated 2040 TDM. Again, in order to compare the volumes from the two models the roadway networks should be similar to each other. The current Phase I project looks to reconstruct the portion of I-70 between Brighton Boulevard and Quebec Street, with additional phases to be built once funding is identified. The goal is to construct the portion of I-70 between Brighton Boulevard and Quebec Street to its ultimate design during Phase 1 so that the adjoining neighborhoods in this area will not be disturbed in the future as additional phases of the ultimate project are constructed. Thus, the decision was made to use the Preferred Alternative, or ultimate project, roadway network to better identify the number of lanes that would be needed on I-70. A 2035 TDM with the Preferred Alternative roadway network already existed from the Final EIS and IAR analyses, so the project team worked with DRCOG staff to modify the 2040 TDM roadway network to match the full build Preferred Alternative design. The Preferred Alternative network includes managed lanes between I-25 and Tower Road with direct connect ramps at I-270, I-225, and Pena Boulevard. Thus, a new 2040 TDM network was created for the sole purposes of this analysis, which is different than any of the networks that had previously been analyzed in the other comparative analyses.

3.3.1. Volume Comparison

The first question is whether or not there is a significant difference between the 2035 and updated 2040 TDM volumes. The daily, AM peak hour, and PM peak hour volumes for mainline I-70 between I-25 and Tower Road are summarized in Table 1, Table 2, and Table 3, respectively. It should be noted that the volumes in the tables represent a single total directional flow, or a sum of volumes from the general-purpose lanes and the managed lanes for each location. It should be noted that due to differences in the versions of models (preliminary results versus adopted results versus updated results), the roadway networks (partial build alternative in the first two comparative analyses versus full build in this analysis), and TDM forecasting methodologies (Focus versus Compass), any direct comparison to the volumes or number of lanes shown in previous comparative analysis memorandums should be avoided. The volumes and number of lanes shown in the previous comparative analysis memorandums should be considered independently from each other and from the values contained in this memorandum. It should also be noted that volumes shown in this comparative analysis should not be compared to the volumes shown in the Final EIS and IAR documents because the volumes shown in those documents are not directly from any TDM, but come from operational evaluation tools that take the origin-destination data from the TDM and generate unique trip routes and traffic volumes through the roadway network. The volumes shown in this document are strictly related to the analysis being discussed herein and should be considered valid for the sole purpose of the comparative analysis between the different TDMs.

Table 1 shows that the 2040 daily traffic volumes are lower than the 2035 volumes throughout the entire I-70 corridor from I-25 to Tower Road. For the most part, the 2040 daily volumes are between 5 and 20 percent lower than 2035 volumes with the exception of the portion of I-70 that is east of the Pena Boulevard ramps which experiences a much larger decrease in volumes from 2035 to 2040 (between 50 and 65 percent). The main reasons for the difference in volumes comes from the variations in many different inputs to the 2040 model compared to the 2035 model. These inputs include demographic data, land-use data, vehicle-miles traveled (VMT) trends, transit ridership assumptions, and data from the State Demographer. Additionally, the 2040 model is an activity-based model whereas the 2035 model is trip-based, which fundamentally changes how different decision variables are weighted and modeled. Specific to the larger volume differences at the east end of the corridor, the 2040 model projects a much higher volume of traffic exiting/entering I-70 at Pena Boulevard compared to the 2035 model which showed more traffic using Airport Road and Tower Road. The main reason is because the 2040 TDM includes an eight-lane (four lanes in each direction) Pena Boulevard compared to only a six-lane roadway in the 2035 TDM. This additional capacity results in more traffic using Pena Boulevard and then using the east-west arterials to travel to/from Pena Boulevard instead of continuing on I-70 to Airport Boulevard and Tower Road.

Table 2 (AM peak hour volumes) and Table 3 (PM peak hour volumes) show more fluctuation in the volume differences between the models. During the peaks the eastbound 2040 volumes are typically within 10 percent of the 2035 and there are a few areas that show higher 2040 volumes. The westbound peak volumes show a similar trend compared to the daily volumes with the 2040 volumes typically between 20 and 30 percent lower than 2035. Since the majority of resource analyses, including traffic operations, focus on the peak periods, the 2035 TDM traffic volumes appear to represent a worst-case scenario compared to the 2040 TDM.

