APPENDIX A.   RAPIDTRIP 2040 MODEL USER'S GUIDE & MODEL CALIBRATION AND VALIDATION REPORT

RAPID CITY AREA
METROPOLITAN PLANNING ORGANIZATION
RAPIDTRIP 2040 MODEL USER'S GUIDE &
MODEL CALIBRATION AND VALIDATION REPORT

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INTRODUCTION

As a part of the Rapid City Area Metropolitan Planning Organization (RCAMPO) Long Range Transportation Plan Update, known as RapidTRIP 2040, the RCAMPO travel demand model has been revised. This report builds on previous model documentation to provide a Model User's Guide describing the installation and use of the updated travel demand model, followed by a summary of the Calibration and Validation processes used during the model update (see **Chapters I** and **II**, respectively).

I.   MODEL USER'S GUIDE

This Guide has been developed to inform the installation, use, and reporting of results for the RCAMPO travel demand model. This documentation focuses on changes to the model that have occurred as part of the RapidTRIP 2040 update process. **Appendix A** provides the Model User's Guide developed in May 2011 as part of RapidTRIP 2035, which provides more detail about the model structure and functions.

A. Setting Up the Model

This model must be run with TransCAD 5.0 on a computer running Windows XP or Windows 7. Installation and setup of the model within TransCAD has changed from previous versions of the model. Instructions for setting up the model follow:

1. Unzip the "RC Model.zip" file and place the "RC Model" folder onto the C: drive (Note: The file path for model files must be C:\RC Model). Within the "RC Model" folder are three sub-folders: AddIn (which provides the model code), Input (which contains model scenario inputs), and Output (which contains executed model run outputs by scenario).

2. Open TransCAD 5.0, access the "GIS Developer's Kit" and "Compile to UI" to compile the model. To accomplish this step, select "Tools", and then select "GIS Developer's Kit".
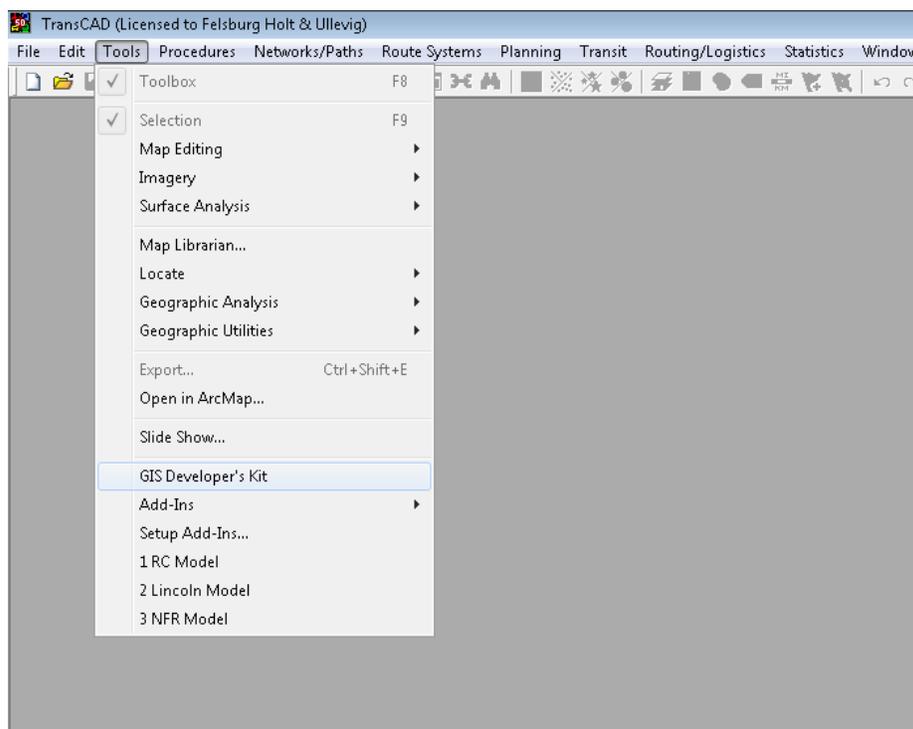
The following process must be completed four times to properly compile each of four .rsc files to the corresponding .dbd file.

RapidCity.rsc & model_ui.dbd

RapidCity_perf.rsc & perf_ui.dbd

RapidCityScen9.rsc & scen_ui.dbd

LSAModelUtilities.rsc & util_ui.dbd

When the GISDK Toolbox opens, select "Compile to UI" (the middle tile).

Navigate to C:\RC Model\AddIn and select RapidCity.rsc.
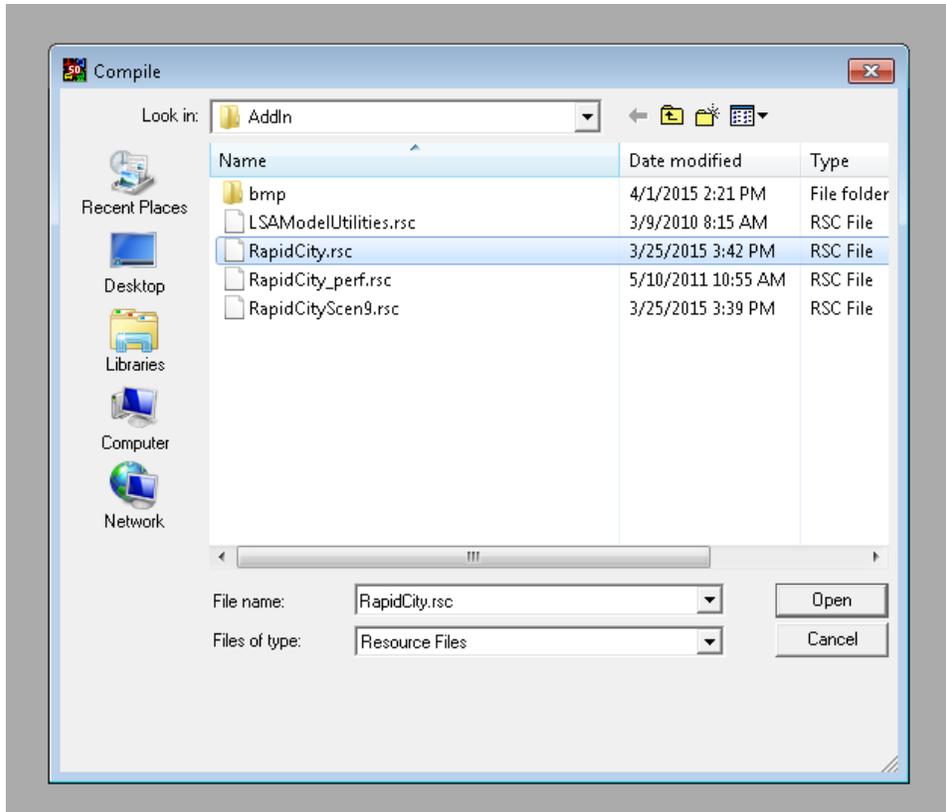
Navigate to C:\RC Model\AddIn and select model_ui.dbd. Click "Yes" when asked to replace model_ui.dbd.
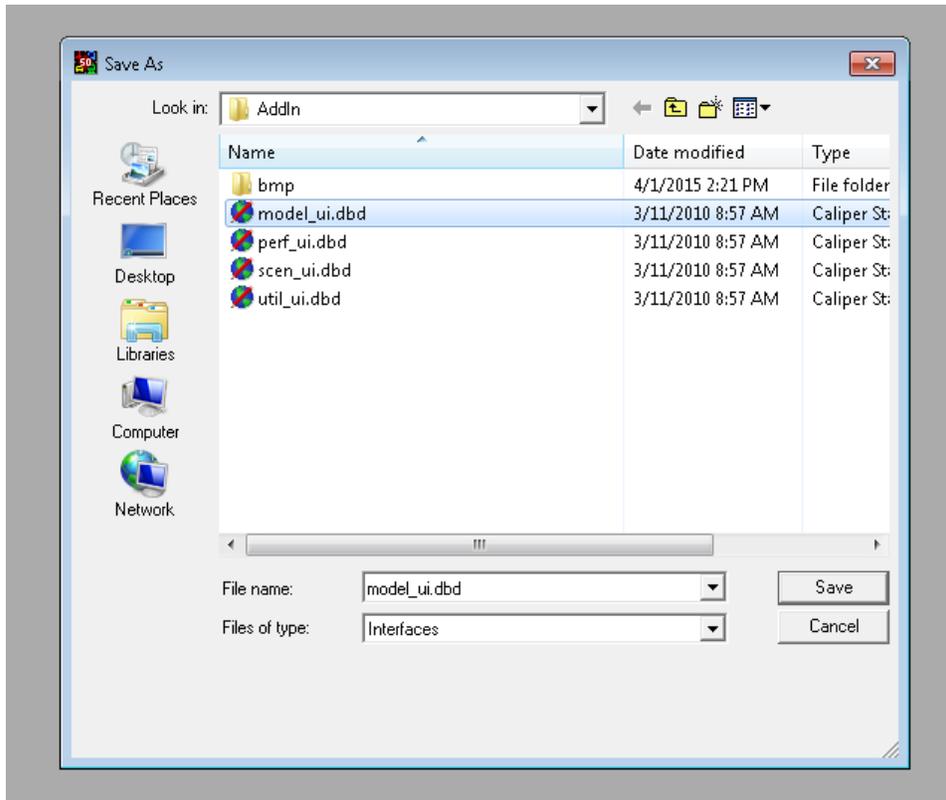
This process must be completed for the remaining.rsc and .dbd file pairs listed at the beginning of this step. After compiling each of the four codes, close the GISDK Toolbox.

3. The final step in model setup is to create a Model Add-In. To start, select "Tools", followed by "Setup Add-Ins…".
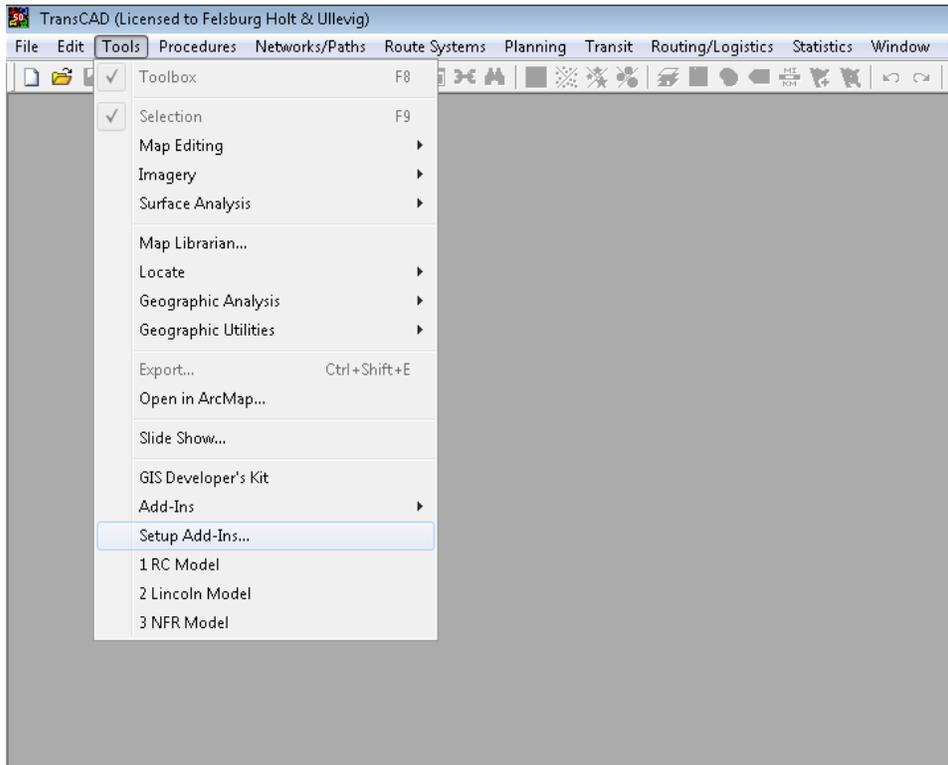
Select "Add" on the right panel to create a new Add-In. Populate the new Add-In with Type: Dialog Box, Description: RC Model, Name: RC Model, and UI Database: C:\RC Model\AddIn\model_ui.dbd.
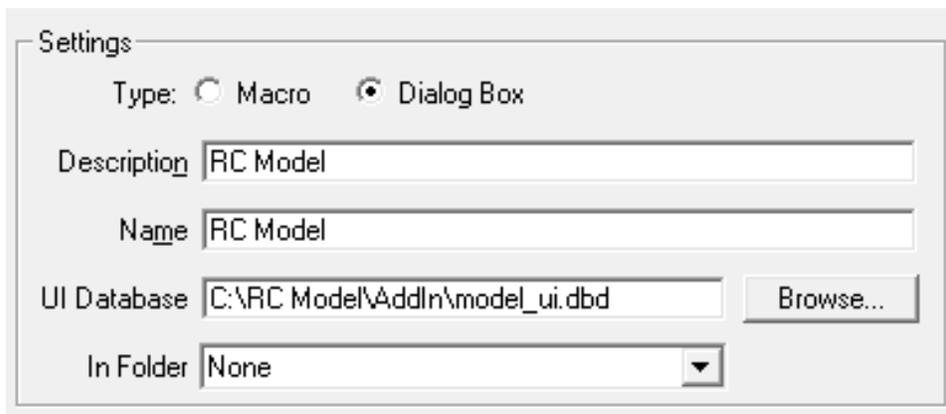
After creating the Model Add-In, click "OK" to finish the setup. The model is now ready to run.

B. Running the Model

The process of executing a model run is consistent with the previous versions of the RCAMPO travel demand model. This Chapter outlines the basic procedures for setting up and running a travel demand model. The Model User's Guide developed in May 2011 as part of RapidTRIP 2035 documents additional detail and options (see **Appendix A**).

1. To set up a travel demand model for execution, use the model add-in developed for the RC Model. To start, select "Tools", then "Add-Ins", and then "RC Model".
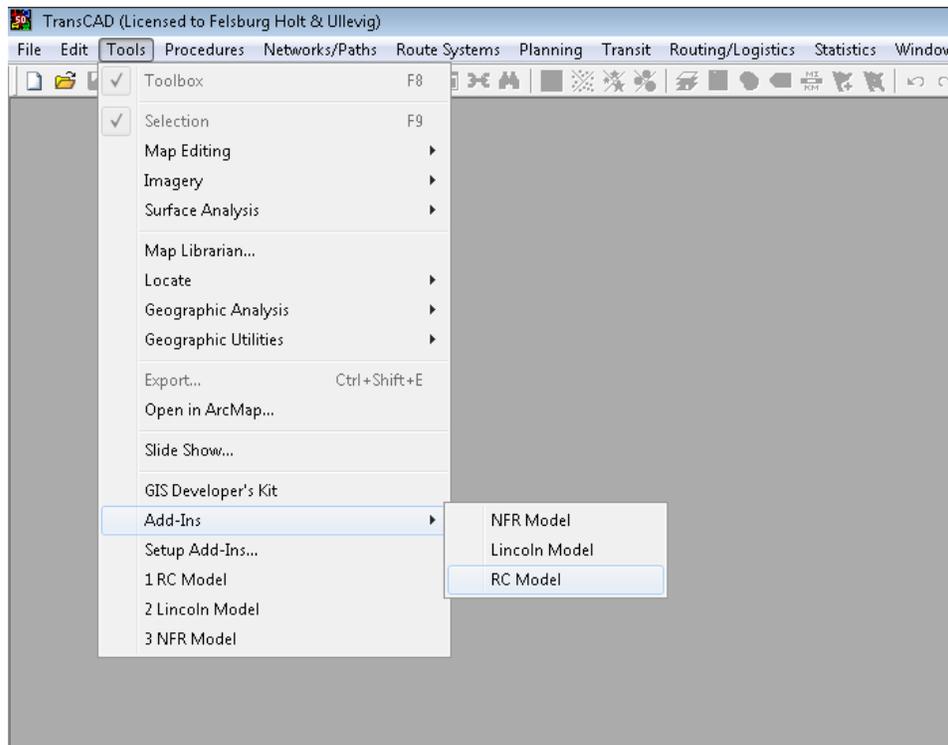
This process opens two customized input boxes. The Scenario Toolbox (right box) is used to develop model scenarios, and the left box is used to execute model runs.
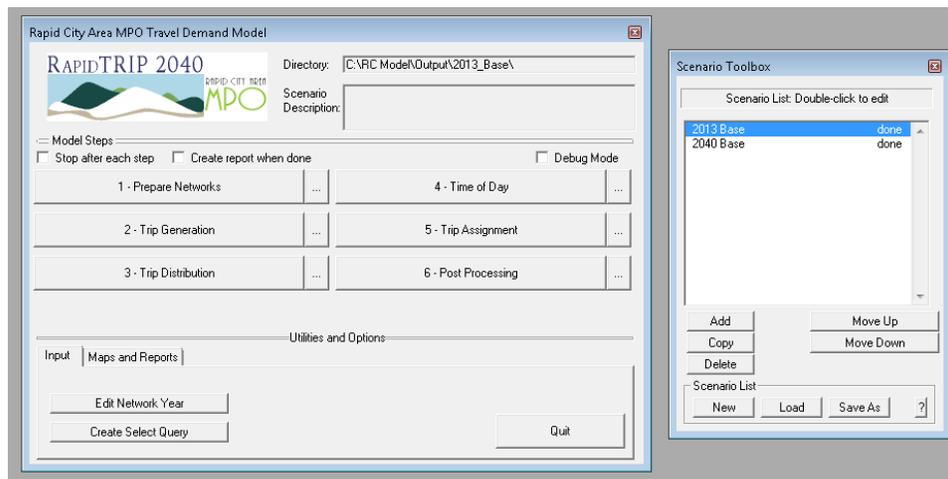
To set up a standard model run, otherwise known as a scenario, select "Add" within the Scenario Toolbox (right box). This opens a Scenario Editor, where the input files for the new run are customized. Set up the model inputs by providing a Scenario Name, selecting the Input Directory, and selecting an Output Directory. The model structure uses a single Input folder for all scenarios, while a unique folder within the Output folder should be created and assigned to each executed model run (for additional detail, refer to **Appendix A**).
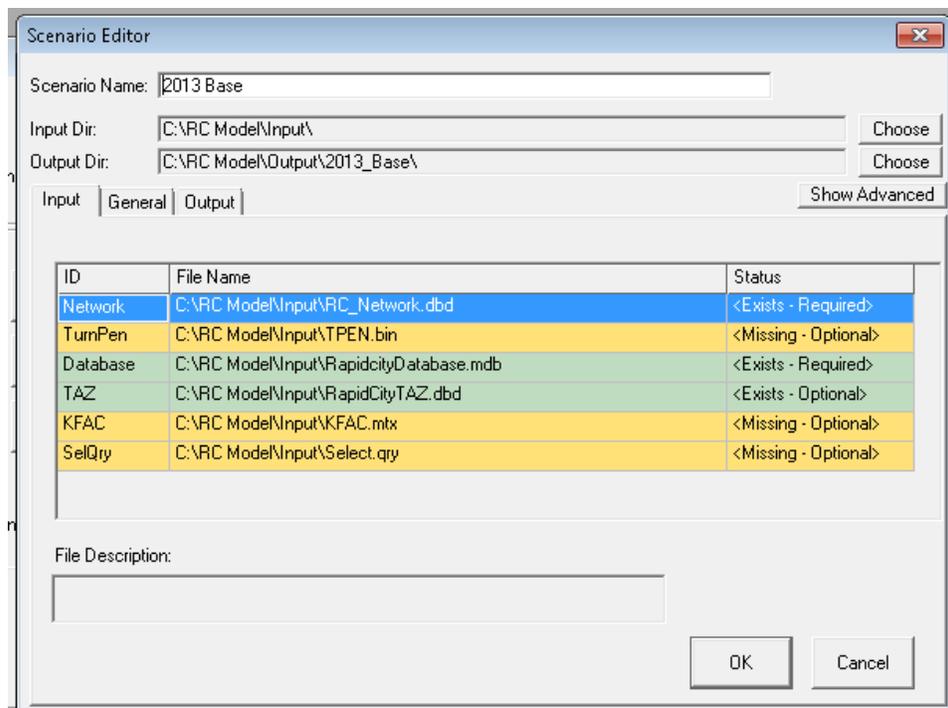
In the sample model setup detailed above, a scenario has been developed to execute the travel demand model for the 2013 Base model. All required input files have been properly identified (see "Status"), and a "2013_Base" folder within the Output folder has been assigned to store the generated output files.

Additional model parameters must be edited on the General tab to finish the scenario setup.
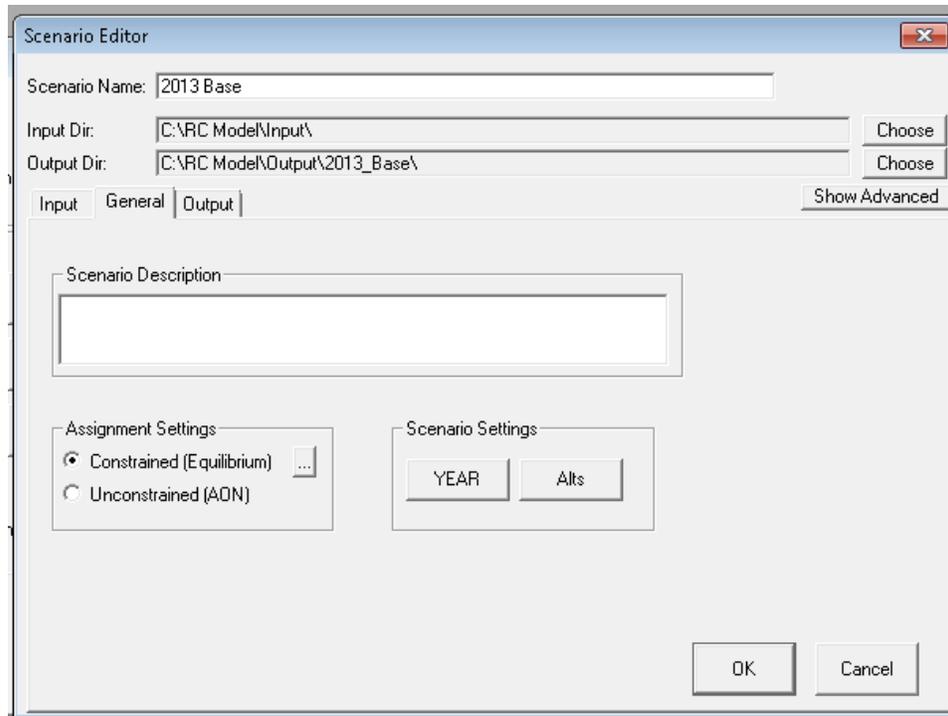
These parameters are found by clicking the "Year" button under the Scenario Settings header.
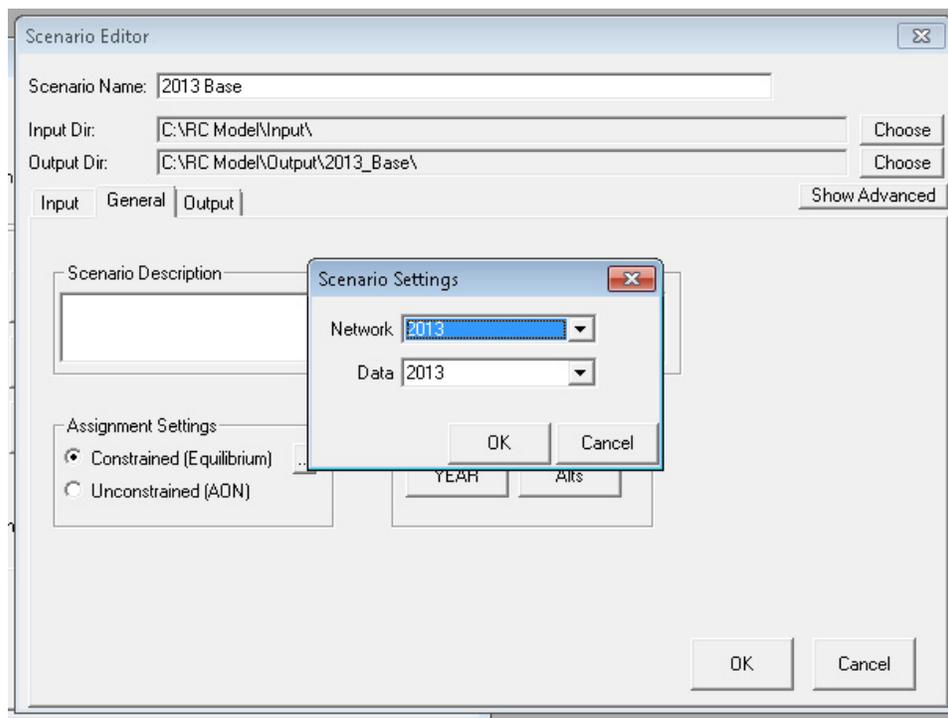
This function allows the user to select the road network year (Network) and socioeconomic data year (Data) for the model run. Three baseline networks are identified within the model input road network that can be used to evaluate different scenarios: 2013 (existing), 2018 (existing plus committed projects), and 2040 (fiscally constrained). Similarly, two baseline socioeconomic datasets within the Microsoft Access database model input can be used to evaluate different land use scenarios: 2013 (existing) and 2040 (future). **Appendix A** includes details for creating additional road network alternatives for when additional model scenarios are desired.