Table 1: Comparison of I-70 Daily Volumes

Segment	Eastbound		% Diff	Westbound		% Diff
	2035	2040		2035	2040	
I-25 to Washington	56,550	53,250	-6%	67,200	53,750	-25%
Washington to Brighton	107,600	96,350	-12%	111,490	98,500	-13%
Brighton to Steele	110,700	107,600	-3%	116,400	110,220	-6%
Steele to Colorado	97,900	93,750	-4%	102,950	96,120	-7%
Colorado to Holly	114,600	95,800	-20%	116,300	99,070	-17%
Holly to Quebec	110,250	92,900	-19%	110,250	94,950	-16%
Quebec to CPB (ramps)	112,350	91,050	-23%	111,050	91,550	-21%
CPB (ramps) to I-270 (ramps)	102,400	95,950	-7%	127,250	121,200	-5%
I-270 (ramps) to Havana	139,500	126,950	-10%	132,600	130,150	-2%
Havana to Peoria	147,650	137,650	-7%	153,700	140,150	-10%
Peoria to I-225	150,300	133,500	-13%	135,850	118,050	-15%
I-225 to Chambers	151,900	137,700	-10%	89,100	74,350	-20%
Chambers to Pena (ramps)	126,300	113,500	-11%	130,800	111,950	-17%
Pena (ramps) to Airport	73,250	49,850	-47%	72,500	47,700	-52%
Airport to Tower	69,300	42,200	-64%	70,900	43,400	-63%

Note: A positive difference means the 2040 volumes are higher than 2035 and a negative difference means the 2035 volumes are higher than 2040.

Table 2: Comparison of I-70 AM Peak Hour Volumes

Segment	Eastbound		% Diff	Westbound		% Diff
	2035	2040		2035	2040	
I-25 to Washington	4,800	4,400	-9%	5,750	4,425	-30%
Washington to Brighton	9,375	8,300	-13%	9,600	8,625	-11%
Brighton to Steele	8,800	8,350	-5%	10,150	9,700	-5%
Steele to Colorado	7,350	7,150	-3%	10,250	8,650	-18%
Colorado to Holly	8,050	6,850	-18%	10,200	9,450	-8%
Holly to Quebec	7,050	6,150	-15%	10,750	9,300	-16%
Quebec to CPB (ramps)	6,150	5,500	-12%	11,100	8,900	-25%
CPB (ramps) to I-270 (ramps)	8,450	8,650	2%	10,350	10,500	1%
I-270 (ramps) to Havana	7,450	7,150	-4%	11,650	11,050	-5%
Havana to Peoria	8,150	8,550	5%	14,250	12,550	-14%
Peoria to I-225	8,100	8,100	0%	12,250	10,050	-22%
I-225 to Chambers	7,750	8,500	9%	9,800	7,400	-32%
Chambers to Pena (ramps)	6,200	6,650	7%	12,750	9,900	-29%
Pena (ramps) to Airport	3,450	3,200	-8%	8,650	6,100	-42%
Airport to Tower	2,800	2,450	-14%	8,800	5,350	-64%

Note: A positive different means the 2040 volumes are higher than 2035 and a negative difference means the 2035 volumes are higher than 2040.

Table 3: Comparison of I-70 PM Peak Hour Volumes

Segment	Eastbound		% Diff	Westbound		% Diff
	2035	2040		2035	2040	
I-25 to Washington	4,500	4,200	-7%	5,550	4,600	-21%
Washington to Brighton	9,100	8,650	-5%	9,500	8,350	-14%
Brighton to Steele	9,150	9,750	6%	9,400	8,600	-9%
Steele to Colorado	8,100	8,950	9%	7,900	7,450	-6%
Colorado to Holly	9,500	9,550	1%	8,850	7,150	-24%
Holly to Quebec	9,550	9,600	1%	7,450	6,050	-23%
Quebec to CPB (ramps)	10,450	9,550	-9%	8,150	5,500	-48%
CPB (ramps) to I-270 (ramps)	10,700	12,000	11%	8,550	7,450	-15%
I-270 (ramps) to Havana	10,550	11,650	9%	9,000	7,550	-19%
Havana to Peoria	12,600	13,300	5%	10,400	8,600	-21%
Peoria to I-225	13,100	13,400	2%	9,200	7,100	-30%
I-225 to Chambers	13,400	13,600	1%	5,900	4,650	-27%
Chambers to Pena (ramps)	10,450	11,200	7%	8,400	6,950	-21%
Pena (ramps) to Airport	6,850	6,150	-11%	5,000	3,100	-61%
Airport to Tower	6,100	5,750	-6%	4,450	2,500	-78%

Note: A positive difference means the 2040 volumes are higher than 2035 and a negative difference means the 2035 volumes are higher than 2040.