2. Once a model run is set up through the Scenario Toolbox, the model may be executed. To accomplish this process, select the scenario for execution (to execute more than one scenario, hold down the "Ctrl" button and select each desired scenario), and within the left box, under Model Steps, select "1 – Prepare Networks." This process executes the model run(s). At model completion, the model results may be viewed and post-processed. If multiple scenarios are selected, runs will be executed in succession
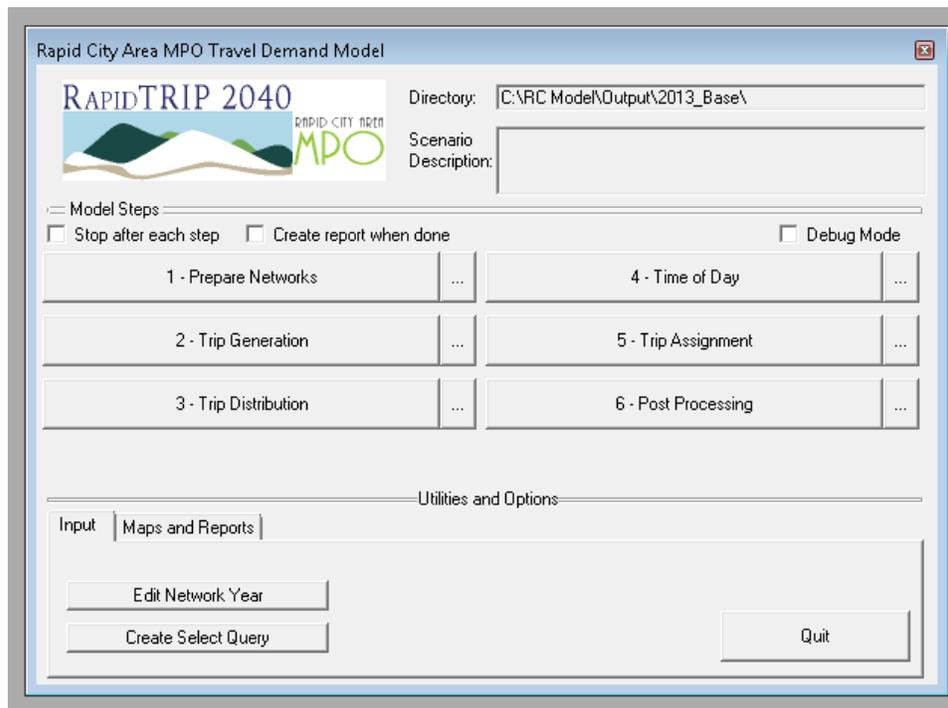
C. Viewing the Model Results and Model Post-Processing

Travel demand models offer insight into future traffic conditions by combining anticipated characteristics of the future transportation network and socioeconomic data. During the development of travel demand models, a base year (existing) model is created, calibrated, and validated against known travel conditions. This process results in a model that is unable to precisely match existing conditions, but can represent many of the travel trends and volume characteristics; and from the successful base model development process, future travel demand models are developed using the existing model framework.

To correct the known inaccuracies of the travel demand modeling process, post-processing procedures are an important step in developing all traffic projections. The *National Cooperative Highway Research Program (NCHRP) Report 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design* details industry recognized standards for model post-processing. Chapter 6 details the Model Output Refinements processes recommended for converting raw future traffic volumes into future traffic projections.

The Output folder designated for during the RCAMPO travel demand model run includes several critical volume output files that are used during the model post-processing step. All volume adjustments use three basic pieces of information - existing counted volumes, base model volumes, and future model volumes - to quantify and account for inherent model inaccuracies. Model volumes that should be used during this process come from the "Flow_Daily.bin" file within the respective model run's Output folder; specifically from the "TOT_Flow" field.

The previous version of this travel demand model used a built-in NCHRP process customized to generate adjusted daily volume projections automatically. This process still runs but is no longer used for model post-processing. Transportation planners using this model should use NCHRP Report 765, local knowledge of the transportation network, and professional judgment to manually complete the model adjustment process.

II.   MODEL CALIBRATION AND VALIDATION

The RCAMPO travel demand model update has been completed as part of RapidTRIP 2040. Updates to the travel demand model have focused on revisions to model inputs to update the base year to 2013 and provide future year forecasts to 2040. Also included in the model update was a review of all four-step model processes with adjustments to various operating parameters, a review of the model performance against known traffic volumes, and validation against collected cellular origin-destination data. A list of recommendations for future model enhancements is provided at the end of this Chapter.

A. Revisions to Model Inputs

The following sections describe changes made to each input file used by the travel demand model during the update process.

1. Road Network

The road network review required updating the base year network, which was previously calibrated to 2008, to the new 2013 horizon. This process included a review of centroid connector location placement, confirmation that roadways contained within the model align with the Rapid City Major Street Plan, and a review of the network attributes. Critical network attributes reviewed during the update included functional classification, number of lanes, and speed limit.

2. Traffic Analysis Zones

Since the previous update, the Metropolitan Planning Area (MPA) has been expanded and 10 traffic analysis zones (TAZs) were added to the travel demand model so that all areas are modeled (resulting in a total of 290 internal zones). The new model areas are located in remote areas of the region in the northeast, north, south, and southeast portions of the MPA. Historically determined TAZ boundaries and definitions for the original zones were used for this update, including the use of four area types: Central Business District (CBD), Urban, Suburban, and Rural.

Neighborhood definitions provide a means for aggregating model statistics and results used during this study (see **Figure 1**). These aggregated zone divisions, expanded to cover the complete MPO area, subdivide the region into characteristically similar areas and provide a useful tool for examining the region.

Figure 1. Neighborhood Boundaries
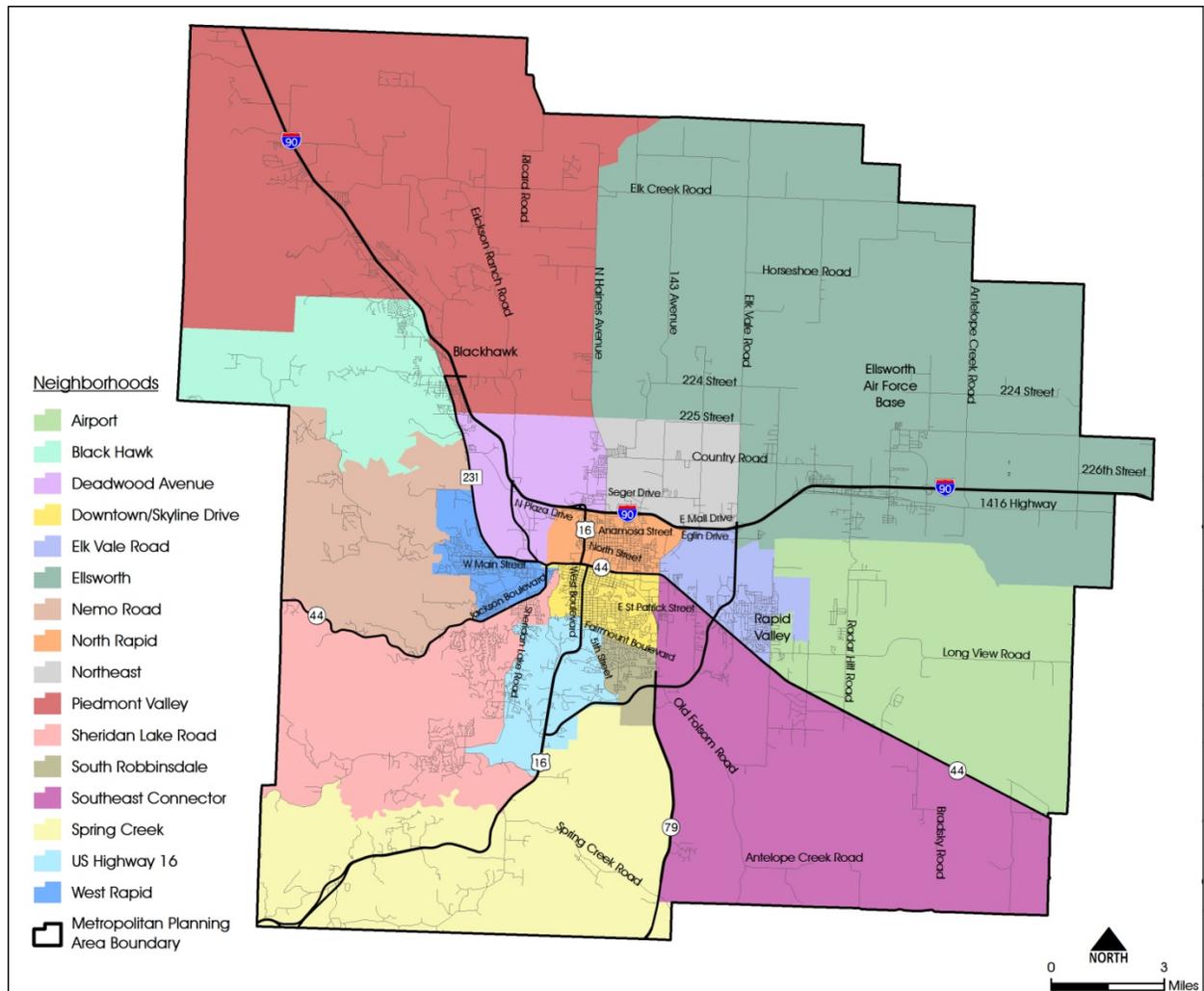
3. *Socioeconomic Data and External Station Traffic Volumes*

All socioeconomic data and external station volumes used by the travel demand model are stored in a Microsoft Access database. This model update required that all inputs be updated with the socioeconomic data revisions performed by RCAMPO staff. Basic inputs into the socioeconomic data tables include the number of households, the average household size, the average auto ownership rates, retail employment, service employment, basic employment, and production employment. Overall, the base model includes 43,219 households and 51,734 employees.

Figure 2 and **Figure 3** provide a view of the 2013 base model total household and total employment frequencies by TAZ, respectively. These plots demonstrate that the relative size of TAZs have generated few zones with very high density except in special circumstances.

Figure 2. Base Model Total Household Frequency
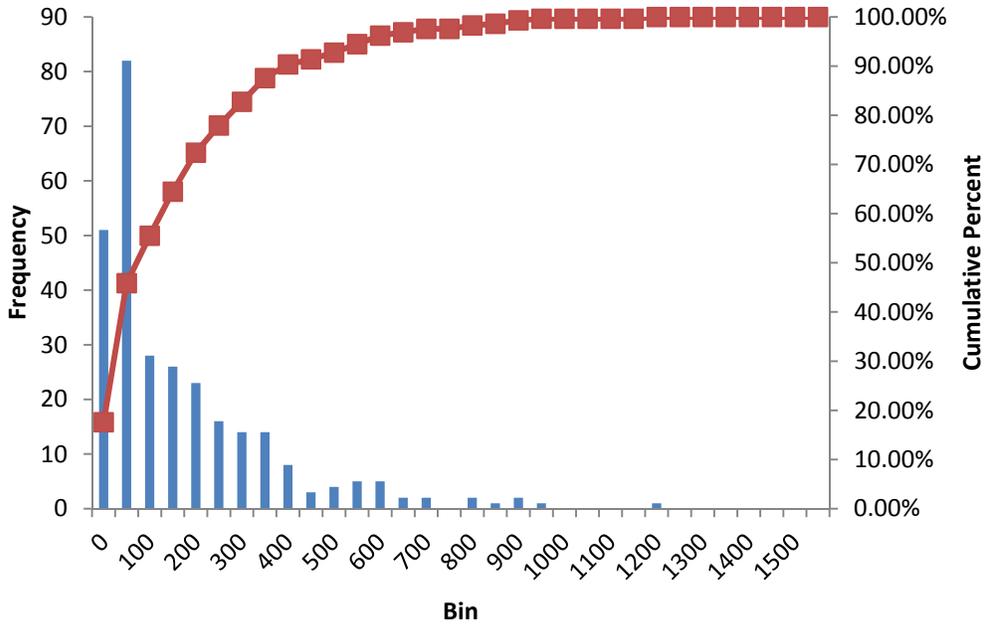
Figure 3. Base Model Total Employment Frequency
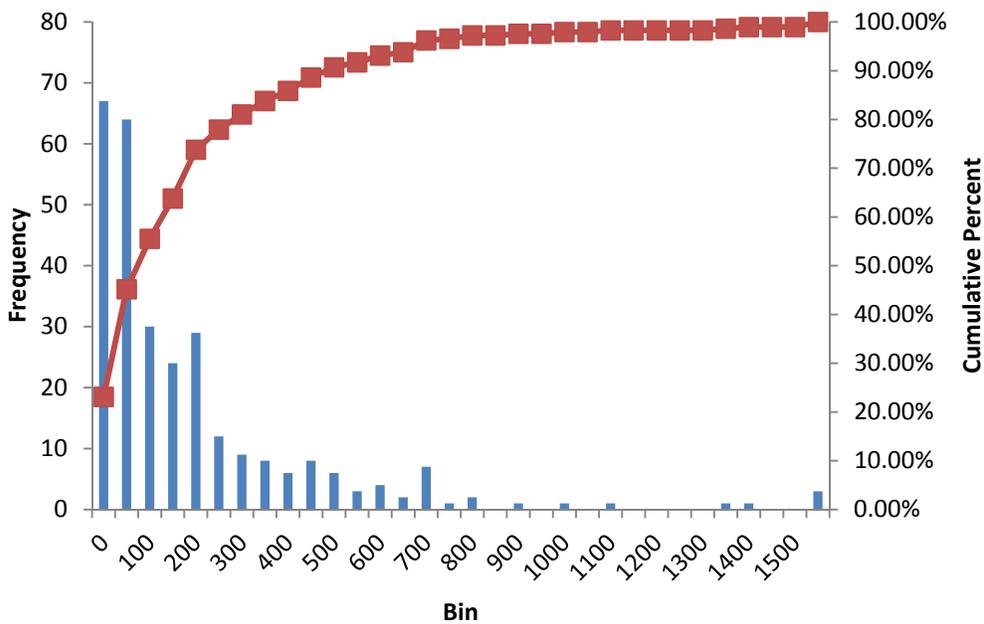
To better reflect trip making characteristics within the region, four zones have been identified as special generators. Special generators are used in travel demand modeling when the trip

generation characteristics experienced by the typical zone are not shared for certain areas due to unique trip making. The RCAMPO travel demand model previously identified four special generators including two zones at Ellsworth Air Force Base, one zone at the hospital, and one zone at the Civic Center. The base year trip generations for these zones were updated for this modeling effort by examining methodologies from the previous model version, known socioeconomic growth within each zone, and information from count locations adjacent to each zone. Calibration included the review of adjacent roadway volumes and screenlines to ensure that proper traffic generation from each special generator occurs. **Table 1** shows the resulting special generator trip generation. The RCAMPO model includes five trip purposes: home-based work (HBW), home-based shopping (HBS), home-based other (HBO), work-based other (WBO), and other-based other (OBO).

Table 1. Special Generator Productions and Attractions

TAZ	Productions					Attractions					Total
	HBW	HBS	HBO	WBO	OBO	HBW	HBS	HBO	WBO	OBO	Trips
64 (Hospital)	201	9,098	228	1,091	407	10,377	4,348	4,328	5,554	5,554	41,187
79 (Civic Center)	0	347	0	207	0	967	302	254	414	414	2,907
140 (Ellsworth AFB)	122	424	160	209	275	1,235	366	314	506	506	4,116
263 (Ellsworth AFB)	536	1,367	541	126	1,171	4,238	1,124	894	1,222	1,222	12,439

External trip making includes two separate trip tables for the model: external-external and external-internal. External-external trips describe vehicle trips which pass through the model area from two external zones with no stops in the region and external-internal trips describe vehicle trips where one trip end is within the region and the other trip end is external to the model area. In total, there are 11 external stations where the model area interacts with the greater transportation network. During the network and TAZ update process, these links were lengthened to incorporate the increased MPA but are still positioned along the same roadways exiting the model area (see **Figure 4**).

Figure 4. External Station Locations
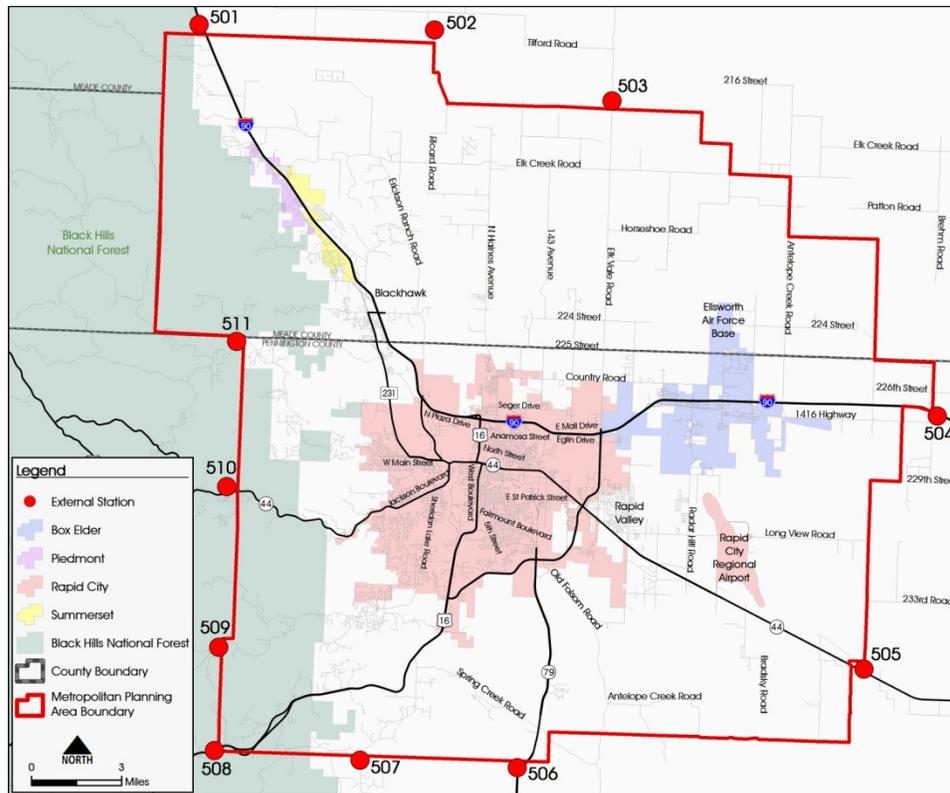
The external station volumes were calibrated, starting with the 2008 travel demand model as the basis, using the cellular origin-destination data and recent traffic counts available from the South Dakota Department of Transportation (SDDOT). The origin-destination data provided valuable insight about the split between external-external and external-internal trip making occurring at each external station. The external-external trip making origin-destination matrix developed for the 2013 base model is shown in **Table 2** and represents trips passing through the region without stopping.

Table 2. 2013 Base Model External-External Origin-Destination Matrix

Station	501	502	503	504	505	506	507	508	509	510	511
501	0	0	0	1,363	53	267	0	110	0	0	26
502	0	0	0	0	0	0	0	0	0	0	0
503	0	0	0	0	0	0	0	0	0	0	0
504	1,363	0	0	0	13	64	0	67	0	0	7
505	53	0	0	13	0	25	0	11	0	0	2
506	267	0	0	64	25	0	0	49	0	0	13
507	0	0	0	0	0	0	0	0	0	0	0
508	110	0	0	67	11	49	0	0	0	0	9
509	0	0	0	0	0	0	0	0	0	0	0
510	0	0	0	0	0	0	0	0	0	0	0
511	26	0	0	7	2	13	0	9	0	0	0

The external-internal trip making represents trips entering the MPA with a stop in the region or coming from the MPA and exiting the region. The trip generation rate proportions among HBW, HBS, HBO, WBO, and OBO trips generated for the previous model were maintained during this model update and factored to equal the observed total trip generation. **Table 3** shows the resulting external-internal interactions.

Table 3. 2013 Base Model External-Internal Productions and Attractions

Station	Productions					Attractions					Total
	HBW	HBS	HBO	WBO	OBO	HBW	HBS	HBO	WBO	OBO	Trips
501	6,008	2,995	3,993	2,764	1,843	1,502	334	444	308	203	20,394
502	83	37	50	35	23	9	5	6	5	1	254
503	83	37	50	35	23	9	5	6	5	1	254
504	3,280	1,455	1,937	1,342	894	364	160	216	149	99	9,896
505	791	351	467	323	215	87	38	51	35	26	2,384
506	2,860	1,267	1,689	1,170	779	317	140	190	129	87	8,628
507	290	128	172	119	79	33	14	19	13	8	875
508	2,316	1,027	1,370	948	631	258	114	151	105	71	6,991
509	250	112	149	103	67	27	10	15	10	8	751
510	1,741	771	1,028	713	474	193	86	116	79	53	5,254
511	538	240	319	221	148	59	24	36	23	17	1,625

B. Model Adjustments

An important step in updating the travel demand model for RapidTRIP 2040 focused on a systematic review of the model parameters from the base 2008 model. The evaluation was based on the 2013 model inputs and an interim executed run. Based on the resulting model outputs and further exploration into critical model processes, several revisions to the model coding have been implemented into the model structure.

To determine how the model should perform, key reference manuals were used to evaluate the RCAMPO model performance in relation to nationally recognized best practices. The following key reference manuals were used during the model review:

- *National Cooperative Highway Research Program (NCHRP) Report 716: Travel Demand Forecasting: Parameters and Techniques*
- *Travel Model Improvement Program (TMIP) Travel Model Validation and Reasonableness Checking Manual Second Edition*

The following sections identify model adjustments made to various portions of the model process. Identified are the reasons for each change and the resulting improvement to model performance.

1. *Trip Generation Adjustments*

During review of the model process, the trip generation step became an area of concern due to high vehicle trip generation rates per household. Further inspection of the trip generation step revealed three model processes that have been adjusted: generalized person-trip generation rates, area type specific trip generation rates, and auto occupancy factors. Adjustments are described as follows:

Generalized Person-Trip Generation Rate Reduction: Trip generation rates were summarized and reviewed, and found to generate too many person trips per household. **Table 4** provides a comparison of trip rates produced by the unadjusted model, with rates provided in the *TMIP Travel Model Validation and Reasonableness Checking Manual*. The trip generation rates were adjusted downward to match rates recommended in Tables 5.2 and 5.6 of the manual.

Table 4. Summarized Person-Trips Generated per Household

Trip Type	Unadjusted Model	TMIP Trip Rates
HBW	2.2	1.44
HBO	6.2	5.04
NHB	4.8	3.41
TOTAL	**13.2**	**9.87**

Area Type Specific Trip Generation Rates: The unadjusted model altered trip generation rates based on area type. Review of unadjusted model volumes did not support such a change in trip generation rates. **Table 5** shows how the trip generation rates were adjusted to eliminate this parameter.

Table 5. Area Type Specific Trip Generation Rate Factors

Area Type	Unadjusted Model	Adjusted Model
CBD	1.2	1.0
Urban	1.2	1.0
Suburban	1.0	1.0
Rural	0.7	1.0

Auto Occupancy Factors: Review of unadjusted model volumes generated too many trips per household compared to rates provided in *NCHRP Report 716*. The unadjusted model auto occupancy rates were altered to reflect higher persons per vehicle. **Table 6** shows how auto occupancy rates were adjusted upward to match rates recommended in Table 4.16 of the NCHRP Report.

Table 6. Auto Occupancy Rates by Trip Purpose

Trip Type	Unadjusted Model	NCHRP 716 Table 4.16
HBW	1.05	1.1
HBS	1.4	1.75
HBO	1.52	1.75
WBO	1.11	1.66
OBO	1.54	1.66

In combination, these adjustments to the trip generation step resulted in a decrease in vehicle trips per household from the unadjusted model levels of 9.1 trips per household down to 6.9 trips per household, which aligns with national expectations.

2. *Trip Distribution*

During review of the model process, the trip distribution step became an area of concern due to short average vehicle trip lengths (initial run generated average trip length of 5.5 miles). Further inspection of the trip generation step revealed a need to revise the gravity model to lengthen trips generated within the model.

Gravity Model Parameters: Revisions to the gravity model focused on adjusting the gravity model to lengthen trips generated for each trip purpose. *NCHRP Report 716* documents that HBW trips are the longest (in minutes), with all other trips for small urban areas equaling approximately 90 percent of the travel time (in minutes) (Table C.10). These statistics were used as guidance to adjust the gravity model parameters to lengthen trips occurring in the

model. **Table 7** shows that changes to the gravity model parameters were significant and increase average trip lengths from 5.5 miles to 8.3 miles.

Table 7. Trip Length in Miles by Trip Purpose

Trip Type	Unadjusted Model	Adjusted Model
HBW	8.7	10.2
HBS	6.0	7.9
HBO	7.0	8.3
WBO	4.0	8.0
OBO	3.5	7.7
Overall Average	5.5	8.3

In combination, these adjustments made during the trip generation and trip distribution steps of the model have resulted in significant changes to the overall model vehicle miles traveled per household reported by the model. By multiplying the average trip length (miles) against the average number of trips per household, an average vehicle miles per household is calculated. **Table 8** demonstrates the resulting changes to the vehicle miles per household calculation between the unadjusted and adjusted models.