3.3.2. Number of lanes

The second question deals with the number of lanes proposed on I-70 as part of the identified Preferred Alternative in the Final EIS. Of particular interest is the number of lanes in the area between Brighton Boulevard and Quebec Street, which is the section of I-70 that passes through residential areas, where a wider I-70 will result in more impacts. The Preferred Alternative proposes to add two managed lanes in each direction of I-70 for this stretch of the highway. Thus, the Preferred Alternative has at least 10 lanes or five lanes in each direction of I-70 for the section of interest, with additional width necessary to accommodate auxiliary lanes that provide acceleration and deceleration opportunities for vehicles entering and exiting I-70 at the various interchanges.

The projected volumes from the TDM models can help determine a minimum number of lanes needed for I-70 to operate at or near capacity during the peak periods. Based on a level of service D/E according to the 2010 Highway Capacity Manual, a value of 2,000 vehicles per-hour per-lane (vphpl) was assumed to represent the capacity of a single lane. The minimum number of lanes was determined by taking the total AM peak hour volume (sum of the TDM volumes for the general-purpose lanes and managed lanes) and dividing that number by 2,000 vphpl. This results in a minimum number of lanes needed for each segment of I-70 during the AM peak hour to accommodate the projected TDM volume. A similar process was completed for the PM peak hour and for each direction of travel. Then, for each direction of travel the number of lanes needed in the AM was compared to the number of lanes needed in the PM and the maximum of the two is reported in Table 4.

Table 4: Number of Lanes Needed on I-70

Segment	Eastbound			Westbound		
	2035	2040	Preferred Alternative	2035	2040	Preferred Alternative
I-25 to Washington	3	3	3	3	3	3
Washington to Brighton	5	5	5 (1)	5	5	5 (1)
Brighton to Steele	5	5	5 (1)	6	5	5 (1)
Steele to Colorado	5	5	5 (1)	6	5	5
Colorado to Holly	5	5	5 (1)	6	5	5 (1)
Holly to Quebec	5	5	5 (1)	6	5	5 (1)
Quebec to CPB (ramps)	6	5	5 (1)	6	5	5 (1)
CPB (ramps) to I-270 (ramps)	6	6	5	6	6	6
I-270 (ramps) to Havana	6	6	6 (1)	6	6	6
Havana to Peoria	7	7	6 (1)	8	7	6 (1)
Peoria to I-225	7	7	5 (2)	7	6	6
I-225 to Chambers	7	7	6 (1)	5	4	5
Chambers to Pena (ramps)	6	6	4 (2)	7	5	4 (1)
Pena (ramps) to Airport	4	4	3	5	4	3
Airport to Tower	4	3	3 (1)	5	3	3 (1)

Notes: Assumes a capacity of 2,000 vphpl for all lanes. Number of lanes in the Preferred Alternative represents the total number of lanes (general purpose plus managed lanes) between interchanges and does not include auxiliary lanes. The values shown in parentheses represent continuous auxiliary lanes between interchanges.

It should be noted that the number of lanes shown represent the minimum number of lanes anticipated for I-70. The analysis assumed all lanes on I-70 would have the same 2,000 vph capacity, which is the capacity of a general purpose lane. Managed lanes actually have a capacity that is lower than this value, closer to around 1,200 to 1,400 vph, in order to maintain a LOS C or better at all time. With the lower capacity, it is likely that the actual number of lanes needed on I-70 could exceed the values shown in Table 4, but would not be lower. Based on the analysis, both the 2035 and 2040 volumes indicate that a minimum of five lanes in each direction of travel are required for the section of I-70 between Brighton Boulevard and Quebec Street. Despite the fact that the 2040 TDM volumes are generally lower than the 2035 TDM volumes, the decrease in projected volumes does not alter the number of lanes required on I-70 as identified in the Preferred Alternative.

It should be noted that there are several segments of the Preferred Alternative where the number of lanes are less than what the TDMs show is needed to meet the projected volume demands. For the most part these segments are located east of Havana Street. For most of these segments the Preferred Alternative does include continuous auxiliary lanes between the adjacent interchanges (shown in parentheses in the table). While not counted as a full lane, the addition of these auxiliary lanes do add capacity to the facility and help facilitate the projected future traffic demands that will occur in the area.

3.4. Environmental Impacts

For many resources evaluated in the EIS, impacts are determined by the extent of right of way required (construction limits) or location of the alternative in relation to the surrounding environment. These resources include:

- Social and economic conditions
- Environmental justice
- Land use and zoning
- Right of way
- Historic preservation
- Paleontological resources
- Visual and aesthetic qualities
- Parklands and recreation
- Biological resources
- Floodplains and drainage/hydrology
- Wetlands and other waters of the US
- Water quality
- Geology and soils
- Hazardous materials
- Utilities
- Construction

Because quantitative environmental impacts for these categories were modeled using 2035 TDM values, the impacts reported in the Final EIS are slightly higher than would occur if the 2040 TDM values were used. Even with the traffic volumes in 2040 being lower than the volumes in 2035, the number of lanes on I-70 required for the Preferred Alternative would not change resulting in no changes to the construction limits or impact areas evaluated for the resources previously listed.

Some resources are dependent on traffic volumes for impact analysis. These resources include energy, noise, and air quality.

Energy consumption is based on VMT, and is expected to be slightly overstated when compared to 2040 values. Noise analysis is based on the volume of the roadway at LOS C and will not vary unless additional lanes are added or the edge of the roadway is moved closer to sensitive receivers. The change in models is not expected to change the impacts of noise from the alternatives.

Air quality is based on the volume of and speed of traffic for the year of peak emissions, thus the 2040 TDM and its projected traffic volumes were used for the air quality conformity analysis for the ROD. Since the release of the Final EIS, DRCOG adopted an amendment to the 2040 Fiscally Constrained RTP (March 16, 2016), which includes the Central 70 Project (Phase 1 of the Preferred Alternative). This extends the hotspot analysis to the DRCOG planning horizon year of 2040, as required by the EPA in 40 CFR §93.116(a), to demonstrate that during the time frame of the transportation plan no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project.

In addition, due to the highly sensitive nature of this environmental resource, the project team determined the need to complete an update to the air quality comparative analysis from the Final EIS using the current adopted TDM (2040) and its projected traffic volumes.

3.5. Schedule impact

The last question has to do with identifying the possible impact to the project schedule should the project switch from using the 2035 TDM volumes to 2040 TDM volumes for all resources including transportation. Switching from the 2035 TDM to the 2040 TDM would result in significant delays to the project schedule due to the substantial effort required to update all environmental resources that rely on traffic volumes such as transportation, noise, and energy.

There are several factors that would contribute to the delay including:

- The time to re-evaluate all alternatives from the Final EIS using the 2040 TDM model.
- The time to re-evaluate all alternatives from the Final EIS in the traffic operations analysis tool DynusT.
- The inexperience of the local consultant community with using the 2040 Focus model would result in a ramp up time to become efficient enough to effectively evaluate the I-70 alternatives.
- The timely process to re-evaluate the operations of intersections and freeway elements for the IAR.
- All of the new results would need to be documented and put through the review and approval processes, including a public review and comment time period.

Based on these steps that would need to be completed if a forecast year TDM change is made, it is estimated that the delay to the project schedule would be at least 16 months and as much as 24 months. In addition to the schedule delay, this would result in a need for additional funds to be allocated to the project team to cover the costs of performing all of the re-work. As a result of this timely and costly delay, it has been decided that other than for the air quality analysis, the ROD and IAR will continue to rely on the 2035 TDM traffic projections.

4. Conclusions

The I-70 East project team has completed the above analysis to determine the potential need to change from the 2035 TDM to the 2040 TDM (updated in the Summer 2016) to re-evaluate the results reported in the Final EIS and IAR.

The results of the comparative analysis indicate the peak period traffic volumes from the 2040 TDM are typically lower than the volumes from the 2035 TDM, with the volumes being within about 20 percent of each other for most locations. Since the majority of resource analyses, including traffic operations, focus on the peak periods, the 2035 TDM traffic volumes appear to represent a worst-case scenario compared to the 2040 TDM. However, the air quality analyses are updated and the associated portion of the documentation using the new 2040 TDM volumes due to the highly sensitive nature of this environmental resource and its potential impact to the surrounding communities. Additionally, the project is required to use the year of highest emissions as part of the air quality conformity analysis.

In addition, the traffic volumes from the TDMs were used to determine the minimum number of lanes needed to service the projected future traffic demand on I-70. Based on the analysis, the section of highway between Brighton Boulevard and Quebec Street will need a minimum of five lanes in each direction, based on both the 2035 and 2040 TDM volumes. This is consistent with the number of lanes included in the Preferred Alternative in the EIS.

Because the volume levels in the two models do not result in the need for fewer lanes on I-70 it is unlikely that switching from the 2035 TDM to the 2040 TDM would result in significant changes to the Preferred Alternative. The switch would only result in further delay and additional cost.

This memorandum with its conclusions was discussed by the project team. Chris Horn, FHWA, and Vanessa Henderson, CDOT, agreed with the conclusions. Therefore, analyses based on the 2035 TDM volumes contained in the I-70 East EIS and IAR will not be updated to reflect possible changes due to the projected 2040 TDM traffic volumes. This memorandum will be included in the project file as documentation of the decision.