Table 8. Vehicle Miles of Travel per Household

Metric	Unadjusted Model	Adjusted Model
Average Trip Length (miles)	5.5	8.3
Trips per Household	9.1	6.9
Vehicle Miles of Travel per Household	50.4	57.3

While the unadjusted model reported a vehicle miles of travel per household of 50.4, which is low but not obviously in error, the components composing this metric were poorly calibrated and resulted in model assignment that poorly replicated anticipated travel behavior throughout the region compared to national averages. Based on the adjustments made to the model parameters, the new adjusted model has made strides to correct the model metrics and now reports longer trip lengths with fewer trips per household.

3. *Trip Assignment*

During review of the model process, revisions to the trip assignment step of the travel demand model were completed. These changes focused on simplifying several factors controlling the road network initialization and value attribution. Changes to the trip assignment parameters included simplifying the friction factor adjustments (which reduce speed limit based on facility type and were over penalizing the lower class facilities), alpha parameters (which affected the volume-delay function and were over penalizing the lower class facilities), and capacity values (which set capacities too low for all lower class

facilities). Combined, these three parameters discouraged use of the lower class facility types within the model, resulting in significant over assignment of volumes to high class facilities. Adjustments to these parameters have been combined with all previous alterations and resulted in the following model performance and validation.

C. Model Performance

The improved performance of the RCAMPO travel demand model has been accomplished through careful analysis of the 2013 Base model volumes compared to known count data. **Appendix B** provides the performance by count station. The following sections highlight the performance of the model on an aggregate level by examining the performance by screenline, facility type, neighborhood, and area type.

1. Performance by Screenline

Existing count data were collected from SDDOT, RCAMPO, Counties of Meade and Pennington, and Cities of Box Elder and Rapid City, compiled, and used during the model calibration. Based on these count stations, 22 screenlines were developed for evaluation during the calibration process. The goal of using these screenline locations was to identify unique travel flows and to evaluate the performance of the model compared to known data.

The screenline location's identified for this study are generally consistent with those used for previous model calibration. The most significant difference is the lack of a north-south screenline in the northwest portion of the MPA. Original intent included a screenline in this location, but a lack of reliable count data on I-90 made developing the screenline volumes at this location unfeasible.

Figure 5 displays the location of the count and screenline locations, while **Table 9** provides detail about each screenline's performance.

Figure 5. Count and Screenline Locations
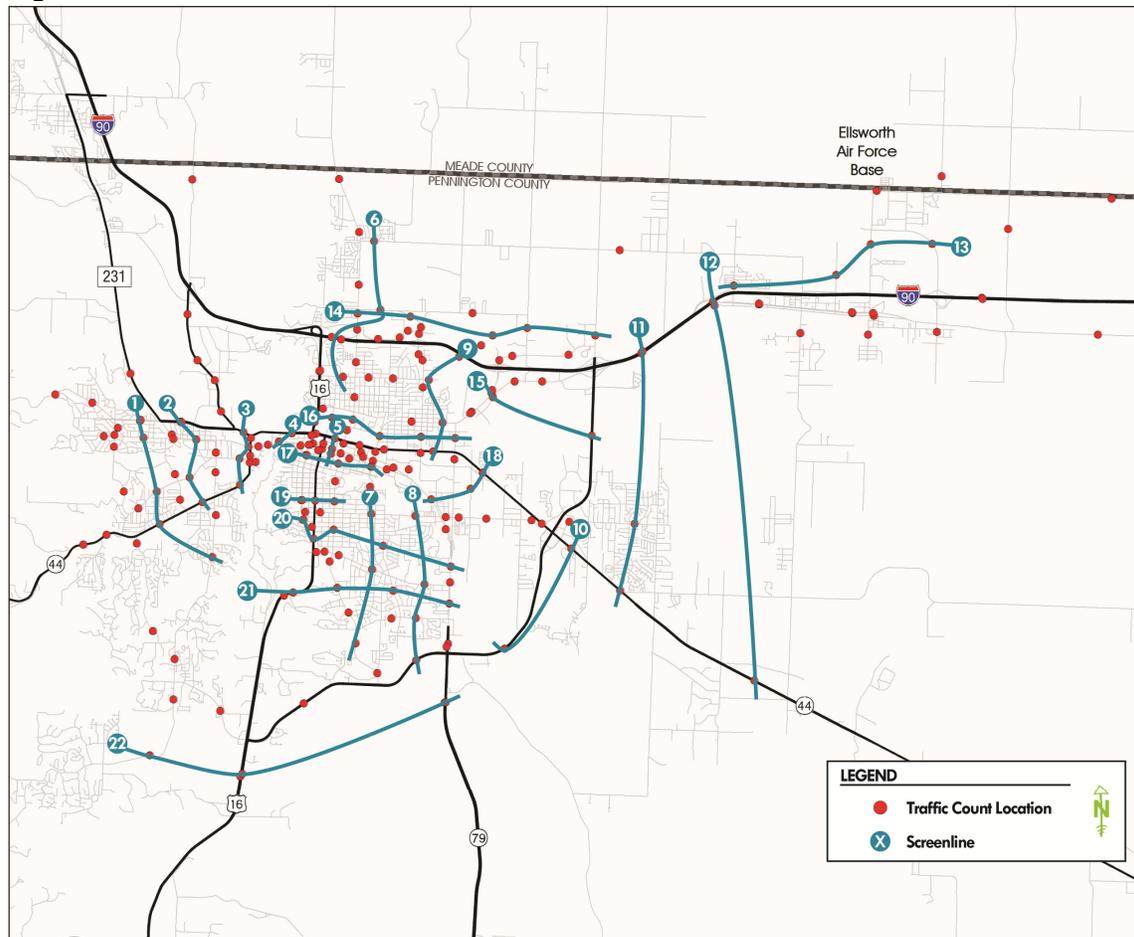
Table 9. Screenline Performance

Screenline	Count Volume	Model Volume	Model/Count Volume
1	47,673	42,834	90%
2	58,225	47,245	81%
3	79,538	71,796	90%
4	61,925	72,794	118%
5	52,643	59,734	113%
6	47,625	58,824	124%
7	33,950	24,090	71%
8	43,738	34,363	79%
9	51,013	57,089	112%
10	33,095	26,473	80%
11	49,809	52,563	106%
12	21,510	18,141	84%
13	17,893	17,990	101%
14	33,149	24,340	73%
15	37,828	45,761	121%
16	91,690	118,511	129%
17	33,401	27,648	83%
18	28,424	35,570	125%
19	46,739	50,040	107%
20	63,445	72,477	114%
21	51,995	42,332	81%
22	34,948	29,080	83%

Screenlines were considered to be well-performing when assigned model volumes compared to counted volumes were within 20 percent. This occurred for 15 of 22 screenline locations. Of the poorer performing screenlines, all locations matched counts within 30 percent.

2. *Performance by Facility Type*

Table 10 and **Figure 6** provide detail about the performance of the model by facility type. Overall, the higher class facilities (Freeway and Principal Arterial) provide better relative performance, while lower class facilities struggle to receive model volumes that match the counted data. This type of performance is not uncommon, especially for smaller model areas (like the MPA) where the ability to identify and measure prominent lower class facilities is difficult and volumes tend to spread among many routes.

Table 10. Performance by Facility Type

Facility Type	Number of Links	NCHRP 716 Acceptable Error	RCAMPO Model
Freeway	8	+/- 7%	8%
Principal Arterial	120	+/- 10%	5%
Minor Arterial	44	+/- 15%	-34%
Collector	27	+/- 25%	-47%

Figure 6. Performance by Facility Type
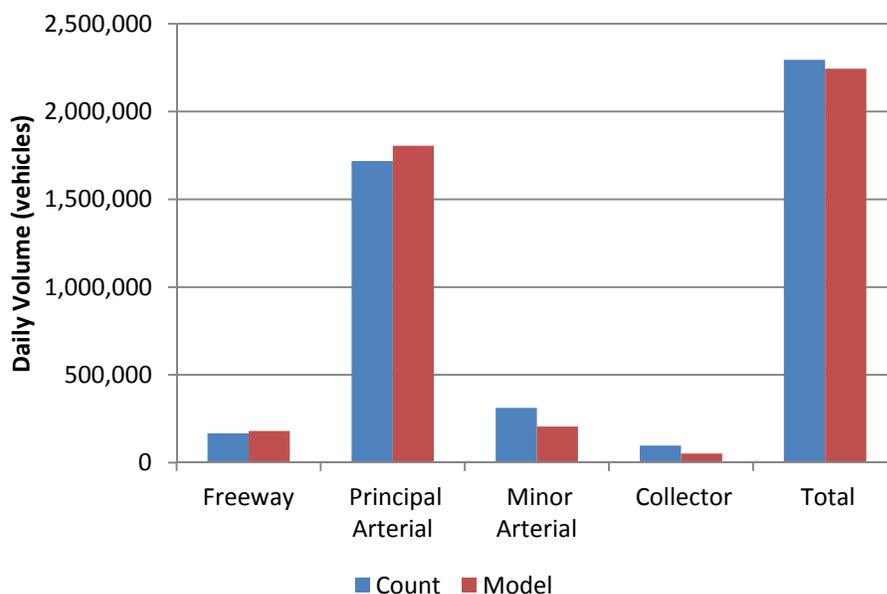
3. Performance by Neighborhood

Figure 7 provides detail about the performance of the model by neighborhood. Overall, the spatial performance of the model is well matched to observed counts. Areas of difficulty are in the North Rapid and West Rapid Neighborhoods, where road networks are much more dense than are included in the travel demand model and the ability to easily measure model performance is hampered.

Figure 7. Performance by Neighborhood
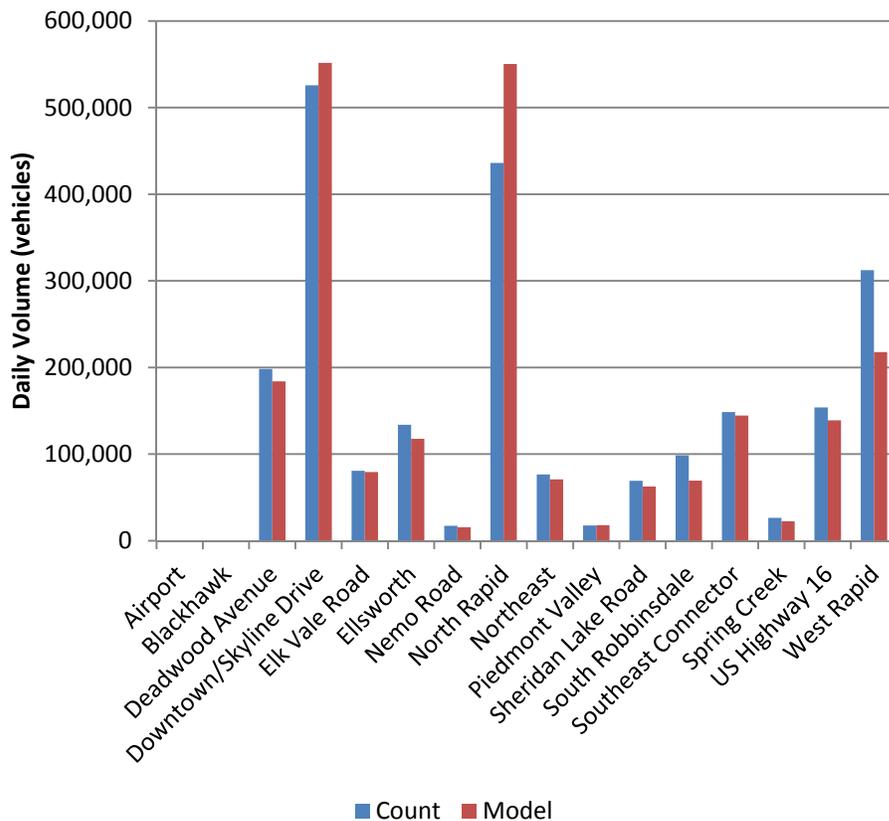
4. Performance by Area Type

Figure 8 provides detail about the performance of the model by area type. Overall, the regional performance by land use density is well matched to observed counts.

Figure 8. Performance by Area Type
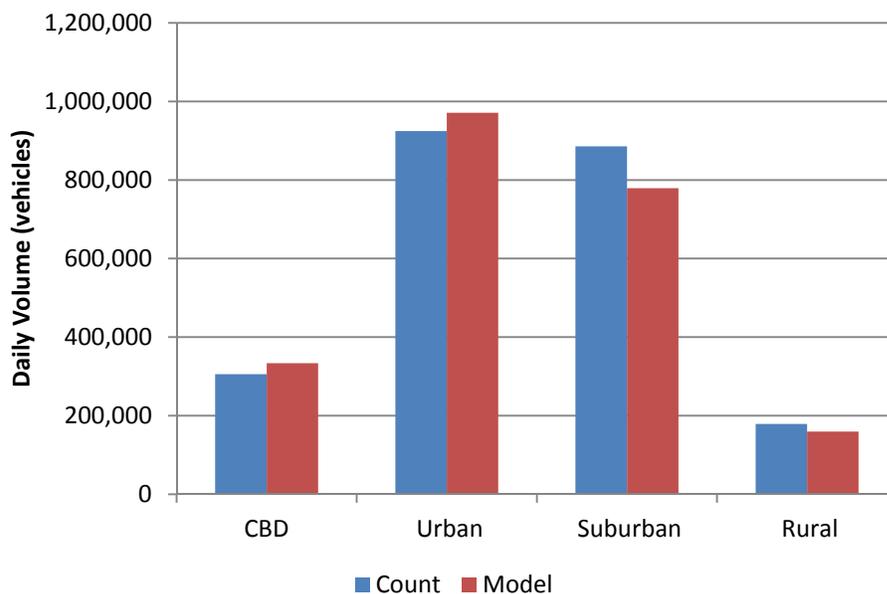
D. Model Validation

1. Introduction

With the goal of improving the calibration and validation process, RCAMPO completed the *Rapid City Area Origin-Destination (OD) Study (June 2014)*. The data collection effort was completed by AirSage, a firm that collects and analyzes real-time mobile signals to provide anonymous data of the location and movement of mobile devices. This dataset provides insight into where people are located and how they move about over time. AirSage's WiSE (Wireless Signal Extraction) technology extracts data from wireless carrier networks, as generated by devices in the normal course of operation (e.g., making phone calls, texting, surfing the Web). The data collection process relies on mobile devices' frequent communication with the network, both during use and when the mobile is in idle mode. AirSage technology anonymizes the data stream ensuring user privacy and performs multiple stages of analysis to monitor the location movement of mobile devices, and thus the population of mobile users. The initial findings of that data collection effort were reported in the *Rapid City Area Origin-Destination Study,* which is included as **Appendix C**.

In performing this model update, data from the *Origin-Destination Study* has been incorporated into the model calibration process. The following section provides additional

insight into the nature of the AirSage data collection and processing methodology followed by a comparison of the origin-destination data to the 2013 Base model in the form of a model validation.

2. *AirSage Methodology Overview*

This section provides an overview, clarification, and assessment of various steps and assumptions in the AirSage data collection, data expansion, and summarization process. This review is based on the literature AirSage provided, along with data provided to the agencies and other available information.

a. Device Location Processing

In its report about device location processing, AirSage mentions that:

> *Time-stamped locations (latitude/longitude) are generated for each mobile device (e.g. a cellphone), utilizing the network signaling data generated each time a mobile device interacts with the mobile network. Interaction with the network comes in many forms including sending and receiving text messages or receiving updates or streaming data to/from mobile devices. "Processed Sightings" are created using this information in addition to factoring in the quality of the device and removing any static that might occur within the network that has the potential to obscure the data.*

The National Capital Region Transportation Planning Board (TPB) and Metropolitan Washington Council of Governments (MWCOG) also purchased and analyzed AirSage data recently. Their staff members noted in a presentation that trip movements are identified by time and distance criteria, namely:

- Trips O-Ds must be at least 1.2–1.5 km (0.75–0.93 miles) in distance;
- If a device stops at a location for 5 or more minutes, a destination is assumed.

For more information, see http://www.mwcog.org/uploads/committee-documents/ZV1YW1Zc20140718142637.pdf.

These "assumptions" are appropriate and logical when used in the context of converting cellular locations to trips made by a person. However, they introduce errors when comparing cellular-based travel data to outputs of a regional travel model. For example, in a dense city center or downtown, the distance threshold can potentially miss short trips where both the origin and destination are within a mile of each other. While these trips are included in the travel model, AirSage may neglect to include many short trips in the final trip matrices. Similarly, for device stops less than five minutes in length, the AirSage process may fail to accurately capture trip chaining.

These assumptions affect comparisons between the travel model output and AirSage data, and should be treated as one of the areas of weakness of the origin-destination data.

b. Activity Pattern Analysis and Point Generation

In its report about activity pattern analysis and point generation, AirSage mentions that:

> *All of the "Device Locations" (Home, Work, etc.) for a device are determined over the course of four to six weeks. The data are run through a series of pattern recognition and statistical clustering algorithms to determine repeated and irregular trip patterns and primary activity locations for a device. These patterns and locations are used to classify trip purpose*.

AirSage also mentions that a home location is defined as a place where a subscriber (of the cellular device) spends most of its time between 9:00 pm and 6:00 am and a work location is determined by looking at where subscribers spend the majority of their days between 9:00 am and 5:00 pm. All remaining locations, with a 5+ minute stop inside a mile-wide radius, are defined as "others" and the trip legs are formulated around these to arrive at a daily trip pattern.

Although these assumptions are reasonable, agencies should consider them when looking at areas with a medium to high population of evening/night shift workers or college students. These special groups generally never form a large part of a travel model, thus they should not affect the comparison too much. Therefore, this location tagging and cluster analysis is a strong feature of this comparative analysis.

c. Population Synthesis

In its report about population synthesis, AirSage mentions that:

> *Using the observed sample devices, the movements for a full population is synthesized based on the penetration rates and device quality. Penetration rate is the ratio of number of resident devices observed by AirSage in a given census tract to the 2010 census population. Device quality refers to the number of daily sightings observed for each device. This factor feeds a model which adjusts for the probability of missing trips due to limited visibility of some devices.*

Based on the information provided by AirSage, this could be one of the main strengths of the cellular data. This could also explain how in most cases the comparison of outputs from a well-calibrated travel model match very closely with AirSage data at aggregate levels.

However, it is also important to note that one factor not mentioned in the AirSage documentation is the percentage of people owning smartphones. AirSage, as mentioned in the literature presented earlier, can only collect a person's location if the cellular device interacts with the network. Smartphones interact with the network a lot more frequently (for calls, texts, internet access, locations services, etc.) than traditional cell phones. Thus, an area with a very low percentage of smartphones can potentially skew the data in the wrong direction. AirSage mentions that device quality is used in factoring

for probability of missing trips but details of that "factoring model" are unavailable to the general public or the agencies.

d. Trip Analysis

In its report, AirSage mentions that:

> *Each trip is analyzed and classified into various interesting categories such as resident class of subscriber, trip purpose, time of day and day of week.*

In essence, based on the home, work, and other location of the cellular device derived from the 4 to 6 weeks of preliminary observation and clustering analysis, a trip purpose is assigned to each trip. Because the AirSage data cannot identify any other specific location type except home and work based on the clustering analysis, results from travel models with trip types such as HBS have to be aggregated with HBO trips for comparative purposes. As a result, all analyses have been aggregated to compare the model outputs to HBW, HBO, and non-home based (NHB) trips.

As for this study, AirSage data can be used as a way to generate external-internal and external-external trip matrices for use in travel models. These matrices are traditionally derived from license plate or Bluetooth surveys and are a valuable application of the origin-destination data. The following sensitivities for the application of the data are discussed below.

A study area has to be defined before beginning the AirSage data analysis so that the devices in the area can be designated as those belonging to a resident (those living in the study area) or a visitor, such as someone whose cellular devices are seen for the first time in an external zone. AirSage suggests that an external zone be defined as a 30- to 45-minute travel time buffer created around the study area to/from the external zones.

At the edges of a travel model, these external zones can stretch 30 to 40 miles in each direction, thus potentially adding many external-external trips to the data set that never pass through the study area. At places where these external zones include mid- to large-size cities with trips to and from each other, this error can be amplified substantially. In addition, when applying factors to expand the sample of trips from cellular devices, the population of the study area alone is used. In that case these external-external trips will form a larger than usual piece of the total trips in the dataset that potentially should either not be a part of the dataset or should have been grown using different population growth factors.

For example, in the case of RCAMPO, external zone 506 contains medium size cities like Belle Fourche, Spearfish, and Sturgis. When sample cellular trips between these cities are grown based on the population in the study area, the external-external portion of the dataset become artificially large (approximately 30 percent in this case). This

study resolved this issue by adjusting trip generation to recognize only trips that pass through the internal zones of the MPA.

With these strengths and weaknesses in mind, the remainder of this Chapter will focus on comparing the AirSage data to the RCAMPO travel model outputs.

3. *AirSage Data Comparison to RCAMPO Travel Model – Total Trips*

This section focuses on various dimensions across which AirSage data were compared with the 2013 Base RCAMPO model. For the purposes of comparison, the data from an average weekday in the month of April/May 2013 were used (a one month period spanning the two months). Thus, for the remainder of this report, the term "AirSage Data" refers to an average weekday in April/May unless stated otherwise.

Table 11 presents the total number of trips in the travel model and the AirSage data. The trip types are internal-internal, external-internal, and external-external trips. As was discussed earlier, the external-external portion of the trips for the AirSage data is much higher (approximately 30 percent of total trips) when compared to the travel model (approximately 1 percent). It is believed that the main reason for this is the size of the external zones and the presence of mid to large size cities within those zones.

Because the external-external trips form a small part of the travel model (approximately 1 percent), for the rest of the analysis and results presented in this report the external-external trips are removed from the comparative analysis so that the results are not adversely skewed by their large presence in the AirSage dataset.

Table 11 presents the disparity between the overall trip generation when comparing the model and AirSage. Overall, total AirSage trips are 20 percent higher than those of the model.

Table 11. Total Trips by Type (1,000s)

Trip Type	Model		AirSage	
	Trips	**%**	**Trips**	**%**
Internal-Internal	261	85%	314	63%
External-Internal	40	13%	50	10%
External-External	4	1%	137	27%
Total	305	100%	501	100%
Internal-Internal & External-Internal	301	99%	364	73%

Table 12 presents the breakdown of trips by trip purpose. This comparison recognizes that while the overall trip generation by AirSage data is greater than the model, the trip splits by purpose type align.

Table 12. Travel Model vs AirSage Data (trips in 1,000s)

Purpose	AirSage Trips	AirSage Percent	Model Trips	Model Percent
HBW	88	24%	68	23%
HBO	193	53%	136	45%
WBO	34	9%	31	10%
OBO	48	13%	66	22%
TOTAL	**364**	**100%**	**301**	**100%**

As discussed previously, the AirSage methodology to produce overall trip totals require data expansion of the cellular data sample which requires assumptions about the relationship between the population and sample size and is susceptible to error. Another source of error within the AirSage data relates to how special generators are handled in the model; for example, future sections describe an overproduction of trips at Ellsworth Air Force Base which impacts the overall trip numbers. In summary, processes related to the generation of total trip generation in the AirSage data process are not exact and could be resulting in the differences between the AirSage data and model.

In response to these inconsistencies between the total trip generation reported by the travel demand model and the AirSage data, there developed a need to reconcile data sources during the final calibration. Key in the calibration process was ensuring that count station and screenline comparisons reflect reasonable model volumes. Based on a comparison of the model to known count data, the trip generation rates for the region were adjusted to align.

The other aspect of this table which is helpful is a comparison of trip generation by purpose. By purpose, the HBW and WBO trip percents match well, with some variation between HBO and OBO. Overall, these shares confirm that the model trip generation reflects trends seen in the AirSage data.

4. *AirSage Data Comparision to RCAMPO Travel Model – Zone Level*

As presented in Section 2.a., comparing AirSage data to regional travel model outputs at a zone level is not generally advisable. Before aggregating TAZ trips to neighborhoods or

major districts, this section demonstrates that the same would be true for the RCAMPO travel model.

Figure 9 shows the total number of model trips originating at a zone plotted against the AirSage dataset on a log scale. A correlation of 0.28 shows that there is little correlation between the two data sets when compared for the 290 internal model zones but the data do appear to be clustered around the y=x line.

Figure 9. Zone Level Total Trips by Origin Zones (290)
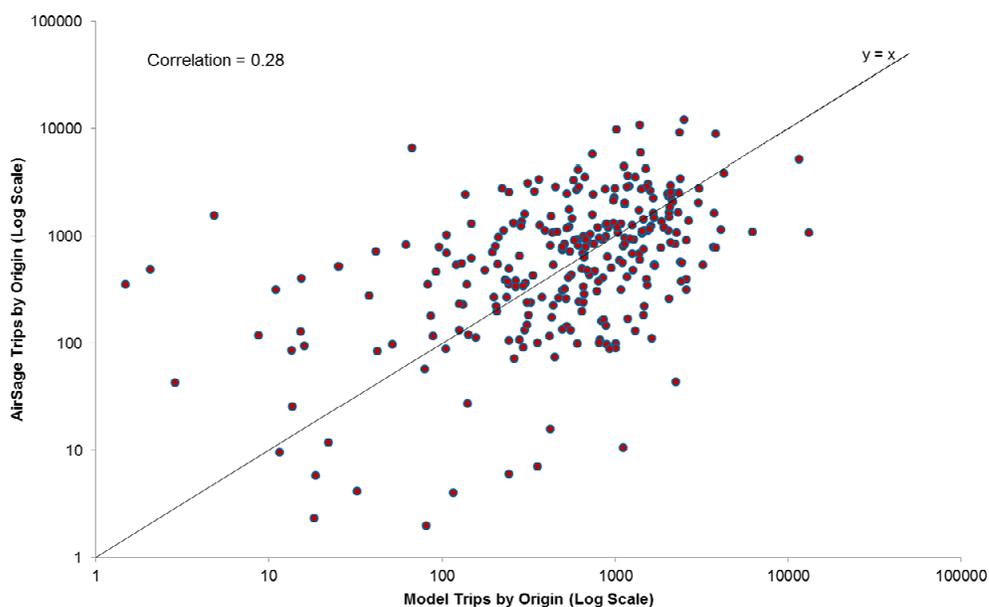
Figure 10 shows the absolute and percent error rate plotted against each other for the model outputs and AirSage dataset. Ideally, most of the error points would be clustered near the bottom left corner of the chart (signifying low absolute and percent error), but **Figure 10** shows that at a zonal level there are both high absolute and percent errors. Thus, it can be concluded that comparison of the data at a very disaggregate level is not appropriate.

Figure 10. Regional Total Trips – Error Rate
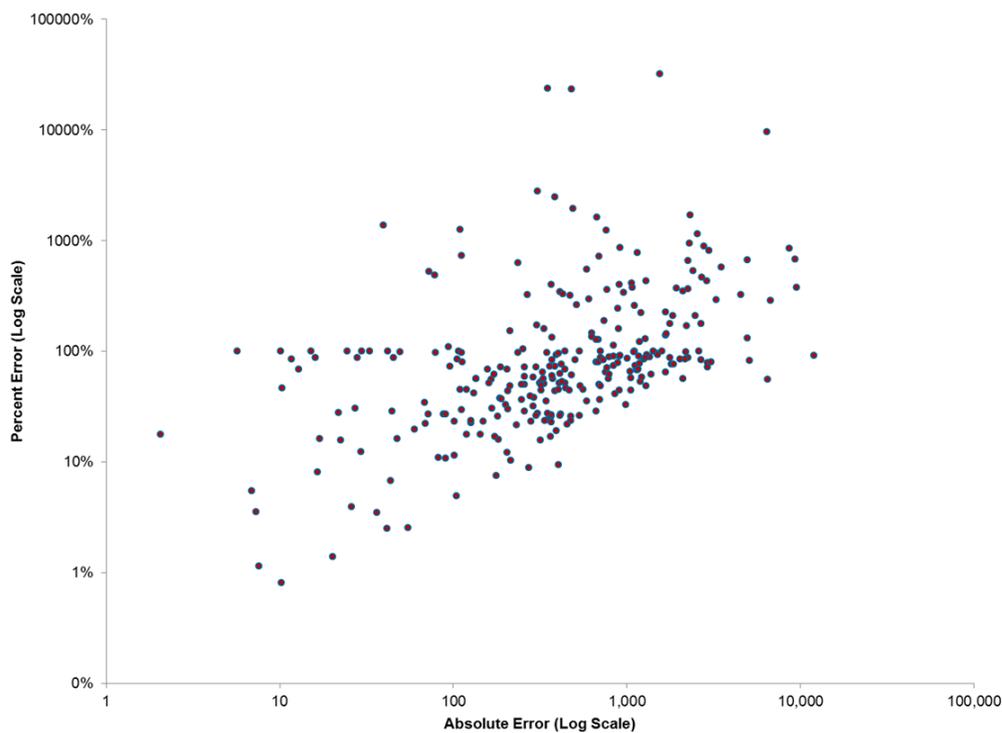
Plotting the total number of trip destinations in a zone also yields a nearly identical chart as **Figure** 9 (correlation = 0.28), but an interesting comparison with the destination can be made by plotting the total HBW trips with destinations in a zone against the total employment in that zone. Ideally, one would expect a linear correlation between the two because employment is the only attraction for HBW trips to a zone.

Figure 11 shows that while the zonal HBW trips aggregated by destination for a zone are not well correlated with the total number of employment opportunities in that zone, there is a general trend of increasing HBW destinations with an increase in employment.

Figure 11. HBW Destinations vs Employment – Model

Model HBW destinations

y = 0.3858x + 135.31
R² = 0.0961
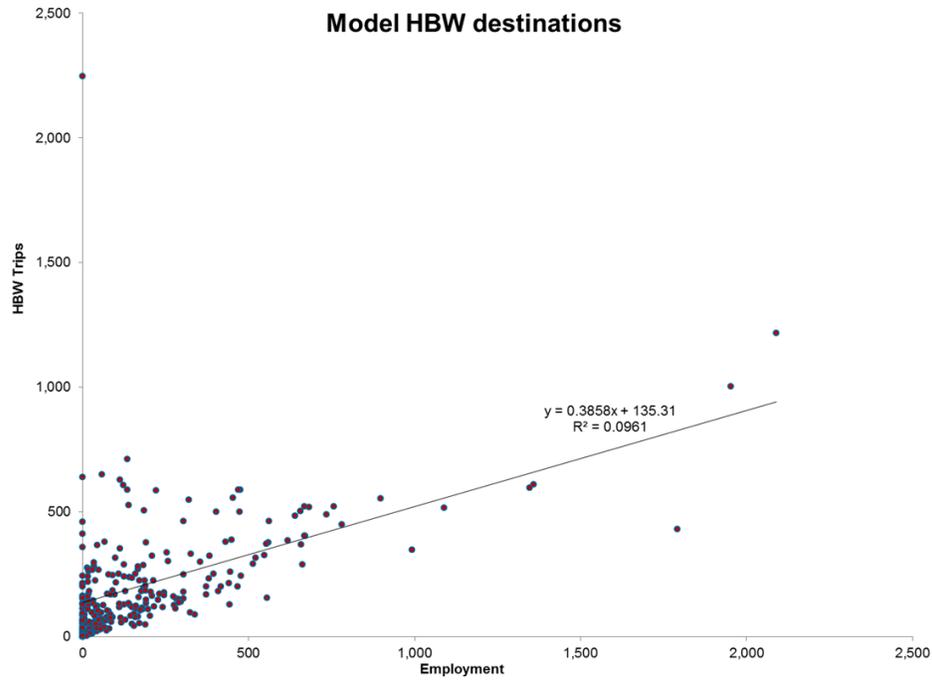
Figure 12. HBW Destinations vs Employment – AirSage
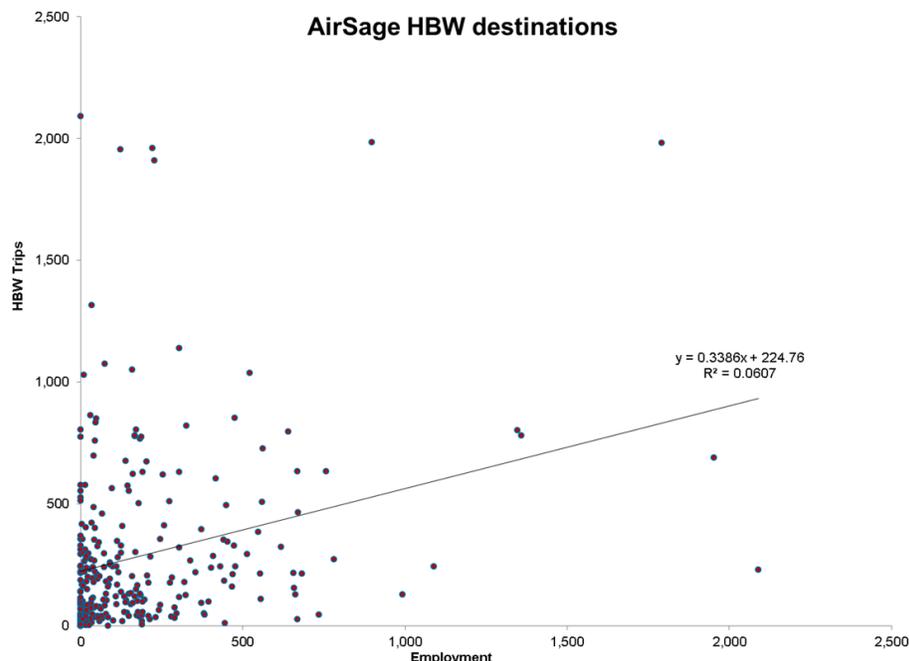
On the other hand, **Figure 12** shows that AirSage work trip destinations are not correlated with zone level employment locations and there is no general trend of increasing HBW destinations with an increase in employment. This comparison highlights the poor zone level correlation within the AirSage data.

This study also looked at the comparison between the two datasets for one special area: Ellsworth Air Force Base. Ellsworth Air Force Base consists of two separate special generator zones in the travel model. **Table 13** presents the comparison of the model outputs vs AirSage, which has higher trips for all trip purposes. Overall AirSage data show almost three times the number of trips in that area as suggested by the model.

Table 13. Ellsworth Air Force Base

Purpose	AirSage Trips	Model Trips
HBW	3,503	2,688
HBO	7,540	1,476
WBO	2,265	521
OBO	1,285	956
TOTAL	**14,592**	**5,641**

These results, compared with collected traffic volumes and screenlines, reveal that the model better represents traffic volumes generated at Ellsworth Air Force Base. Through this comparison, it is affirmed that unique trip generation at the special generators exists and is better handled by the model than typical trip generation procedures or AirSage data.

5. *AirSage Data Comparision to RCAMPO Travel Model – Aggregate Levels*

This section looks at the comparative analysis between AirSage and travel model outputs at two aggregation levels: (1) neighborhoods as defined in the RCAMPO and (2) an even larger aggregated sub-district level. The results at both levels are presented in the following sub-sections.

a. Dividing the Region into Sixteen Neighborhoods

Figure 1 shows the 16 neighborhoods that are part of the RCAMPO model structure and were used as the aggregation level for this comparison plus one (external) that was excluded.

Figure 13 shows a plot of total trips between each neighborhood pair (on a log scale) and has a correlation factor of 0.51, which is between the 0.28 at zone level and 0.71 at super district level (presented later).

To identify one or two trip types that might be causing an adverse effect on this correlation, **Figure 14** presents town-to-town trip flows for all four trip purposes. It is evident from the plot that there is hardly any correlation or covariance between AirSage and model output for OBO trips. HBW and HBO trips appear to be strongly correlated in the two datasets. Generally, more neighborhoods in the model have higher WBO trips than AirSage data; but wherever AirSage has more trips, the differences are substantial.

Figure 13. Town-to-Town Trip Flows
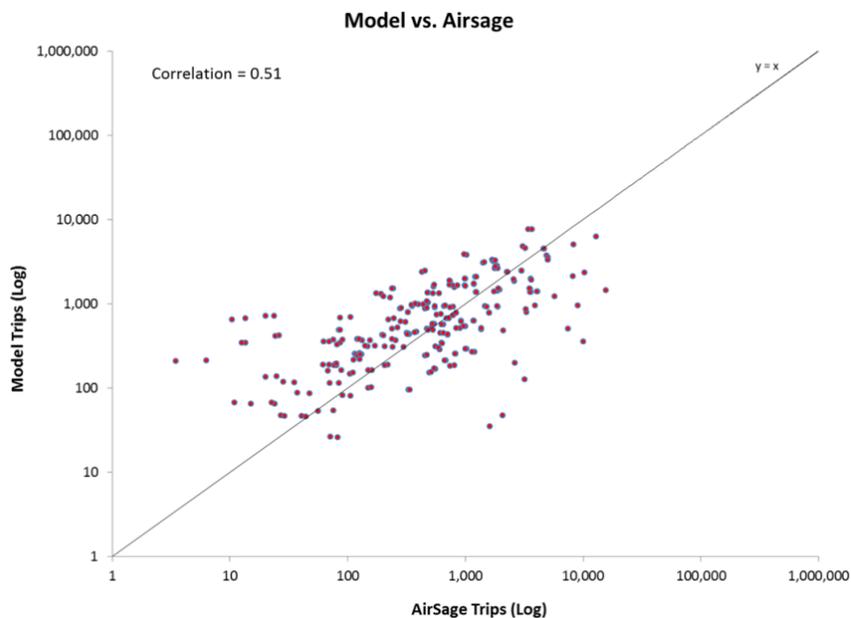
Figure 14. Town-to-Town Trip Flows by Purpose
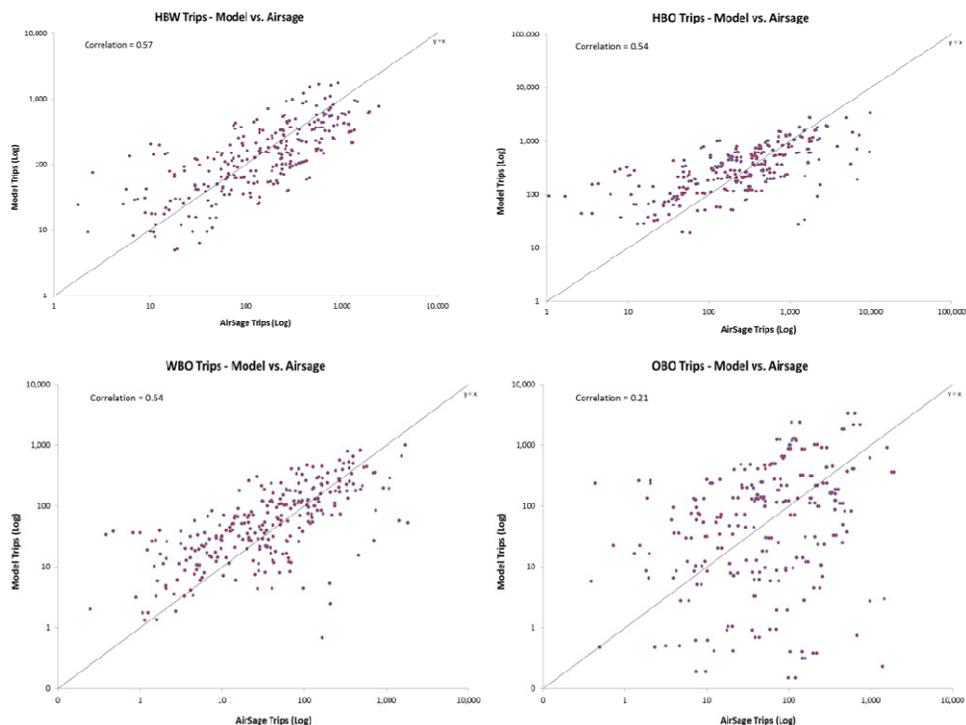
Similar to the select zone analysis for Ellsworth Air Force Base, the model and AirSage trips were compared for an important downtown neighborhood (Downtown/Skyline Dr). The results look encouraging with a correlation factor of 0.64 (**Figure 15**) for trip origination in downtown. For trips with their destination in the downtown area from all districts, the chart and correlation factor were very similar to those of **Figure 15**.

Figure 15. Downtown Rapid City as Origin to All Towns
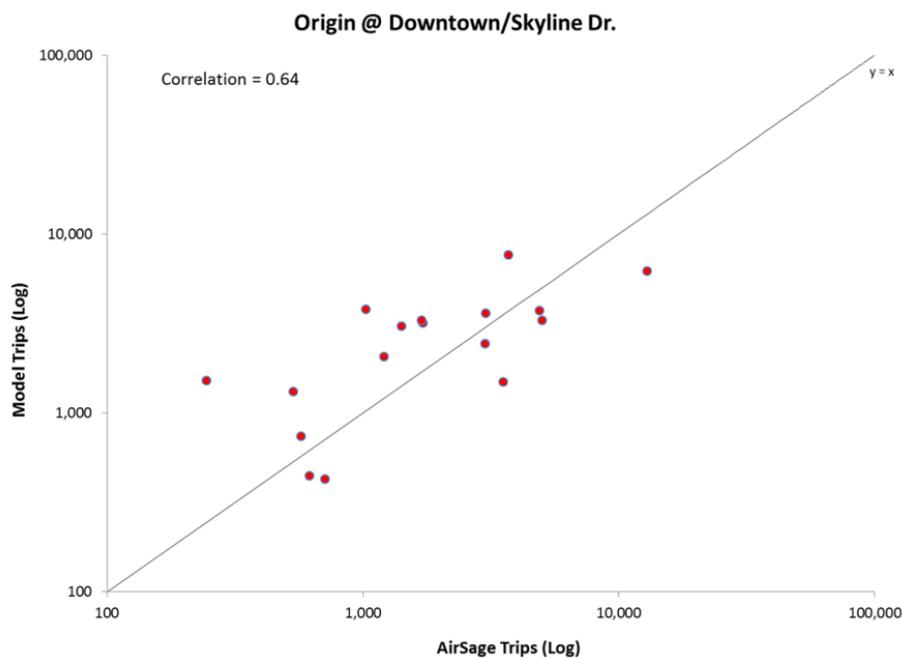
b. Dividing the Region into Five Super Districts

Figure 16 shows the five super districts that were used in the comparison. These five districts are the four quadrants with the central downtown area carved out to form its own super district.

Figure 16. Five Super Districts
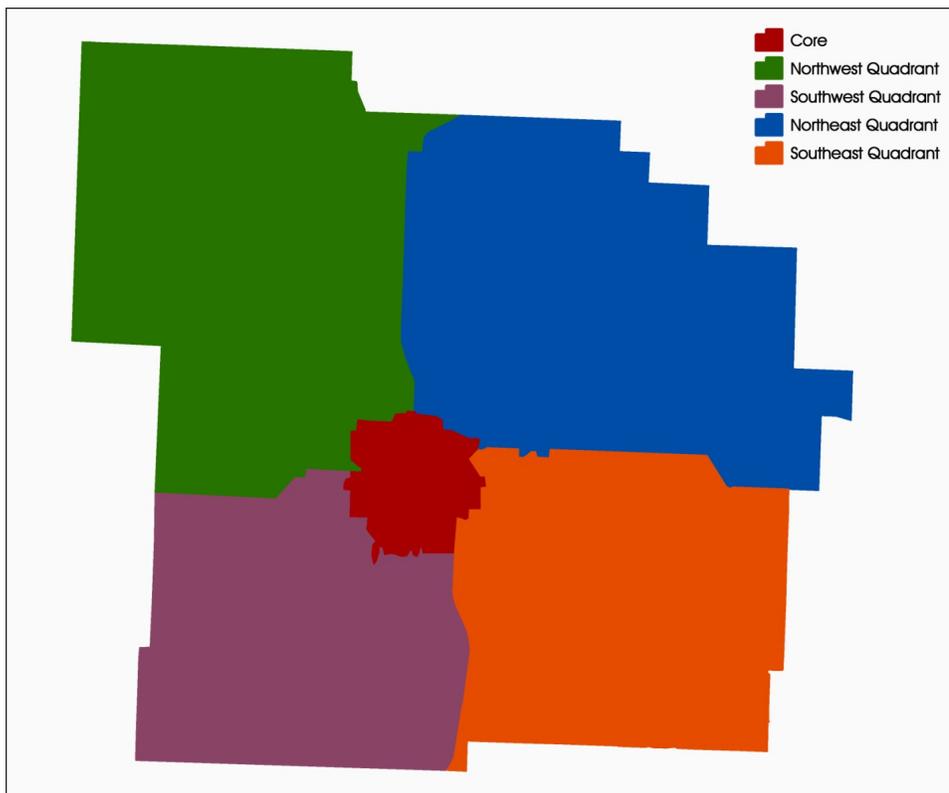
Table 14 presents the matrix view of trips originating from and destined to each super district. Almost all of the difference between the two datasets can be attributed to intra-district trips. While the model has more trips within downtown, AirSage has higher intra-district trips for all other super districts when compared to the model. Except those intra-district elements, the distribution of inter-districts trips for both the model and AirSage match up well. It is important to note that this table excludes the external-external and external-internal trips due to the matrix structure and thus the totals trips are different from those presented in **Table 14**.

Table 14. AirSage Trips vs Model Trips at Super District Level

AirSage	Central	Northwest	Northeast	Southwest	Southeast	Total
Central	53	14	10	24	16	117
Northwest	14	21	2	4	2	44
Northeast	10	2	19	2	4	37
Southwest	24	4	2	33	5	68
Southeast	16	2	4	5	21	48
TOTAL	**117**	**44**	**36**	**68**	**48**	**314**

Model	Central	Northwest	Northeast	Southwest	Southeast	Total
Central	69	21	13	20	13	135
Northwest	21	6	3	5	4	39
Northeast	12	3	2	3	2	24
Southwest	20	5	3	6	3	38
Southeast	13	4	2	3	3	25
TOTAL	**135**	**39**	**24**	**38**	**25**	**261**

Data at the super district level also compare well when separated out by trip purposes. In **Figure 17**, even while including the OBO trip purpose that clearly does not match well between the two datasets, the correlation factor between the two dataset is 0.71 (was 0.28 at zone level and 0.51 at neighborhood level).

Figure 17. District-to-District Trip Flows by Purpose
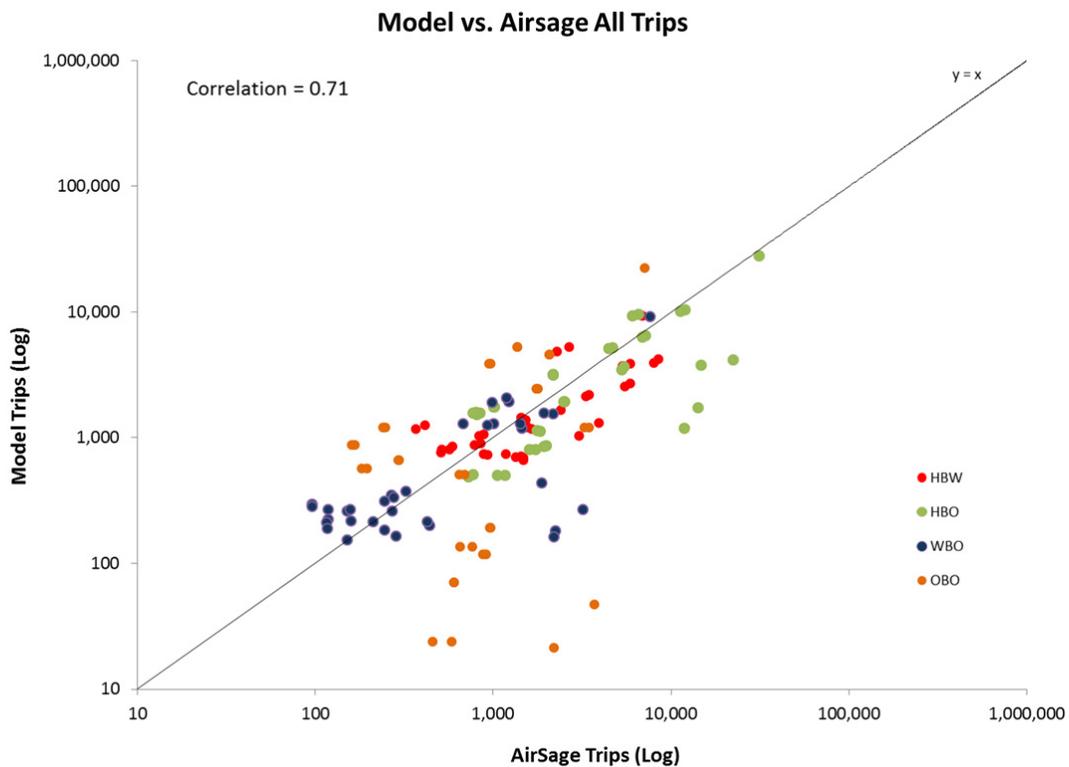
As show in this sub-section, to effectively compare the data from these two sources, there is a need for data aggregation to larger neighborhoods or super districts. At this level, these findings suggest good matching between the AirSage data and model. Previous sections highlighted several sources of errors in the AirSage data (buffers and linked trips) at a zone level. However, at an aggregate level due to the strengths of the methodology, the errors seem to have less profound effect on overall results and patterns of consistency between the two data sources emerge.

Based on this sub-section, there is a need to investigate the model outputs for OBO trip purposes. The differences for this trip purpose between the two data sources are significant. While there are limitations of AirSage in identifying these trips, there still needs to be a general, albeit weak, linear trend between the datasets that is missing.

E. Conclusion and Next Steps

Throughout **Chapter II** of this report, the discussion has focused on calibration of the travel demand model. In order to accomplish this goal, several data sources and nationally recognized reports have referenced. These sources include:

- Count Station Volumes
- Screenlines
- *Rapid City Area Origin-Destination (OD) Study* and associated data
- *National Cooperative Highway Research Program Report 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design*
- *Travel Model Improvement Program (TMIP) Travel Model Validation and Reasonableness Checking Manual Second Edition*

Combined together, these data and references provide the best instruction for the proper calibration of the travel demand model. Inevitably, the greatest source of comfort that a model has been properly calibrated is a strong correlation between the counts and the model results. Here, the model has been able to properly reflect vehicle volumes across the network.

During the calibration process, some decisions had to be made about the best source of information for various component calibration processes. Most significantly, reference materials were used to ensure reasonable calibration during the trip generation and gravity model calibration processes. These two steps relied on national averages when refining details of the model parameters. Overall, these changes have yielded a model capable of producing reliable model forecasts compared to counts and screenlines. The AirSage data has been found to be a useful tool during several stages of the model effort, including the determination of external-external and external-internal trip making, during the validation of trip purpose splits, and through validation of the final model against aggregated sub-area origin-destination characteristics.

Based on the results of the model validation process, which relied on the *Origin-Destination Study*, there are two recommendations for future fine tuning of the travel demand model:

1. **Use of National Household Travel Survey (NHTS) Data for Calibration** – During the previous NHTS, additional survey sample was purchase by the State of South Dakota, including an additional sample for RCAMPO. Due to the constraints of this study, this data was not utilized during this model update. It is anticipated that implementation of the new NHTS data is a major effort requiring the review, classification, and processing of the raw data followed by implementation of the measures in the model process. This process should be helpful in further calibrating the model trip length characteristics. Specific implementation of the NHTS data during calibration should include a focus on validating the special generator's trip types, rates, and lengths.

2. **Improvement of Other-Based Other Trip Generation in the RCAMPO Travel Demand Model** - As noted in the model validation, further evaluation is needed to investigate the model OBO trip making. This process should be accomplished through additional data collection and model validation. It is possible some of this data could be collected from the NHTS data, further calibration may also be completed through a targeted travel survey for the region.

3. **Combining of Other-Based Other and Work-Based Other Trip Types** – During the next model update, consider combining the Other-Based Other and Work-Based Other trip types. The validation data available and ability to distinguish these trip types through survey data may make the use of a single Non-Home Based trip type simpler without jeopardizing model performance.

4. **Transition of the Travel Demand Model to the latest TransCAD version** – This update preserved the travel demand model in TransCAD 5.0. The next model update should transition the travel demand model to the latest version of TransCAD.

APPENDIX A.   RAPIDTRIP 2035 TRAVEL MODEL USER'S GUIDE

RapidTRIP 2035

RapidTRIP 2035

Travel Model User's Guide

May 2011

Rapid City Area Metropolitan Planning Organization

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Model User's Guide

RapidTRIP 2035

This User's Guide provides instructions on operation of the Rapid City MPO Travel Model. Information is provided regarding installation of the model, management of model scenario data, and running of the model.

The model is run from the TransCAD software platform through a customized user interface. This interface provides access to custom calculations developed specifically for the Rapid City MPO. Scenario and file management is achieved through a scenario management system integrated into the custom user interface. A basic understanding of the TransCAD software program is required to get the most out of the model. However, users unfamiliar with the software should be able to perform some modeling tasks with the assistance of this guide.

SYSTEM REQUIREMENTS

The model must be run on a computer running Windows XP or Windows 7 and the TransCAD software program. Specific system requirements are shown in Table 1.

The listed requirements are suggested minimums; a computer that does not meet these requirements may still succeed in running the model. Increased processor speeds, multiple processor cores, and additional memory will reduce the amount of time required to run the model. The required disk space for installation must be available on the drive where TransCAD has been installed. The required disk space for additional scenarios can be on a local or network drive and must be available before attempting to run the model. However, model run times will increase significantly if the model is run from a network drive instead of a local drive.

Table 1: System Requirements

Operating System	Windows XP or Windows 7 *Note: A 64-bit operating system is recommended for all new machines that will be used to run TransCAD models.*
Processor	Intel Core 2 Processor or later *Note: Multiple cores will improve model run times.*
Memory	2GB – 12 GB
TransCAD Software	Version 5.0
Microsoft Office (including Access)	Version 2007 or later (Version 2003 will work with reduced functionality)
Disk Space (Installation only)	2 MB
Disk Space (each scenario)	40 MB for each scenario

INSTALLING THE MODEL ADD-IN

To install the model, run the provided Setup.exe file. If the model has been previously installed, the installation program will update the model to the most current version. The installation program will not overwrite custom scenario lists created by the user.

The model setup file contains an option to install model data as well as the model add-in files. If data is selected for installation, data in the C:\RC Model directory will be overwritten.

To access the Add-In, choose *Tools* → *Add-Ins RC Model* from the TransCAD menu. Once an add-in has been used once, RC *Model* will be available in the recently used Add-Ins list shown directly under the Tools menu.

The installation program does not provide an uninstall function. To uninstall the model, use the following steps:

> Delete the "RC Model" folder from Program Files (Usually C:\Program Files\RC Model),
> Choose Tools → Setup Add-Ins… from the TransCAD menu and remove the entry for the RC model,
> Remove any data (as desired) from local or network drives, and Remove LSA\RC Model directory from the All Users Application Data folder *(Note this step is optional, as these files use very little disk space)*.

Removal of the program files and user settings may delete scenario lists created by the user.

Directory Structure

The example directory tree shown in Figure 1 is structured to provide efficient and straightforward organization of travel model input and output files. However, TransCAD and the customized user interface are flexible enough to allow for nearly any directory structure.

Figure 1: Example Model Directory Tree

RC Model

Input ← All model input data is stored here

Output

├── **Base 2008**

├── **Forecast 2035**

└── **etc....**

A separate output folder is created for each scenario
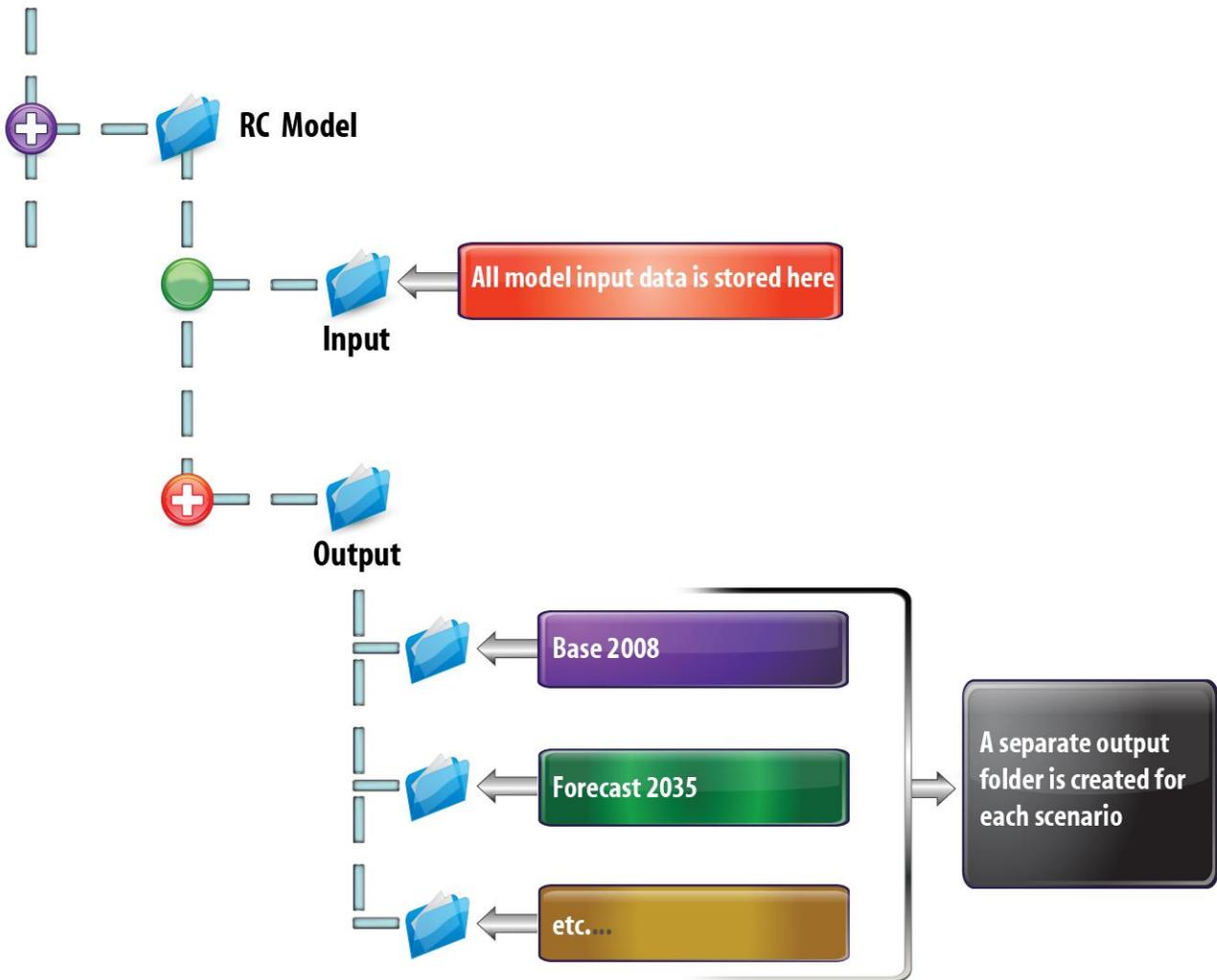
RUNNING THE MODEL

The model is controlled through a series of dialog boxes. These dialog boxes allow the user to specify custom model run settings or to copy settings from a previously defined scenario. Users may also run the travel model, create reports and maps, and specify model run options. Steps required to complete a successful model run are described below.

Collecting the Required Data

To successfully run the travel model, various data files are required. Some input files are optional and will provide additional functionality. Each file is identified by a short keyword as identified in Table 2. All input files should be collected and placed in a model input directory. Input files will not be modified when the model is run.

Table 2: Model Input Files

ID	Description and Notes	Required / Optional
Network	The Roadway Geographic File	Required
TurnPen	An optional turn penalty file can be identified to enable specific turn penalties. If this file is not present, no turn prohibitions or penalties will be applied. If used, this file must be formatted as described in the TransCAD software documentation.	Optional
Database	The Model Database contains various information items and is further described later in this document.	Required
TAZ	The TAZ geographic file is not used by the model, but may be referenced for bookkeeping purposes.	Optional
KFAC	Placeholder for a K-factor matrix. K-factors are not used in the validated model.	Optional (not used)
SelQry	Select link/node query file. If this file is present, select link analysis will be performed when traffic assignment is run.	Optional

Creating and Running a Scenario

After the input data has been collected, a scenario must be defined from the model dialog box. Model scenarios are accessible from the scenario toolbox and contain information about the following for each scenario:

- Input and output directories,
- Filenames,
- Network year/alternative,
- Data year/alternative,
- Individual alternatives, and
- Advanced settings and parameters.

Scenarios can be copied based on existing scenarios or can be created from scratch using default settings. Figures 2 through 6 show the scenario toolbox and editor that are used to manage scenarios along with annotations describing the available functions.

When creating or editing a scenario, use the steps listed below. *It is recommended that these steps are performed in order*.

1. Specify a scenario name and identify the scenario input and output directories.

2. As necessary, identify input files by name. Most files will be found automatically, but some files may need to be located manually.

3. After the status for all required files is shown as "Exists," edit the scenario settings on the General tab. Note that network and data year settings do not need to match. It is possible to run a scenario based on the 2008 roadway network and 2035 socioeconomic data.

4. *Optional:* Review the output filenames and modify if desired.

5. *Optional:* Review the advanced settings and modify if desired.

Warning: The Advanced tab in the Scenario Editor allows the user to edit values that are not often changed. The advanced interface does not prevent the user from entering invalid or inconsistent data, which may cause the model to crash or produce invalid results.

The model dialog box, shown in Figure 7, provides a great deal of flexibility in how the model is run, but in most cases a very simple approach can be taken.

- To run a standard, complete model run simply start the model dialog box, create a scenario, and click on Step 1 – Prepare Networks. The model will be run with the standard default settings.

- To automatically create a performance report when the model run is complete, select the appropriate checkbox.

- If buttons are grayed out and cannot be used, this is usually due to missing input files or invalid settings.

Figure 2: The Scenario Toolbox

All scenarios in the scenario file are listed here. Double click a scenario to edit it. Select one or more scenarios before running the model.

Add, copy, and delete scenarios using these buttons.

Start a new blank scenario list.

The status will read "Missing," "Ready" "Partial," or "Done." The model cannot be run if the selected scenario has a "Missing" status.

Change the order in which scenarios are displayed.

Load or save a scenario list.

Show the current scenario filename

Scenario Toolbox © 2011 LSA Associates

Scenario List: Double-click to edit

| 2008 Base | done |
| 2008 Base - Closed Jackson | Ready |

Add | Move Up
Copy | Move Down
Delete

Scenario List
New | Load | Save As | ?

Figure 3: The Scenario Editor (Input Tab)

Enter a scenario name.

Identify the scenario directories.

When a file is selected, its description will be shown here.

All input files are searched for in the input directory when the input directory is changed.

Filenames and file status are displayed here. Double-click an item to change the filename or location.

Figure 4: The Scenario Editor (General Tab)

A description of the scenario can be entered here.

Choose assignment settings

The default settings are appropriate for most uses

Set the network year, data year, and individual alternatives

Figure 5: The Scenario Editor (Output Tab)

Different model stages are listed here. Files for the selected stage are shown.

When a file is selected, its description will be shown here.

Filenames and file status are displayed here. Double-click an item to change the filename or location.

Note: Files will be missing until the model has been run.

Figure 6: The Scenario Editor (Advanced Tab)

Different model stages are listed here.

Tables, Parameters, or Access Data (i.e., table names in the access database) can be selected here.

Available data is shown here. Some data can be edited directly in the grid. Arrays will be edited in a separate dialog.

Subarray data can be displayed by clicking in a cell and selecting Edit…

Note: Advanced model parameters should not typically be changed.

Figure 7: The Model Dialog Box

If checked, only the selected model step will be run. If unchecked, subsequent steps will be run as well.

Click on a model step to run that step.

Sub-steps can be deactivated.

Utilities can be run from this area.

A performance report can be created when the model run is complete.

Debug mode disables error handling. This can help with troubleshooting, but prevents TransCAD from "cleaning up" after a crash.

Running Selected Model Steps

The user interface can be set to run only selected model steps or sub-steps. To run only a single step, click the "Stop after each step" checkbox in the main model dialog box. When this box is checked, the selected step will be run, but subsequent steps will not. When this checkbox is cleared, subsequent steps will be run automatically.

To exclude certain sub-steps or to run only selected sub-steps, the dialog shown in Figure 8 can be used. By clicking on the ⋯ button to the left of each model step, the user can enable or disable specific steps. The behavior of the "Stop after each step" checkbox is not changed when sub-steps are enabled or disabled.

Figure 8: Sub-Steps Dialog Box
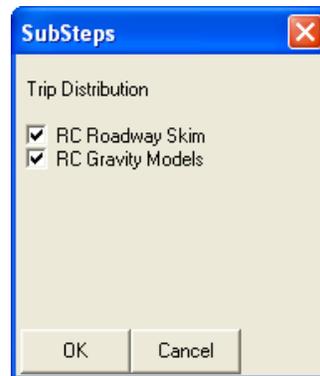
MODEL UTILITIES - INPUT

The model dialog box includes several utilities that can be used in preparation of model inputs. These utilities, described below, will only be available if all required input files for a scenario have been identified and are present.

Add/Delete Network Year

The model roadway network is designed to contain data for various distinct scenarios. This tool will allow network years to be added or deleted and can be operated as described below.

1. Select a model scenario that references an input network. The referenced input roadway network will be modified.

2. Click the *Edit Network Year* button in the main model dialog box (Input tab); the dialog box shown in Figure 9 will appear.

3. **To add a network year:**

    a. Select a year from the drop-down list.

    b. Click the *Copy* button. The tool will make an exact copy of the selected year.

    c. Attributes for the new network year can be modified by opening the network file and using tools made available in the TransCAD software.

4. **To delete a network year:**

    a. Select a year from the drop-down list.

    b. Click the *Delete* button. The tool will delete all data fields associated with the selected year.

Figure 9: Add/Delete Network Year Dialog Box
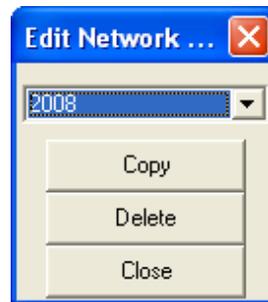
Network years can contain up to four digits. A recommended practice is to use a two to four digit code.

Create Select Query

A select link or node query file (*.qry) can be created for a scenario using the Select Link/Zone Query Builder provided with the TransCAD software. This toolbox, accessed from *Planning* → *Assignment Utilities* → *Select Link/Zone Query Builder*, is explained in the TransCAD software documentation. It can be used to interactively create a query, or can create a query based on a link selection set. However it cannot be used to create a select zone query based on a node selection set. The *Create Select Query* tool can be used to create a select zone query based on a node selection set. To use this tool, follow the steps listed below.

1. Add the attributes as needed to the input network node layer (e.g., use a subarea ID).

2. Create a scenario that references the modified input network and select this scenario.

3. Click the *Create Select Query* button in the main model dialog box (Input tab). The system will prompt the user if an existing select link/query file is specified for the selected scenario.

4. Enter a name for a new select zone query.

5. Select the query method:

    a. To or from: Track trips departing or arriving,

    b. From: Only track departing trips, or

    c. To: Only track arriving trips.

6. Enter a selection condition when prompted

7. When prompted, choose whether to add an additional query to the query file.

Once the query file has been created, it can be viewed and edited using TransCAD's *Select Link/Zone Query Builder* or can be used as input to a travel model scenario.

MODEL UTILITIES – MAPS AND REPORTS

The model contains mapping and reporting utilities that can be used to produce additional model outputs and summary data. These tools, described below, will only be available if all selected scenarios have been successfully run and read "done" in the status column. Some of these utilities can only operate on one scenario at a time and will be disabled when multiple scenarios are selected.

Create Performance Report

This tool will allow the user to create a standard summary report for all selected scenarios. The user will be prompted to select performance report options prior to report creation.

Create Maps

This tool will create a set of standardized maps in the model output directory. Maps that are created can be opened from TransCAD once the utility completes.

Traffic Comparison Map

This tool will create a map that compares the results of two model scenarios. To use this tool:

- Select a single completed scenario.
- Click the *Traffic Comparison Map* button (Maps and Reports tab).
- Select a completed scenario for comparison.

ROADWAY NETWORK STRUCTURE

The roadway network is structured to contain data for multiple timeframes. The roadway network delivered with the model contains the 2008 base year network and 2035 forecast year roadway networks, as well as interim 2010 and 2014 networks. The model includes the capability to represent the base year, existing plus committed networks, plan forecast networks, interim horizon year networks, and any other network scenarios that are desired within a single network database. In addition, the network is structured so that localized alternatives can be represented within the same file. These alternatives can be activated and deactivated based on the year of analysis and infrastructure scenario desired using the scenario management system that forms the basis of the travel model user interface.

Input and Output Networks

The roadway network file contains travel model input data, and it also acts as a repository for both intermediate (e.g., speed feedback data) and final (e.g., traffic volumes) model data. For this reason, a separate output model network is created for each model scenario. This output network is created by making a copy of the input network and then modifying this network to contain data and results specific to each model run. This copy of the roadway network is created and modified automatically by a network initialization step when the travel model is run. Required attributes present on the input network link and node layers are listed in Tables 3 and 4.

Table 3: Input Network Link Fields

Field Name	Description		Comments
ID	TransCAD Unique ID		Maintained automatically by TransCAD
Length	Link Length in miles		Maintained automatically by TransCAD
Dir	Link Direction of Flow		Direction of Flow
Dir_yyyy	Scenario-Specific Direction Field		
FT_yyyy	Facility Type for year yyyy		
	1	Freeway	
	2	Principal Arterial	
	3	Minor Arterial	
	4	Collector	
	5	Local	
	6	Private Road	yyyy represents a two to four digit year code (e.g., 2008, 2035) or the string "AL"
	7	Ramp	
	99	Centroid Connector	
	100	Local (Not Modeled)	
	null	Link not present for year yyyy	
AT_yyyy	Area Type for year yyyy		
	1	CBD	
	2	Urban	
	3	Suburban	
	4	Rural	

Field Name	Description	Comments
AB_LN_yyyy	Number of Lanes for year yyyy	
AB_LN_yyyy		
CTLMED_yyyy	Presence of a center turn lane or median	
	0 Not Present	
	1 Present	
SPLM_yyyy	Speed Limit for year yyyy.	
AB_FBAM_yy	Fields used to store speed feedback results – not typically modified by the user	"AL" versions of these fields are not present in the network
BA_FBAM_yy		
AB_FBOP_yy		
BA_FBOP_yy		
ALT	Primary Alternative Number	
ALT2	Secondary Alternative Number	
ROADNAME	Link street name	Optional (for reference only)
Counts2008	Traffic Count representing 2008 conditions	
CountSource08	Traffic count data source	
EstCount	Estimated traffic count data for use in NCHRP-255 adjustment	
DO_NCHRP	Indicates links that should be adjusted using NCHRP-255 procedures (Only links with a value of 1 are adjusted)	
BASE_VOL	Base year volume for use in NCHRP-255 adjustments	

Note: Additional fields present in the roadway network file but not listed here are retained from the previous model. They are not required and can be deleted without impacting the model.

Table 4: Input Network Node Fields

Field Name	Description	Comments
ID	TransCAD Unique ID	Maintained automatically by TransCAD
ZONE	Traffic Analysis Zone Number	Populated only for centroid nodes (including external station nodes). Null for all non-centroid nodes.
INT_ID	Intersection ID for turn movement reporting	Turn movement volumes will be stored for nodes identified by this field.

Multi-Year and Alternative Network Structure

The roadway network is designed to store roadway data representing different years in one consolidated network layer. To accomplish this, selected network attribute names are appended with a two- through four-digit suffix representing a particular year. By representing multiple networks in one network file, consistency between baseline and forecast networks is enforced. Furthermore, this approach eliminates the need to edit multiple network files when making a change in a baseline or interim year network.

In addition, the network structure allows for the representation of alternative roadway projects such as roadway widening, realignments, and new facilities that are not tied to a specific network year. These alternatives can be activated or deactivated individually or in groups, regardless of the network year that has been selected. While there are some limitations with respect to alternatives sharing the same link, this capability can be a valuable tool when performing alternatives with the travel model. These limitations and strategies to overcome them are described below.

Representation of Networks by Year

Each attribute that can vary from year to year (e.g., facility type, area type, number of lanes, direction of flow, etc.) is represented in the roadway network by an attribute containing a two- through four-digit numerical suffix. When a particular network is selected for use in the travel model, only attributes with a suffix matching the selected year are used by the travel model. Of utmost importance is the facility type attribute. If this attribute is blank on a link for a particular year, that link will be "closed" to traffic (i.e., will not exist) in the network when that year is selected. If a valid facility type value is found, then the remaining attributes specified for that year will be referenced by the travel model.

The roadway network will initially contain data for the years 2008, 2035, and selected interim years. Additional network years can be added at any time through the following steps:

1. Add new columns to the network link and node tables that will represent the additional network year (e.g., FT_2012, AT_2012, etc.);

2. Move these columns so that they are in a convenient location (e.g., between the 2010 and 2014 data columns);

3. Fill these columns with data from the corresponding attributes for either 2010 or 2014; and

4. Adjust the data as necessary.

Because this is a commonly performed task, a utility was developed that automatically performs Steps 1 thorough 3 listed above. The utility can also be used to delete all attributes associated with a particular year. The "Edit Network Year" utility is accessible from the model dialog box (described previously).

Representation of New Facilities

This network structure can represent roadway facilities that do not exist in the current network, but are planned for future construction. For example, if a new roadway is planned to be built by 2035, it could be represented in the 2035 roadway network, but not in the base year roadway network. To implement this, the roadway is added as a new link to the network layer, but is not be assigned a facility type for the base year. A 2035 facility type would be assigned for this link. When the travel model is run, only links with a valid facility type are considered by model components that reference the roadway network.

Representation of Network Alternatives

Roadway network alternatives provide a mechanism for testing localized network changes individually or in combination without the need to create an additional network. Roadway network alternatives are specified by a set of attributes with the suffix AL (e.g., FT_AL, AT_AL, etc.) and by attributes named ALT and ALT2, as follows:

- The fields with an AL suffix represent the network attributes used when an alternative is activated, and
- The "ALT" and "ALT2" fields identify the alternative number associated with each link.

If a particular alternative has been activated prior to a model run, the values in fields containing the AL suffix will override other network attributes on links where ALT or ALT2 match a selected alternative. The network structure example sidebar further illustrates application of network alternatives. The Network Attribute Selection section describes the stepwise procedure used to process network attributes.

NETWORK STRUCTURE EXAMPLE

To illustrate the concept behind the network structure, a simplified example link data table is shown below. This table only shows facility type information. Lane, speed override, and area type information follow a similar theme. In this example network:

- Link 100 exists as a principal arterial (FT = 2) in 2008 and all subsequent years.
- Link 200 is programmed as a principal arterial (exists in 2014 and later).
- Link 300 is planned to be built as a minor arterial (FT = 3) by 2035.
- Link 300 is instead built as a collector (FT = 4) if Alternative 1 is activated.
- Link 400 is a new facility to be built as a minor arterial if Alternative 2 is activated.
- Link 500 exists in 2008 and all future years as a minor arterial, but is closed if Alternative 3 is activated.

EXAMPLE LINK DATASET

ID	FT_2008	FT_2014	FT_2035	FT_AL	ALT
100	2	2	2	--	--
200	--	2	2	--	--
300	--	--	3	4	1
400	--	--	--	3	2
500	3	3	3	--	3

Network alternatives can represent scenarios in which roadway attributes differ or scenarios in which roadways are constructed or removed. For example, an alternative might represent a proposed roadway widening project that is not included in the 2035 roadway network. This improvement could be included as an alternative for testing purposes. After adding this one alternative, model scenarios could then be created that:

1. Represent the base-year network without the roadway widening,
2. Represent the base-year network plus the roadway widening,
3. Represent the 2035 network without the roadway widening, or
4. Represent the 2035 network plus the roadway widening.

As with network attributes that vary by year, absence of facility type data will result in a link being omitted from consideration in the travel model. It is possible to represent the closure of a roadway by activating an alternative with a null value for FT_AL on a particular roadway link. This is also useful when simulating a roadway that is realigned.

This structure does have some limitations. Only two alternatives can occupy the same link, as limited by the two fields "ALT" and "ALT2." Also, only one set of alternative attributes can occupy the same link, limited by the one set of attributes with an "AL" suffix.

These limitations are of particular concern in a scenario where a road exists as a 2-lane facility and consideration is being given as to whether it should be widened to 4 lanes or 6 lanes. While this scenario cannot be readily represented in the network alternative structure, this scenario can be represented through use of either of two suggested options:
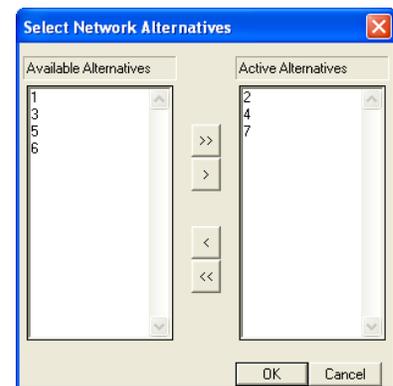
1. Create a separate network year (e.g., "1004" or "3504") that represents the road as a 4-lane facility. Create an alternative that represents the road as a 6-lane facility; or

2. Create an alternative that represents the facility as a 4-lane facility. To run the alternative as a 6-lane facility, make a copy of the network and change the number of lanes (in the "AL" attributes) to six before running the model.

Network Attribute Selection

Year and alternative specific network attributes are selected for use in the travel model based on user selections. The scenario manager that drives the travel model interface maintains user selections regarding network year and network alternatives. Once these selections have been made, the automated network initialization step will apply network attributes according to user selections.

When running the travel model, the user must select a network year. The scenario manager will allow selection of any year where a complete set of data is present in the roadway network. Specifically, the user will be able to select any year for which all of the required year-specific fields are present in the roadway network file. User selections are saved with a model scenario that is accessible from the model interface.

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1. The user may optionally select to activate specific numbered alternatives present in the roadway network. A list of available alternatives is generated by identifying unique values present in the ALT and ALT2 fields. Each unique value is initially identified as an inactive alternative, but may be set to active by the user. Alternative selections made by the user are saved with a model scenario that is accessible from the model interface.
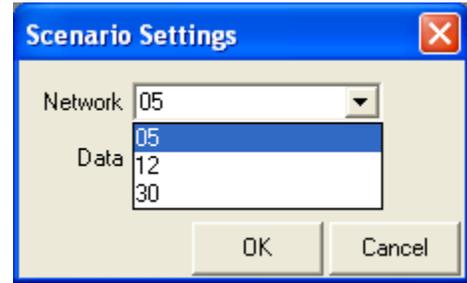
2. The network initialization step makes a copy of the input network file and places it in an output directory specified by the user. One new field is created for each year-specific attribute, but without the year-specific suffix (e.g., FT, AT, etc.). The field Dir is already present in the network, so it is not recreated. However, it is modified in the next step.

3. Each new field is populated with data from the corresponding year-specific field matching the network year selected by the user. For example, if the network year is set to 2014, the field FT will be filled with data in the field FT_2014. Remaining fields will be populated in a similar manner.

4. If any alternatives have been activated, a selection set consisting only of links where either ALT or ALT2 matches an active alternative is created. Attributes for links in the selection set are filled with data from the corresponding field ending in _AL. This overwrites any data previously populated from the year-specific fields. For example, if Alternative 1 is selected, all links where ALT = 1 or ALT2 = 1 will be selected. For these links only, data in the FT field will be replaced with data in the FT_AL attribute. This would overwrite data previously read from the FT_2014 attribute. Remaining fields would be populated in a similar manner.

5. Data in the fields that do not include a suffix (e.g., FT, AT, etc.) are referenced for all subsequent model steps, including the speed, capacity, and volume-delay lookup procedures.

DIRECTION OF FLOW

Direction of flow does not fit within the attribute management scheme, as well as other variables. This is due to the requirement in the TransCAD software that direction of flow be maintained in the network field "Dir" at all times. While this fits within the process used to run the model, this requirement can cause difficulties when editing the network if not addressed. It is important to remember the following points if the direction of flow varies on a link in different year or alternative networks:

- To display directional arrows for a particular network year, fill the column "Dir" with the value from the appropriate attribute (e.g., Dir_2008).

- The Dir field and year-specific Dir fields should be populated with a 1, -1, or 0 – even for network years for which links are not active (i.e., year-specific FT is null). The Dir_AL field can be null, but only if FT_AL is also null.

Note that these concerns apply only if the Dir attribute varies from year to year.

MODEL DATABASE

The model requires a large and varied set of input data for each mode run. Specific data items are required inputs for each step of the travel modeling process. The data is contained in three primary places:

- **Spatial Data:** The roadway line layer contains the supply side information used by the travel model. In addition to these networks, several supporting files are also required (turn penalty tables and mode tables). The Traffic Analysis Zone (TAZ) layer is also input to the travel model, but TAZ data is not stored directly in the TAZ layer.

- **Model Database:** The model database contains socioeconomic data and other demand side information used by the travel model. The database also contains model parameters, such as trip rates and other zonal data such as area type.

- **Scenario Manager:** Some model parameters are stored directly in the scenario manager. Aside from some notable exceptions, these parameters do not generally need to be changed except when a major model recalibration occurs.

This chapter provides a detailed description of the data and parameters contained in the model database.

Database Approach

The model relies on a large amount of data and numerous parameters and lookup tables. The TransCAD software provides a table format that can be used to store this type of information. The TransCAD table format is relatively efficient, very stable, and allows for sufficient precision in storage of decimal numbers. This format, Fixed Format Binary (FFB), has been used to store all data output from the travel model in table format. However, an Access database has been used to store the majority of data that is input to the model. The Access format has been used rather than the FFB format for the following reasons:

- The TransCAD table format cannot be read or edited except with the TransCAD software.

- The Access database can be used to store nearly all of the input data required for the travel model. This prevents the need to manage a large number of input files that contain data for various model steps.

- SQL queries within the Access software can be used to transform data from a human-readable format into a format that is readily used by the travel model.

- The Access database format is designed to allow multiple data scenarios to be managed within a single consolidated database file.

The model has been designed to support two types of scenarios: network scenarios and data scenarios. Network scenarios are stored in the TransCAD geographic line layer, while data scenarios are stored within the model database. A virtually unlimited number of data scenarios can be maintained within a single database, but in practice it may be useful to maintain different databases for different purposes. For example, one database may be desired for use in the regional planning process while a different database could be maintained to facilitate testing of minor land use alternatives associated with proposed development.

The database contains some information that is static (does not change when a different data scenario is selected) and other data that is dynamic (varies by data scenario). The static and dynamic data items are listed below. A detailed description of each data item is provided in the sections that follow.

Static Data:

- Roadway Parameters (lookup tables by facility type and area type)
- Household Size, Income, and Worker Disaggregation Curves
- Trip Generation Rates (production and attraction rates)
- Trip Rate Factors
- Friction Factors (gamma parameters)
- Time of Day Parameters

Dynamic Data:

- Socioeconomic Data
- Regional Bivariate Data (household size and income)
- Other TAZ Data (e.g., area type)
- Special Generator Data
- External Station Data

Database Structure

When opened, the model database will be sorted by topic (requires Access 2007 or above). Tables and queries associated with each model step are grouped for easy identification. To modify model data, only tables generally need to be edited. Queries in the database re-format data for use directly in TransCAD and will automatically update in most cases.

Data Scenarios

Dynamic data described above is present for the 2008 and 2035 model years. Any table that includes a field named "YEAR" includes data for both timeframes. When editing this data, there are two options available to the user.

1. *Edit dynamic data in a copy of the database:* this approach is simplest and is most appropriate when making small temporary changes. Data can be edited for 2008, 2035, or both. After making edits, the user will need to identify the copy of the database file in the Scenario Editor.

2. *Create a new dynamic dataset:* This option is most appropriate when adding a new scenario dataset that will be maintained as part of the model for a longer time period. Like the 2008 and 2035 datasets, the new dynamic dataset will be available from the Scenario Editor. To add a new dataset, perform the steps listed below.

   a. *Add Data:* Add new rows to the tables listed below. The easiest way to do this is to copy data from Access to Excel, modify the data, and paste new records back into Access. When modifying the data, select a new identifier (e.g., 2040) and populate the YEAR field with this identifier. Tables that must be modified include:

      i.   *aSEData,*
      ii. *aSpecialGen,*
      iii. *aZoneData,*
      iv. *bRegBivarPct,*
      v.   *aEETrips, and*
      vi. *aIETrips.*

   b. *Add the year identifier:* After added and modifying data as needed, the new year identifier (e.g., 2040) must be added to the table named "xAvailableYears."

   Once these steps have been performed, the Scenario Editor will allow the user to select the newly added dataset from the General tab.

APPENDIX B.   PERFORMANCE BY STATION

ROAD	LIMITS	COUNT	MODEL	MODEL/ COUNT VOLUME
5TH ST	3RD TO FAIRMONT	19,548	18,445	94%
5TH ST	ST. CLOUD TO COLUMBUS	17,074	22,155	130%
5TH ST	ST JOSEPH TO MAIN	16,598	27,976	169%
5TH ST	PARKVIEW TO MINNESOTA	9,173	5,314	58%
5TH ST	OMAHA TO NEW YORK	17,905	32,169	180%
5TH ST	NEW YORK TO NORTH	17,014	31,464	185%
5TH ST	MAIN TO OMAHA	17,085	33,016	193%
5TH ST	CATRON TO PARKIEW	7,732	4,308	56%
5TH ST	ST. PATRICK TO ST. CLOUD	17,264	22,283	129%
5TH ST	COLUMBUS TO ST. JOSEPH	20,762	24,398	118%
5TH ST	FAIRMONT TO ST PATRICK	18,209	19,029	105%
5TH ST	MINNESOTA TO TEXAS	12,692	6,947	55%
MT RUSHMORE RD	OMAHA TO NORTH	6,885	5,681	83%
32ND ST	JACKSON TO CANYON LAKE	6,196	913	15%
44TH ST	RAIDER TO MAIN	4,168	756	18%
ANAMOSA ST	WEST BLVD N. TO HAINES	5,424	4,977	92%
ANAMOSA ST	HAINES TO MAPLE	7,488	6,019	80%
CAMBELL ST	ST PATRICK TO OMAHA	20,576	27,091	132%
CAMBELL (E) ST	OMAHA TO E. NORTH ST	22,411	25,566	114%
CAMBELL ST	FAIRMONT TO ST PATRICK	17,190	28,160	164%
CAMBELL ST	MINNESOTA TO FAIRMONT	17,372	18,459	106%
CAMBELL ST	CATRON TO MINNESOTA	12,447	15,865	127%
CANYON LAKE DR	SHERIDAN LAKE TO MT VIEW	16,368	5,485	34%
CANYON LAKE DR	JACKSON TO CLIFTON	8,511	2,336	27%
CANYON LAKE DR	SOO SAN TO SHERIDAN LAKE	14,977	5,264	35%
CANYON LAKE DR	CLIFTON TO SOO SAN	8,633	3,474	40%
CATHEDRAL DR	TOWER TO 5TH	15,650	14,870	95%
CATHEDRAL DR	MT RUSHMORE TO TOWER	14,171	15,071	106%
COUNTRY RD	HAINES TO W NIKE	1,508	2,225	148%
DEADWOOD AVE	OMAHA TO LIEN	17,474	11,739	67%
DEADWOOD AVE	I-90 TO CITY LIMIT	3,092	1,058	34%
DEADWOOD AVE	CEMENT PLANT TO LIEN	16,783	10,710	64%
DEADWOOD AVE	LIEN TO N PLAZA	12,705	11,621	91%
DEADWOOD AVE	N PLAZA TO I-90	15,317	9,830	64%
DISK DR	HAINES TO MAPLE	6,453	8,066	125%
ANAMOSA (E) ST	MAPLE TO LACROSSE	10,047	5,574	55%
ANAMOSA (E) ST	LACROSSE TO E. NORTH	4,096	14,042	343%
DISK (E) DR	MAPLE TO LACROSSE	7,193	6,222	86%
SD-44 (E)	JOLLY TO RESERVOIR	14,961	12,979	87%

ROAD	LIMITS	COUNT	MODEL	MODEL/ COUNT VOLUME
SD-44 (E)	RESERVOIR TO AIRPORT	6,986	6,840	98%
SD-44 (E)	CAMBELL TO ST PATRICK	15,961	24,542	154%
MAIN ST	EAST BLVD TO STEELE	8,050	6,342	79%
E NORTH ST	LACROSSE TO CAMBELL	14,537	8,567	59%
ST JOSEPH (E) ST	ST PATRICK TO CAMBELL	6,295	6,578	104%
ST JOSEPH (E) ST	STEELE TO ST PATRICK	11,257	10,687	95%
ST JOSEPH ST	EAST BLVD TO STEELE	6,982	6,203	89%
ST PATRICK (E) ST	ST JOSEPH TO CAMBELL	14,780	10,410	70%
ST PATRICK (E) ST	CAMBELL TO CREEK	15,559	7,268	47%
ST PATRICK (E) ST	ELM TO ST JOSEPH	13,892	7,245	52%
ST PATRICK (E) ST	CREEK TO SD-44	9,566	5,858	61%
EAST BLVD	ST JOSEPH TO MAIN	7,332	4,135	56%
EAST BLVD	OMAHA TO E NORTH	13,124	24,716	188%
EAST BLVD	MAIN TO OMAHA	9,800	7,820	80%
CREEK (N) DR	ANAMOSA TO EGLIN ST	4,180	3,337	80%
ELK VALE RD	SD-79 TO SD-44	15,758	9,426	60%
ELK VALE RD	I-90 TO SEGER	5,557	808	15%
FAIRMONT(E) BLVD	ELM TO CAMBELL	7,978	11,506	144%
FAIRMONT (E) BLVD	WISCONSIN TO ELM	9,732	9,341	96%
FAIRMONT BLVD	5TH TO WISCONSIN	12,734	12,909	101%
HAINES AVE	NORTH TO ANAMOSA	19,140	34,360	180%
HAINES AVE	I-90 TO DISK	22,767	24,053	106%
HAINES AVE	MALL TO COUNTRY	13,285	6,527	49%
HAINES AVE	ANAMOSA TO I-90	18,981	26,859	142%
HAINES AVE	DISK TO MALL	17,159	16,406	96%
HAINES AVE	COBALT TO CITY LIMIT	2,548	2,289	90%
HAINES AVE	COUNTRY TO COBALT	5,745	2,280	40%
I-190	SILVER TO I-90	19,967	21,110	106%
I-190	OMAHA TO SILVER	21,252	20,844	98%
I-90	ELK VALE TO EAST CITY LIMIT	27,228	33,891	124%
I-90	I-190 TO HAINES	37,256	44,464	119%
JACKSON BLVD	CHAPEL LN TO CANYON LAKE	8,289	7,717	93%
JACKSON BLVD	CITY LIMIT TO CHAPEL LN	4,829	4,459	92%
JACKSON BLVD	SHERIDAN LK TO MT VIEW (S)	16,681	26,843	161%
JACKSON BLVD	CANYON LAKE TO 32ND	8,741	14,751	169%
JACKSON BLVD	32ND TO SHERIDAN LAKE	10,154	17,791	175%
JACKSON BLVD	MT VIEW (N) TO MAIN (W)	14,837	17,751	120%
LACROSSE (N) ST	E NORTH TO ANAMOSA	18,994	23,364	123%
LACROSSE (N) ST	OMAHA TO E NORTH	10,112	9,536	94%
LACROSSE (N) ST	ANAMOSA TO I-90	19,507	14,355	74%
LACROSSE (N) ST	I-90 TO DISK	11,869	11,655	98%

ROAD	LIMITS	COUNT	MODEL	MODEL/ COUNT VOLUME
LACROSSE (N) ST	DISK TO MALL	6,145	5,862	95%
MAIN ST	5TH TO EAST BLVD	8,738	6,525	75%
MAIN ST	MT RUSHMORE TO 5TH	11,272	9,644	86%
MAIN ST	WEST BLVD TO MT RUSHMORE	14,279	11,747	82%
MALL DR	MAPLE TO LACROSSE	3,571	5,112	143%
MALL DR	HAINES TO MAPLE	3,438	7,158	208%
SD-44 (E)	TWILIGHT TO JOLLY	17,337	17,047	98%
SD-44 (E)	ST PATRICK TO TWILIGHT	23,006	23,845	104%
MINNESOTA (E) ST	5TH TO ELM	5,405	2,170	40%
MOUNTAINVIEW RD	JACKSON TO CANYON LAKE	7,293	12,322	169%
MOUNTAINVIEW RD	CANYON LAKE TO MAIN	16,668	17,687	106%
MOUNTAINVIEW RD	MAIN TO OMAHA	19,389	22,837	118%
US-16	CATRON TO CATHEDRAL	12,352	12,254	99%
MT RUSHMORE RD	CATHEDRAL TO ST PATRICK	22,913	23,768	104%
MT RUSHMORE RD	ST JOSEPH TO MAIN	17,790	24,613	138%
MT RUSHMORE RD	MAIN TO OMAHA	13,629	21,632	159%
MT RUSHMORE RD	ST PATRICK TO ST JOSEPH	23,505	27,599	117%
US-16	CITY LIMIT TO CATRON	14,879	14,706	99%
MAPLE (N) AVE	DISK (W) TO DISK (E)	2,695	3,064	114%
NEMO RD	WESTBERRY TRAILS TO BERRY PINE	4,046	3,365	83%
OMAHA ST	5TH TO EAST BLVD	27,444	41,235	150%
OMAHA ST	MT RUSHMORE TO 5TH	31,146	41,204	132%
E NORTH ST	MILWAUKEE TO LACROSSE	13,838	22,675	164%
OMAHA ST	WEST BLVD TO MT RUSHMORE	30,524	43,419	142%
SOUTH CANYON RD	BERRY PINE TO 44TH	7,049	3,351	48%
SOUTH CANYON RD	W MAIN TO 44TH	1,300	133	10%
E NORTH ST	CAMBELL TO ANAMOSA	20,011	31,140	156%
E NORTH ST	ANAMOSA TO I-90	16,183	29,507	182%
OMAHA ST	EAST BLVD TO LACROSSE	22,765	22,359	98%
OMAHA (E) ST	LACROSSE TO CAMBELL	20,580	27,972	136%
SD-79	CITY LIMIT TO ELK VALE	11,438	7,816	68%
SEGER DR	LACROSSE TO DYESS	2,545	1,260	50%
SHERIDAN LAKE RD	JACKSON TO CANYON LAKE	11,574	3,292	28%
SHERIDAN LAKE RD	CATRON TO CORRAL	15,105	8,627	57%
SHERIDAN LAKE RD	FLORMANN TO JACKSON	15,663	10,740	69%
SHERIDAN LAKE RD	S WILDWOOD TO CATRON	8,581	6,667	78%
SHERIDAN LAKE RD	DUNSMORE TO S WILDWOOD	8,632	6,558	76%
SHERIDAN LAKE RD	CORRAL TO FLORMANN	13,894	10,884	78%
SHERIDAN LAKE RD	CANYON LAKE TO W MAIN	11,763	3,220	27%
SOO SAN DR	CANYON LAKE TO RANGE	6,312	4,157	66%
ST JOSEPH ST	5TH TO EAST BLVD	9,129	7,904	87%

ROAD	LIMITS	COUNT	MODEL	MODEL/ COUNT VOLUME
ST JOSEPH ST	WEST BLVD TO MT RUSHMORE	12,962	13,687	106%
ST JOSEPH (W) ST	WEST ST TO WEST BLVD	16,427	15,366	94%
ST JOSEPH ST	MT RUSHMORE TO 5TH	10,226	8,886	87%
ST PATRICK ST	MT RUSHMORE TO 5TH	7,468	3,925	53%
ST PATRICK ST	5TH TO ELM	11,526	7,802	68%
ST PATRICK ST	WEST BLVD TO MT RUSHMORE	1,799	517	29%
STURGIS RD	W CHICAGO TO ST MARTINS	10,746	10,545	98%
STURGIS RD	MAIN TO W CHICAGO	11,646	6,383	55%
CATRON BLVD	SHERIDAN LAKE TO US-16	11,904	8,304	70%
CATRON BLVD	US-16 TO 5TH	14,343	11,495	80%
CATRON (E) BLVD	5TH TO SD-79	15,614	13,528	87%
TWILIGHT DR	SD-44 TO JOLLY LN	7,918	4,810	61%
TWILIGHT DR	JOLLY LN TO RESERVOIR	7,619	5,694	75%
W CHICAGO ST	STURGIS TO DEADWOOD	16,404	15,409	94%
W CHICAGO ST	44TH TO STURGIS	11,247	10,034	89%
MAIN (W) ST	BERRY PINE TO 44TH	2,422	964	40%
MAIN (W) ST	JACKSON TO CROSS	33,306	34,025	102%
MAIN (W) ST	MTVIEW TO JACKSON	24,464	14,270	58%
MAIN (W) ST	SHERIDAN LAKE TO MTVIEW	22,995	9,623	42%
MAIN (W) ST	STURGIS TO SHERIDAN LAKE	16,690	8,781	53%
MAIN (W) ST	44TH TO SOO SAN	5,157	3,691	72%
MAIN (W) ST	SOO SAN TO STURGIS	12,036	5,209	43%
MAIN (W) ST	CROSS TO WEST STREET	32,584	34,248	105%
OMAHA (W) ST	MTVIEW TO WEST BLVD	29,340	38,546	131%
OMAHA (W) ST	DEADWOOD TO MTVIEW	23,494	29,846	127%
WEST BLVD	ST. JOSEPH TO MAIN	12,004	5,565	46%
WEST BLVD	MAIN ST TO OMAHA ST	13,762	11,844	86%
WEST BLVD	ST PATRICK TO ST CLOUD	5,971	158	3%
WEST BLVD	ST CLOUD TO ST JOSEPH	9,090	1,969	22%
WEST BLVD	FLORMANN TO ST PATRICK	1,554	17	1%
MINNESOTA (E) ST	ELM TO CAMBELL	6,255	2,084	33%
5TH ST	TEXAS TO 3RD	19,636	11,234	57%
EAST BLVD	KANSAS CITY TO ST JOSEPH	3,550	1,281	36%
HILLSVIEW DR	ST PATRICK TO RAIDER	3,685	786	21%
DYESS AVE	MALL TO SEGER	3,414	14	0%
ELK VALE RD	SD-44 TO I-90	17,465	12,917	74%
EGLIN ST	DYESS TO ELK VALE	4,345	2,497	57%
EGLIN ST	LUNA TO E. NORTH	11,801	6,508	55%
EGLIN ST	LACROSSE TO LUNA	7,772	3,198	41%
EGLIN ST	E.NORTH TO DYESS	5,716	3,416	60%
MALL (E) DR	DYESS TO ELK VALE	4,956	1,400	28%

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ROAD	LIMITS	COUNT	MODEL	MODEL/ COUNT VOLUME
MALL (E) DR	E NORTH TO DYESS	6,222	4,197	67%
MALL DR	LACROSSE TO E. NORTH	3,038	3,139	103%
225TH ST	N ELLSWORTH TO BRIGGS	1,684	337	20%
LIBERTY BLVD	N ELLSWORTH TO I-90	4,115	10,606	258%
N ELLSWORTH RD	US-14/16 TO LIBERTY	6,866	471	7%
RADAR HILL RD	MULE DEER TO US-14/16	3,686	1,036	28%
US-14/16	I-90 TO WESTGATE	14,524	11,301	78%
US-14/16	S ELLSWORTH TO OAK	2,139	150	7%
WEST GATE RD	US-14/16 TO BLUEBIRD	3,508	2,865	82%
COMMERCIAL GATE	I-90 TO GATE	3,404	4,048	119%
COUNTRY RD	ELK VALE TO BENNET RD	1,215	307	25%
US-14/16	COMM. GATE RD TO ELLSWORTH RD	10,200	2,309	23%
US-14/16	WEST GATE RD TO RADAR HILL RD	14,300	13,327	93%
US-14/16	151 AVE TO 154 AVE	1,200	175	15%
151 AVE	I-90 TO 225TH ST	370	323	87%
150 PL	225TH ST TO 224TH ST	445	281	63%
225 ST	151 AVE TO 154 AVE	250	53	21%
ELLSWORTH RD	S/O US-14/16	2,857	2,135	75%
LIBERTY BLVD	S/O US-14/16	961	1,928	201%
44TH ST	SEEAIRE ST TO W. MAIN ST	3,390	720	21%
CAMBELL ST	OAKLAND ST TO E FAIRMONT BLVD	17,183	26,229	153%
CREEK DR	SOUTH OF CENTRE ST	1,205	341	28%
E.NORTH ST N.	E.MALL DR TO I-90 W	6,834	8,015	117%
E. ST PATRICK ST	S. VALLEY DR TO SD44	9,569	4,786	50%
EAST BLVD	E. SIGNAL DR TO QUINCY ST	2,474	1,059	43%
ELM AVE	E. ELK ST TO E. LIBERTY ST	2,635	385	15%
ELM AVE	E. OAKLAND ST TO E. INDIANA ST	3,580	1,502	42%
FLORMANN ST	US16 TO S. RIDGE RD	1,382	109	8%
LACROSSE ST	E. MAIN ST N. TO SD44	4,888	2,859	59%
NORTH ST	WEST BLVD N. TO N. 8TH ST	3,328	1,453	44%
PARK DR	SD44 TO FALLS DR	7,990	7,070	88%
PARK DR	WONDERLAND DR TO CORRAL DR	5,076	2,806	55%
STEELE AVE	E. MAIN ST N. TO MAIN ST	2,726	1,377	51%
TISH BLVD	NORTH OF E. MALL DR	873	1,250	143%
I-90	EAST OF LIBERTY BLVD	10,100	9,990	99%
I-90	WEST OF CHIMNEY CANYON RD	17,670	17,987	102%
US 16	SOUTH OF I-90	19,250	21,427	111%

APPENDIX C. RAPID CITY AREA ORIGIN-DESTINATION STUDY

RAPID CITY AREA
ORIGIN-DESTINATION STUDY

FINAL REPORT

Prepared for:

Rapid City Area MPO
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Prepared by:

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EXECUTIVE SUMMARY

The Rapid City Area Metropolitan Planning Organization (RCMPO) maintains the regional travel demand model for areas including the jurisdictions of Rapid City, Box Elder, Summerset, Piedmont, Ellsworth Air Force Base, the unincorporated areas of Black Hawk and Rapid Valley, and the developing areas of Pennington and Meade Counties. The regional travel demand model is a traditional trip-based, four-step model that runs on the TransCAD platform. The existing model has been calibrated and validated against average daily traffic (ADT) counts; vehicle miles traveled (VMT), trip length distributions, and screen line counts. As there is always room for improvement in the calibration and validation process, this Rapid City Area Origin-Destination Study aimed to collect data that will be used during the next model update process to more accurately calibrate the regional travel demand model.

The data collection effort was completed by AirSage, a firm which boasts a new type of data source – mobile signals. AirSage collects and analyzes real-time mobile signals to provide anonymous data of the location and movement of mobile devices. This data set provides insight into where people are located and how they move about over time. AirSage's WiSE (Wireless Signal Extraction) technology extracts data from wireless carrier networks, as generated by devices in the normal course of operation (e.g., making phone calls, texting, surfing the Web). Mobile devices frequently communicate with the network, both during use and when the mobile is in idle mode. AirSage technology anonymizes the data stream ensuring user privacy, and performs multiple stages of analysis to monitor the location movement of mobile devices, and thus the population of mobile users.

The final AirSage data has been summarized and illustrated to provide a basis for reviewing the data for consistency and adherence to the survey method. The data summarization has been completed by AirSage through the development of summary reports. Two separate reports have been completed, for April-May and June. Included are details about the types of trips generated with magnitudes and comparison to recognized standards, information about trip making by residents and visitors, and time of day trip making details. Overall, these data summaries find the Rapid City area to be within the expected norms for trip making. The data review process began with translating the origin-destination data into TransCAD matrices and a review of the data set for outliers. In order to review the data more thoroughly, several figures have been developed to illustrate the data. These figures focus on the origin-destination patterns of home-based work trips and those of visitors to the region.

Overall, the data review process confirms that the origin-destination data provided by AirSage meets the request contained in the Methods and Assumptions Report and the data has been successfully verified. In addition to this report, the raw data has been transmitted to Rapid City MPO through a share point on May 30, 2014.

PROJECT OBJECTIVES

The Rapid City Area Metropolitan Planning Organization (RCMPO) maintains the regional travel demand model for areas including the jurisdictions of Rapid City, Box Elder, Summerset, Piedmont, Ellsworth Air Force Base, the unincorporated areas of Black Hawk and Rapid Valley, and the developing areas of Pennington and Meade Counties. The regional travel demand model is a traditional trip-based, four-step model that runs on the TransCAD platform. The existing model has been calibrated and validated against average daily traffic (ADT) counts; vehicle miles traveled (VMT), trip length distributions, and screen line counts. As there is always room for improvement in the calibration and validation process, this Rapid City Area Origin-Destination Study aimed to collect data that will be used during the next model update process to more accurately calibrate the regional travel demand model.

STUDY METHODOLOGY

For this project, origin-destination data was purchased from AirSage, a data firm specializing in the procurement and post-processing of mobile device location data. The data collection process used mobile device location data for select wireless carriers in the study area and relied on data already collected and archived by the wireless carriers. Felsburg Holt and Ullevig served as the project manager responsible for coordinating the Methods and Assumption documentation process, coordinating data collection with the provider AirSage, reviewing the provided data for consistency and adherence to the data needs, and documenting the process with this Final Report.

The study process was overseen by the Study Advisory Team, including the following members.

Name	Organization	Contact Address
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SURVEY METHODOLOGY

The data collection effort was completed by AirSage, a firm which boasts a new type of data source – mobile signals. AirSage collects and analyzes real-time mobile signals to provide anonymous data of the location and movement of mobile devices. This data set provides insight into where people are located and how they move about over time. AirSage's WiSE (Wireless Signal Extraction) technology extracts data from wireless carrier networks, as generated by devices in the normal course of operation (e.g., making phone calls, texting, surfing the Web). Mobile devices frequently communicate with the network, both during use and when the mobile is in idle mode. AirSage technology anonymizes the data stream ensuring user privacy, and performs multiple stages of analysis to monitor the location movement of mobile devices, and thus the population of mobile users.

The AirSage data collection process relied on cellular data provided by wireless carriers. The cellular carrier information available to AirSage does not represent the entirety of carrier services, and therefore the complete population was not collected but instead a representative sample was obtained. Since the

data available represented only a sample of devices in the study area, AirSage utilized statistical methodologies to convert the data set into a complete population. The adjusted origin-destination tables are the final deliverable.

Traffic analysis zones defined by the travel demand model served as the basis for this project's study area. The origin-destination data collected for this study identified trips by the origination and destination zones consistent with the travel demand model zonal structure. The traffic analysis zones defined by the travel demand model were supplemented to properly capture external trips. External trips are those originating from or destined for zones outside of the model area and those trips that pass through the model area.

The travel demand model currently defines external zones through a set of eleven external nodes; trips loaded onto the network pass through these zones during the trip assignment process. In order for the AirSage data collection process to account for these trips, external zones were developed to convert the point based loading to an area representing the loading point. Per AirSage methodology, this area represented approximately a 45 minute buffer outside the model zone area. Due to the structure of the AirSage process combined with the lack of distinct travel sheds for each node (where one area can be clearly attributed to each node to represent a 45 minute travel time), the model's 11 external zones have been combined into six zones depicted in **Figure 1**. Locations where nodes were combined focus on the hills west of Rapid City. Also shown are the external zones as blue dots to gain an understanding of where external nodes have been combined.

Figure 1.   **Traffic Analysis Zones with External Zones**
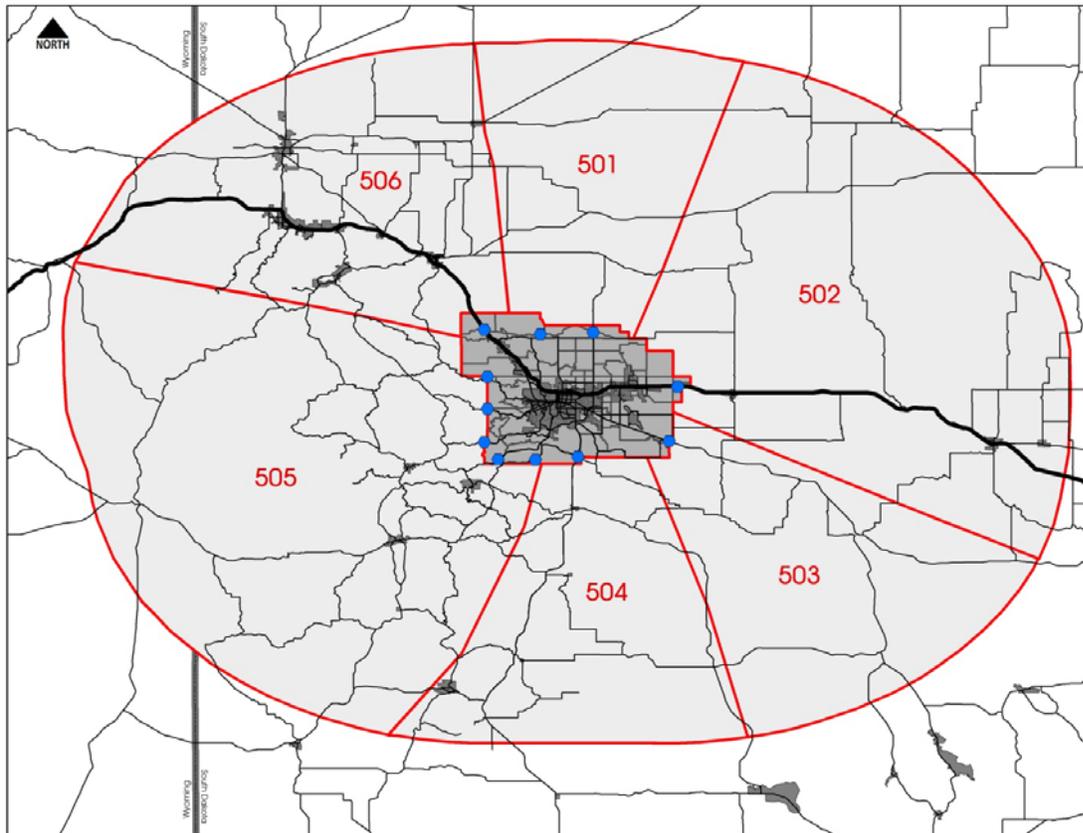
In determining the approach to various study parameters and assumptions, **Table 1** identifies the study definitions. The key study parameters include study area, month of year, day of week, day part aggregations, resident classes, and trip purpose. The Methods and Assumptions Report has been included as **Appendix A**.

Table 1.　　　**Study Parameters and Assumptions**

Parameter	Description	Final Assumptions
Study Area	O-D tables were developed using a TAZ map corresponding to the travel demand model	Utilize the existing TAZ structure from the RCMPO travel demand model with established external zones (280 TAZ's and 6 defined external zones [from 11 external nodes]) (note: this process will allow development of Internal-Internal, Internal-External, and External-External trip pairs)
Month of Year	O-D tables were developed for a one month period	To capture travel during a typical month (school in session), analyze April 15, 2013 to May 14, 2013. Additional summary data was collected for June 2013 to quantify trip making during peak season.
Day of Week	Study included separate O-D tables for average weekday day and average weekend day	Average Weekday Days: Tues-Thurs Average Weekend Days: Sat & Sun
Day Part Aggregations	Determines the periods into which the final O-D matrices are divided (note: must be at least 3 hours long due to data collection accuracy limitations)	Morning: Midnight-6 AM AM Peak Period: 6AM-9AM Midday: 9AM-3PM PM Peak Period: 3PM-6PM Evening: 6PM-Midnight (note: in order to develop data for the peak hour (consistent with the travel demand model), the three hour period must be factored manually)
Resident Classes	Trip characteristics were used to characterize users as residents and visitors	Resident/Visitor
Trip Purpose	Trip purpose characterizes the originating and destination ends of each trip through the network based on the developed home and work locations for each device.	Trip purposes were divided into 4 separate classes: 1. HBW: Home-based work 2. HBO: Home-based other 3. WBO: Work-based other 4. OBO: Other-based other (note: while the RCMPO travel demand model utilizes a Home-based shopping trip purpose, this category is not available from the data collection process and was incorporated into the Home-based other category)

The above study parameters define the assumptions that were used to develop the principal data set. The resulting origin-destination tables will be used to recalibrate the existing Rapid City MPO travel demand model within the next year.

Additionally, the Study Advisory Team expressed interest in understanding the trip pattern differences between the typical month and peak tourist season. AirSage utilized the buffer month data to produce generalized trip origin-destination tables for the summer month of June 2013. These trip tables are useful in comparing the general origin-destination trip differences throughout the region giving a high-level picture of trip making during the tourist season, especially among visitors to the region.

DESIGN OF SURVEY INSTRUMENTS

Not applicable.

SUMMARIZED RESULTS

The final AirSage data has been summarized and illustrated to provide a basis for reviewing the data for consistency and adherence to the survey method. The data summarization has been completed by AirSage through the development of summary reports. Two separate reports have been completed, for April-May and June. These documents have been included as **Appendix B** and give basic information about the trip characteristics captured during the data collection process. Included are details about the types of trips generated with magnitudes and comparison to recognized standards, information about trip making by residents and visitors, and time of day trip making details. Overall, these data summaries find the Rapid City area to be within the expected norms for trip making.

During the Methods and Assumptions process, a threshold for measure of effectiveness was set to collect at least 25% of the population in the sample size. During the data collection process, AirSage met this threshold by including 28% of users throughout the region in the raw data collection effort.

The data review process began with translating the origin-destination data into TransCAD matrices with a review of the data set for outliers. In order to review the data more thoroughly, several figures have been developed to illustrate the data. The first two figures, **Figure 2** and **Figure 3**, have been compiled using the AM and PM peak period data for home-based work trips from the April-May average weekday. Each figure provides the origin zone on the left and destination zone on the right for the peak period trips; with each dot representing five trips made during the period. As would be expected, the AM and PM peak period maps are essentially mirror images of each other as the AM represents the workbound trip and the PM represents the homebound trip for most travelers. Additionally, these figures demonstrate that the data set accurately accounts for the locations of homes and jobs throughout the region.

The second set of figures, **Figure 4** and **Figure 5**, illustrate the results of visitor trip making. The figures show magnitude of April-May and June origin and destination trips, respectively. These figures are interesting in their ability to demonstrate the significant increase in trip making experienced during the summer tourist season. These findings are bolstered through further examination of the visitor data which reveals that trip making during the weekend between the April-May and June data shows an increase from 2,250 trips/hour to 7,000 trips/hour between the month periods, a threefold increase.

The final figure, **Figure 6**, demonstrates the frequency of Internal-External and External-External trips occurring during the April-May average weekday. Internal-External trips are those that leave or enter the MPO boundary, as can be seen 22,140 trips are oriented towards west I-90, 13,327 trips are oriented towards the Black Hills, and 7,422 trips are oriented to the south. Overall, 13 percent of trips of the approximately 375,000 daily trips captured on the average weekday can be classified as Internal-External. External-External trips are those that pass through the MPO boundary, this map shows the largest four External-External trip pairs, with the greatest number of trips occurring between I-90 west and east at 938 trips per day. Overall, 6 percent of trips of the approximately 375,000 daily trips captured on the average weekday can be classified as External-External.

The data review process confirms that the origin-destination data provided by AirSage meets the request contained in the Methods and Assumptions Report and the data has been successfully verified. In addition to this report, the raw data has been transmitted to Rapid City MPO through a share point on May 30, 2014.

During the course of the Methods and Assumptions process a number of specific questions were recorded about how this origin-destination data will be used during the calibration of the travel demand model. Due to this project's limited scope as a data purchase and verification process, those questions have been documented below for reference. It is recommended that during the future calibration, the project team review and incorporate these questions into the process.

- Non-work trips are often more difficult to impute; perhaps it makes sense to collapse the work-based other and other-based other purposes into one bin. Experience in other locations indicates that trip matrices for these purposes are less reliable in general, and it may be difficult to differentiate these trips.
- Verification of estimated data based on "ground truth" information can be helpful as a reality check; potential sources of observed data include American Community Survey flows (for work trips). It may also be helpful to take a sample and manually verify the OD patterns (and imputed trip purposes) using more detailed land use data, such as Google Earth imagery.
- One added value for using large samples is that they afford the opportunity to more closely reflect the temporal distribution of travel; some areas have derived time dependent OD matrices from cell phone derived seed matrices and high resolution traffic count data. This approach could be helpful for supporting operation planning methods (Dynamic Traffic Assignment or micro simulation methods).
- The proposal to develop matrices that reflect variation between peak and shoulder periods, as well as weekday and weekend travel, makes sense. Access to a month's worth of data also affords the opportunity to evaluate travel patterns for other special markets, generators, or other events that may be helpful for calibration efforts. For example, airports and large regional generators often have unique trip distribution patterns that may differ from traditional non-work trips.

Origin Trips
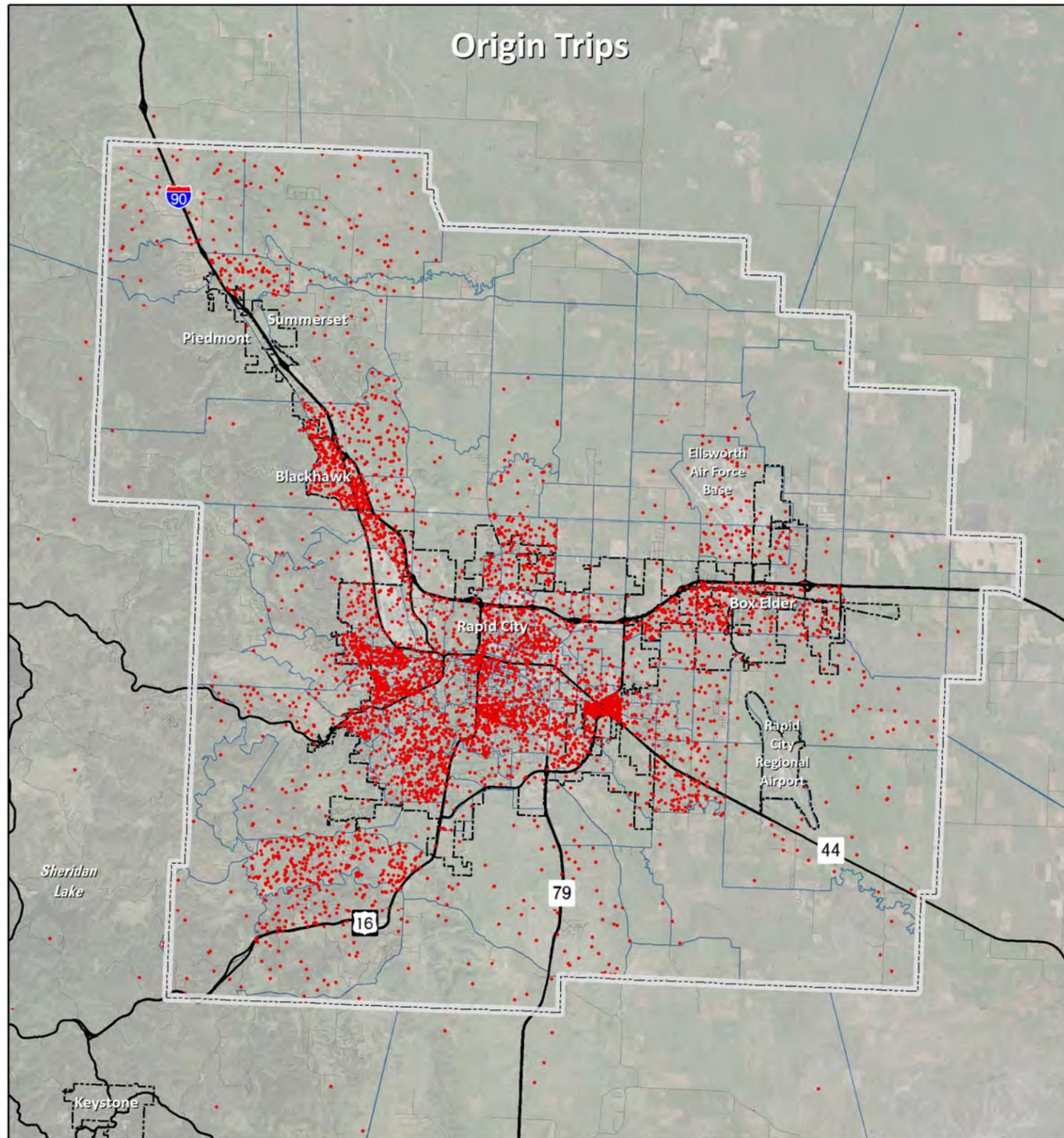
Destination Trips

Legend

- 1 Dot = 5 Trips (AM Peak Period)
- Traffic Analysis Zone Boundaries
- Rapid City MPO Boundary
- State_highways
- City & Town Boundaries

NORTH

0   4   Miles

Rapid City Area Origin-Destination Study
April/May Weekday Home-Based Work AM Peak Period Trip Dot Density

Figure 2

Origin Trips

Destination Trips

Rapid City Area Origin-Destination Study
April/May Weekday Home-Based Work PM Peak Period Trip Dot Density
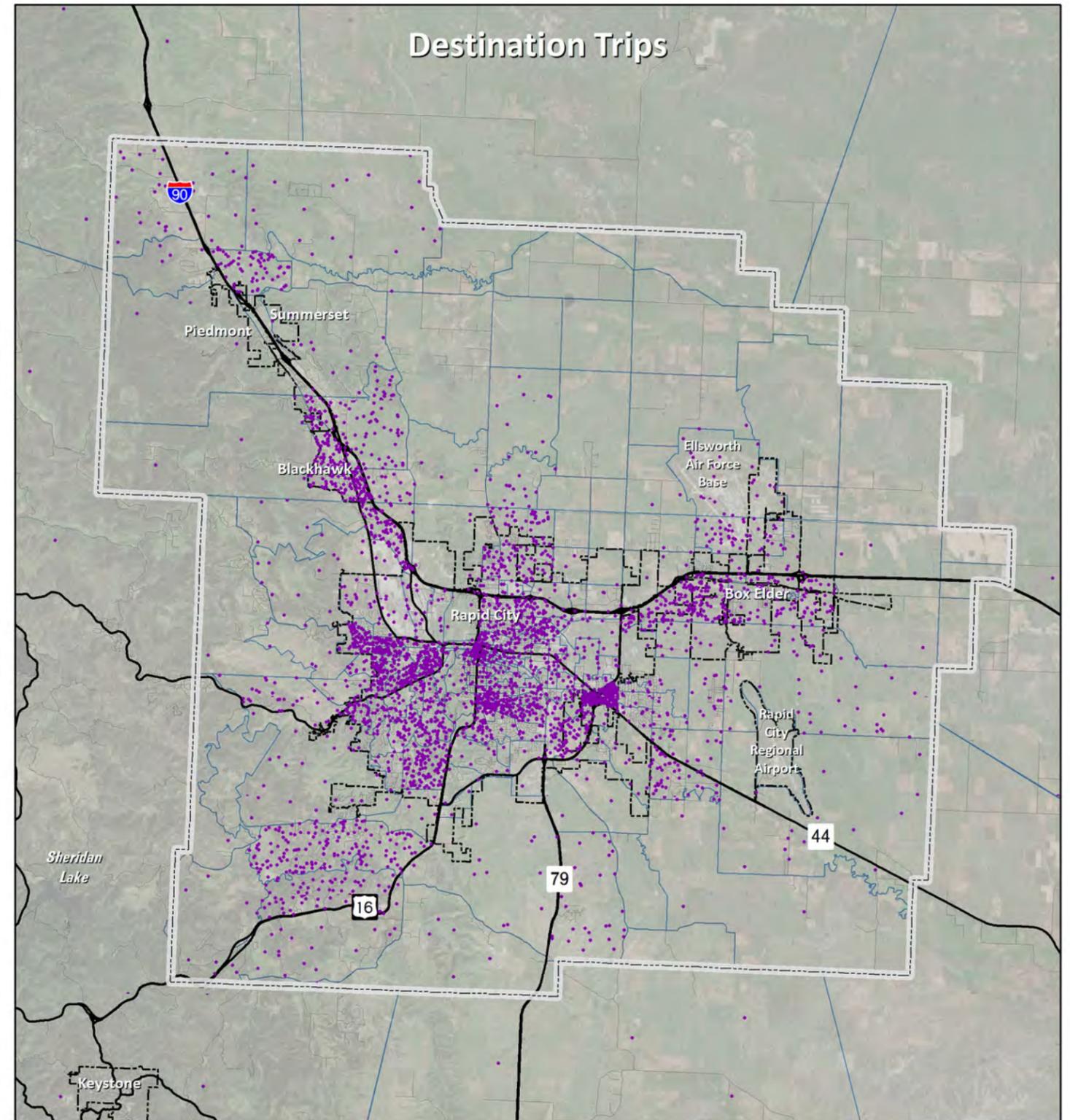
Legend

- 1 Dot = 5 Trips (PM Peak Period)
- ─── State_highways
- Traffic Analysis Zone Boundaries
- City & Town Boundaries
- Rapid City MPO Boundary

NORTH

0   4

Miles

Figure 3

April-May Origin Trips
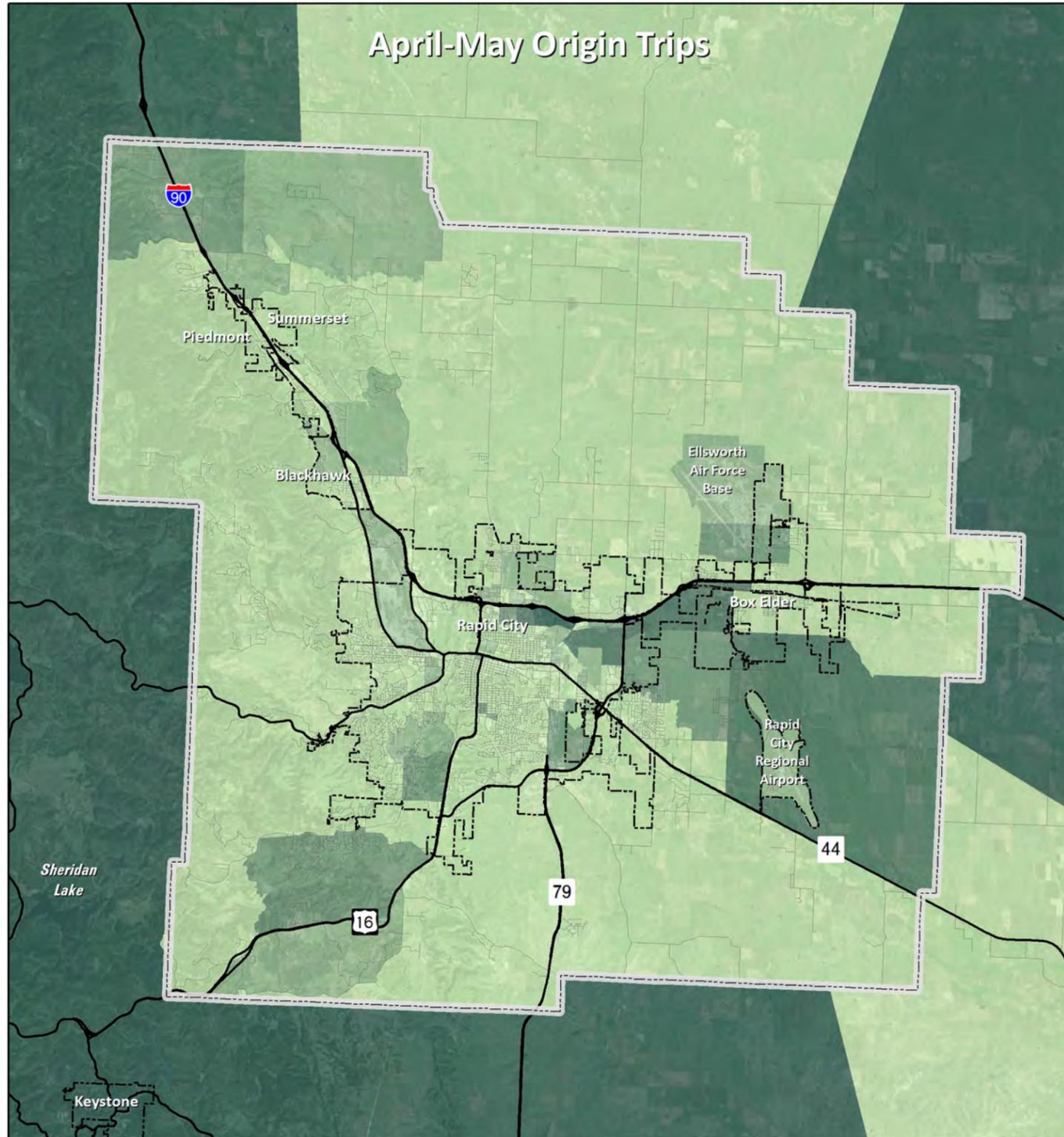
April-May Destination Trips

I-90

Piedmont
Summerset
Blackhawk
Ellsworth Air Force Base
Box Elder
Rapid City
Rapid City Regional Airport
Sheridan Lake
44
79
16
Keystone

Rapid City Area Origin-Destination Study
April/May Weekday Visitor Trips
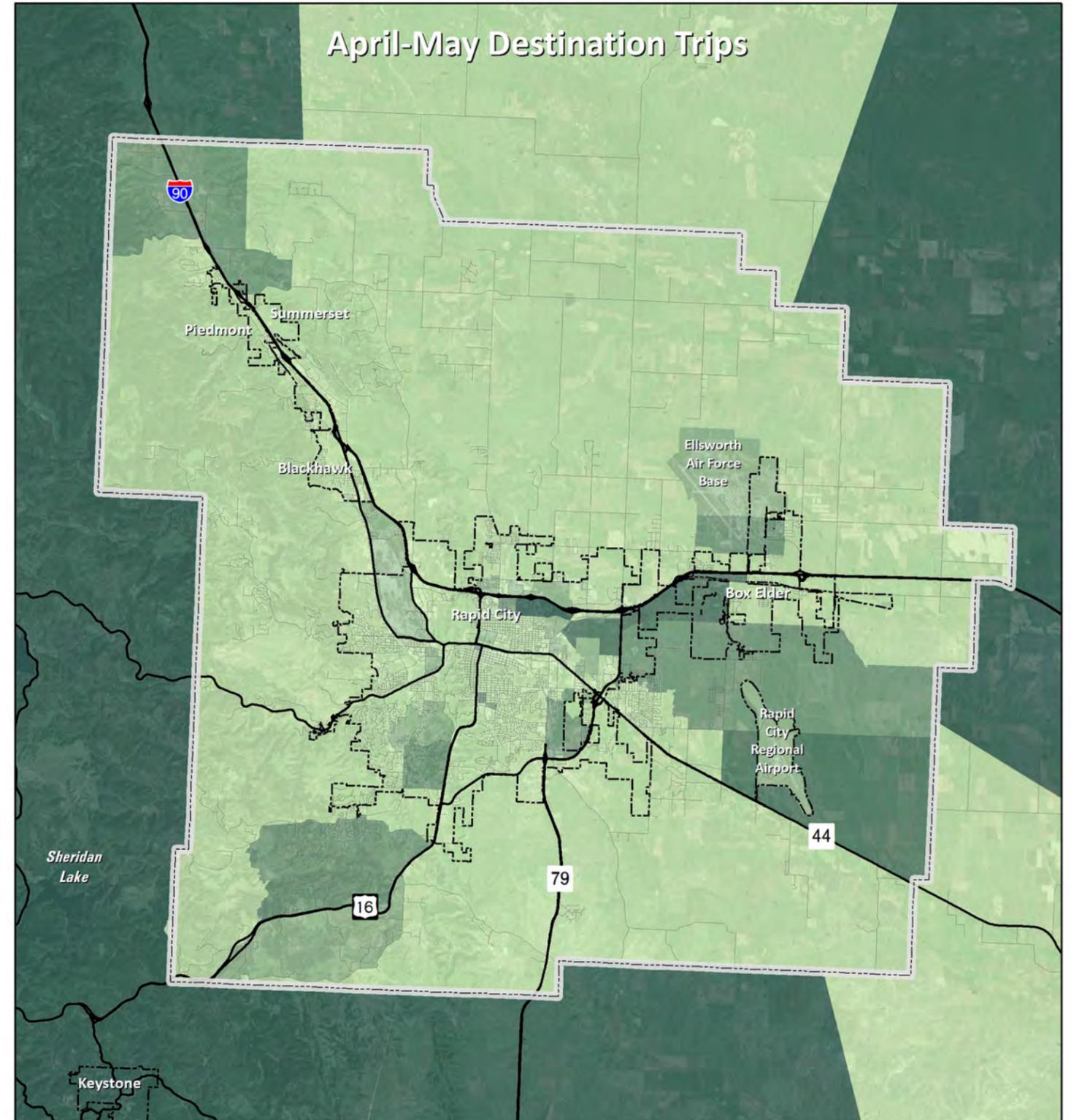
Legend

April-May Origin and Destination Counts

0 - 100 Trips

100 - 200 Trips

200 - 400 Trips

400 - 800 Trips

Greater Than 800 Trips

State_highways

City & Town Boundaries

Rapid City MPO Boundary

NORTH

0   4
Miles

Figure 4

June Origin Trips

June Destination Trips

Rapid City Area Origin-Destination Study
June Weekday Visitor Trips

NORTH

0   4
Miles
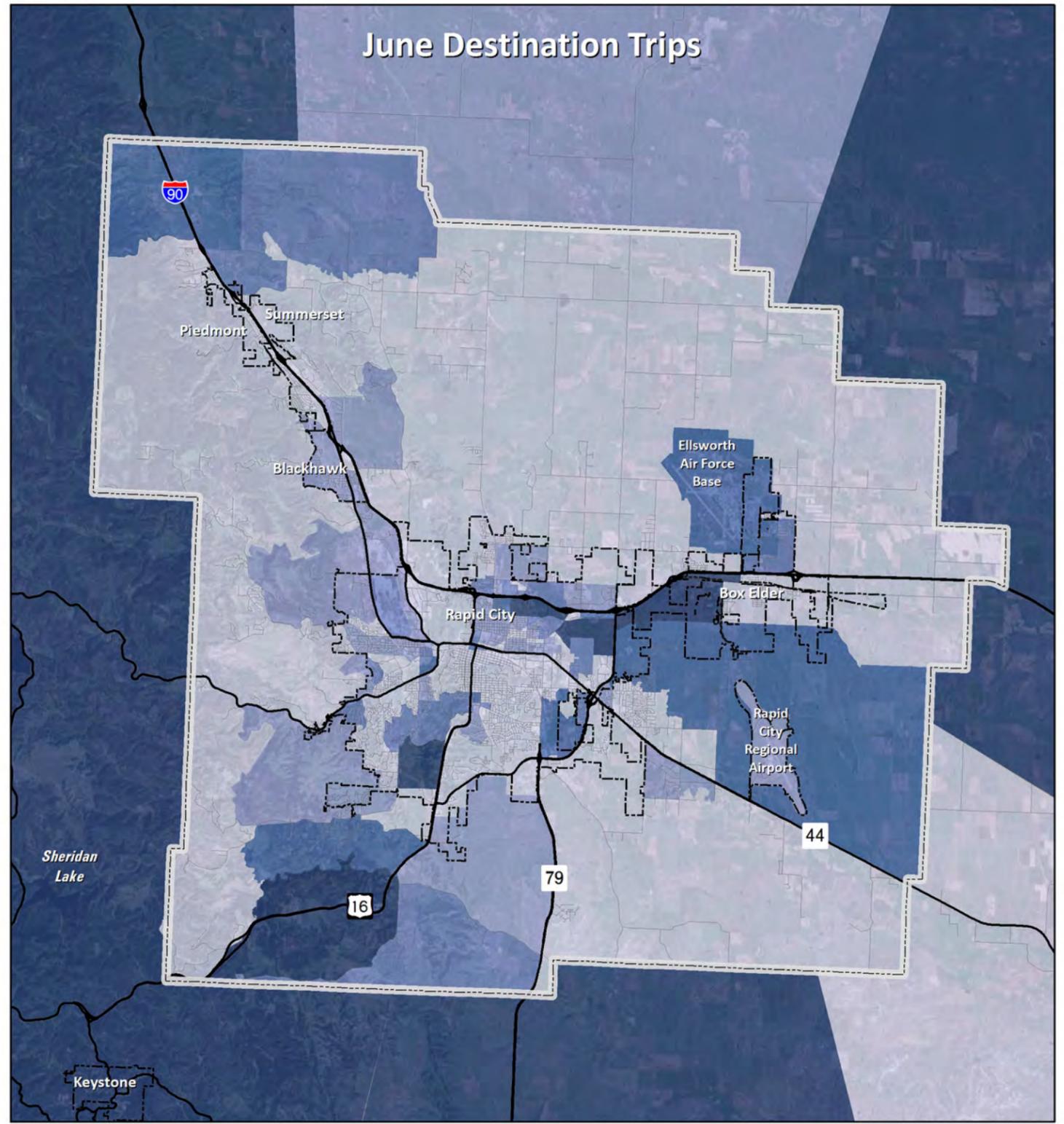
Legend

June Origin and Destination Counts

0 - 100 Trips	200 - 400 Trips	State_highways
100 - 200 Trips	400 - 800 Trips	City & Town Boundaries
	Greater Than 800 Trips	Rapid City MPO Boundary

Figure 5

Internal - External Trips
(trips leaving/entering the MPO area)

22,140
435
6,513
13,327
1
7,422

501
502
503
504
505
506

External - External Trips
(trips passing through the MPO area)

506
501
502
938
242
505
422
144
504
503

Figure 6
April - May
Internal - External and External - External Trips

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ULLEVIG

APPENDIX A RAPID CITY AREA ORIGIN-DESTINATION STUDY METHODS AND ASSUMPTIONS DOCUMENT

RAPID CITY AREA
ORIGIN-DESTINATION STUDY

METHODS AND ASSUMPTIONS DOCUMENT
Version 2: March 14, 2014
Original: February 5, 2014

Methods and Assumptions Meeting Dates:
January 27, 2014
March 11, 2014

Prepared for:

Rapid City Area MPO
300 Sixth Street
Rapid City, SD 57701

Prepared by:

Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
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303/721-1440
Principal: Elliot Sulsky, PE, AICP
Project Manager: Steven Marfitano, PE

AirSage
1330 Spring Street NW
Atlanta, GA 30309
404/809-2499

FHU Reference No. 113315-01

The undersigned parties concur with the Methods and Assumptions for the Rapid City Area Origin-Destination Study as presented in this document.

MPO:

Patsy Horton
Signature

Long Range Planning Mgr
Title

April 1, 2014
Date

SDDOT:

[signature]
Signature

MPO Coordinator
Title

_4-3-14_
Date

FHWA:

[signature]
Signature

Planning Eng.
Title

_4/3/14_
Date

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FELSBURG HOLT & ULLEVIG   airsage
The power of where and when

INTRODUCTION AND PROJECT DESCRIPTION

The Rapid City Area Metropolitan Planning Organization (RCMPO) maintains the regional travel demand model for areas including the jurisdictions of Rapid City, Box Elder, Summerset, Piedmont, Ellsworth Air Force Base, the unincorporated areas of Black Hawk and Rapid Valley, and the developing areas of Pennington and Meade Counties. The regional travel demand model is a traditional trip-based, four-step model that runs on the TransCAD platform. The existing model has been calibrated and validated against average daily traffic (ADT) counts; vehicle miles traveled (VMT), trip length distributions, and screen line counts. As there is always room for improvement in the calibration and validation process, this Rapid City Area Origin-Destination Study aims to collect data that can be used during the next model update process to more accurately calibrate the regional travel demand model.

For this project, Felsburg Holt and Ullevig will serve as the project manager responsible for coordinating the Methods and Assumption documentation process, coordinating data collection with the provider AirSage, reviewing the provided data for consistency and adherence to the data needs, and documenting the process with a Final Report. The origin-destination data will be purchased from AirSage, a data firm specializing in the procurement and post-processing of mobile device location data. The data collection process uses mobile device location data for select wireless carriers in the study area and relies on data already collected and archived by the wireless carriers.

The study schedule will proceed with the review and acceptance of this Methods and Assumptions Document, followed by notice to proceed for AirSage to develop the requested data (anticipated to take approximately six weeks), and the review of the data and documentation of the process into a final report (anticipated to take approximately three weeks), followed by a final document review process.

The study process will be overseen by the Study Advisory Team, including the following members.

Name	Organization	Contact Address
Kip Harrington	Rapid City MPO	Kip.Harrington@rcgov.org
Patsy Horton	Rapid City MPO	Patsy.Horton@rcgov.org
Bradley Remmich	South Dakota DOT	Bradley.Remmich@state.sd.us
Steve Gramm	South Dakota DOT	Steve.Gramm@state.sd.us
Dan Staton	South Dakota DOT	Daniel.Staton@state.sd.us
Mark Hoines	FHWA	Mark.Hoines@dot.gov
Eric Pihl	FHWA	Eric.Pihl@dot.gov

STUDY AREA

Traffic analysis zones defined by the travel demand model serve as the basis for this project's study area. The origin-destination data to be collected for this study will identify trips by the origination and destination zones consistent with the travel demand model zonal structure. The traffic analysis zones defined by the travel demand model must be supplemented to properly capture external trips. These are trips originating or destined for zones outside of the model area and those trips that pass through the model area.

The travel demand model currently defines external zones through a set of eleven external nodes; trips loaded onto the network pass through these zones during the trip assignment process. In order for the AirSage data collection process to account for these trips, external zones have been developed to

convert the point based loading to an area representing the loading point. Per AirSage methodology, this area represents approximately a 45 minute buffer outside the model zone area. Due to the structure of the AirSage process combined with the lack of distinct travel sheds for each node (where one area can be clearly attributed to each node to represent a 45 minute travel time), the model's 11 external zones have been combined into six zones depicted in **Figure 1**. Locations where nodes have been combined primarily focus on the hills west of Rapid City. Also shown are the external zones as blue dots to gain an understanding of where zone combinations have occurred.

Figure 1.   **Traffic Analysis Zones with External Zones**
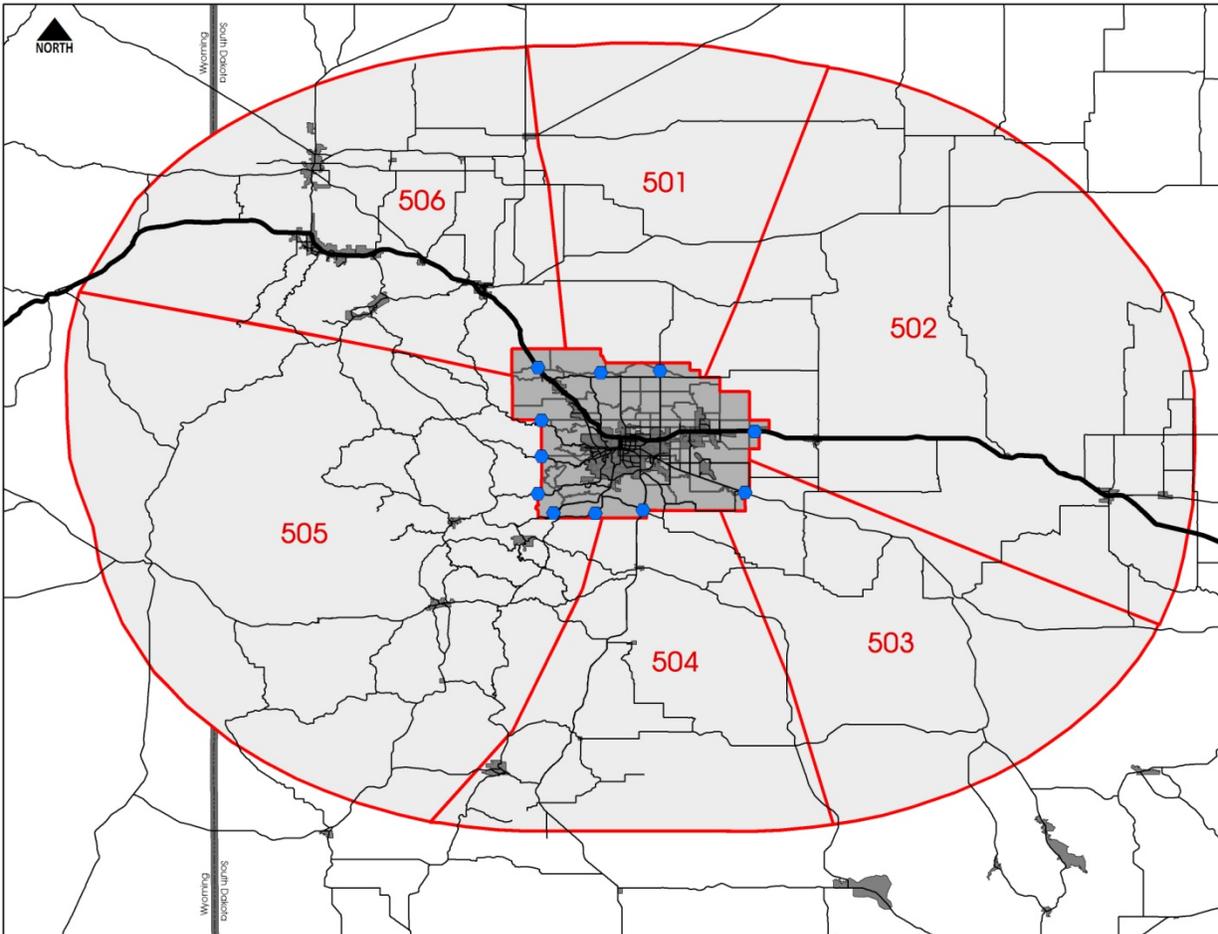
ANALYSIS YEARS/PERIODS

During the Methods and Assumptions Meeting, the key study parameters were presented for review and discussion, including study area, month of year, day of week, day part aggregations, resident classes, and trip purpose. **Appendix A** contains a short memorandum containing the preliminary recommendations in a tabular format; some of these assumptions changed as a result of the Meeting, the resulting final assumptions follow as **Table 1**.

Table 1.   **Study Parameters and Assumptions**

Parameter	Description	Final Assumptions
Study Area	O-D tables will be developed using a TAZ map corresponding to the travel demand model	Utilize the existing TAZ structure from the RCMPO travel demand model with established external zones (280 TAZ's and 6 defined external zones [from 11 external nodes]) (note: this process will allow development of Internal-Internal, Internal-External, and External-External trip pairs)
Month of Year	O-D tables will be developed for a one month period	To capture travel during a typical month (school in session), analyze April 15, 2013 to May 14, 2013
Day of Week	Study will include separate O-D tables for average weekday day and average weekend day	Average Weekday Days: Tues-Thurs Average Weekend Days: Sat & Sun
Day Part Aggregations	Determines the periods into which the final O-D matrices are divided (note: must be at least 3 hours long due to data collection accuracy limitations)	Morning: Midnight-6 AM AM Peak Period: 6AM-9AM Midday: 9AM-3PM PM Peak Period: 3PM-6PM Evening: 6PM-Midnight (note: in order to develop data for the peak hour (consistent with the travel demand model), the three hour period will have to be factored manually)
Resident Classes	Trip characteristics will be used to characterize users as residents and visitors	Resident/Visitor
Trip Purpose	Trip purpose characterizes the originating and destination ends of each trip through the network based on the developed home and work locations for each device.	Trip purposes will be divided into 4 separate classes: 1. HBW: Home-based work 2. HBO: Home-based other 3. WBO: Work-based other 4. OBO: Other-based other (note: while the RCMPO travel demand model utilizes a Home-based shopping trip purpose, this category is not available from the data collection process and will be incorporated into the Home-based other category)

The above study parameters define the assumptions that will be used to develop the principal data set. These resulting origin-destination tables will be used to recalibrate the existing Rapid City MPO travel demand model within the next year.

Additionally, the Study Advisory Team expressed interest in understanding the trip pattern differences between the typical month and peak tourist season. AirSage has agreed to utilize the buffer month data naturally pulled to complete the principal data set to produce generalized trip origin-destination tables for the summer month of June 2013. The secondary trip tables will not provide detailed information such as resident and visitor or distinguish trip purpose. The trip tables will be useful in comparing the general origin-destination trip differences throughout the region giving a high-level picture of trip making during the tourist season.

DATA COLLECTION

The data collection effort will be completed by AirSage, a firm which boasts a new type of data source – mobile signals. AirSage collects and analyzes real-time mobile signals to provide anonymous data of the location and movement of mobile devices. This data set provides insight into where people are located and how they move about over time. AirSage's WiSE (Wireless Signal Extraction) technology extracts data from wireless carrier networks, as generated by devices in the normal course of operation (e.g., making phone calls, texting, surfing the Web). Mobile devices frequently communicate with the network, both during use and when the mobile is in idle mode. AirSage technology anonymizes the data stream ensuring user privacy, and performs multiple stages of analysis to monitor the location movement of mobile devices, and thus the population of mobile users.

Further details about the AirSage process have been included in **Appendix B**.

TRAFFIC OPERATIONS ANALYSIS

Not applicable.

TRAVEL FORECAST

Not applicable.

SAFETY ISSUES

Not applicable.

SELECTION OF MEASURES OF EFFECTIVENESS (MOE)

The AirSage data collection process relies on cellular data provided by wireless carriers. The cellular carrier information available to AirSage does not represent the entirety of carrier services, and therefore the complete population will not be collected but instead a representative sample. Based on previous work experience and research, this study will aim to collect at least 25% of cellular devices in the Rapid City study area. If any concerns about reaching this threshold come to the consultant team's attention, immediate notification will be sent to the Study Advisory Team. Since the data available will represent only a sample of devices in the study area, AirSage will utilize statistical methodologies to convert the

data set into a complete population. These adjusted origin-destination tables will be the final deliverable.

FHWA INTERSTATE ACCESS MODIFICATION POLICY POINTS

Not applicable.

DEVIATIONS/JUSTIFICATIONS

Not applicable.

CONCLUSION

This Methods and Assumptions Document describes the parameters that will be utilized to develop the Rapid City Area Origin-Destination Study. Following approval by the Study Advisory Team, these parameters will be utilized by AirSage to complete the data processing effort. Felsburg Holt & Ullevig will receive the completed data set and review for completeness and preliminary data consistency. The final data will be delivered to Rapid City MPO in its original format along with a Final Report.

APPENDIX A   **RAPID CITY AREA ORIGIN-DESTINATION STUDY METHODS AND ASSUMPTIONS MEETING MEMORANDUM, JANUARY 24, 2014**

FELSBURG
HOLT &
ULLEVIG
connecting and enhancing communities

January 24, 2014

MEMORANDUM

TO:	Kip Harrington
	Patsy Horton
FROM:	Steven Marfitano
	Elliot Sulsky
SUBJECT:	Rapid City Area Origin-Destination Study Methods and Assumptions Meeting
	FHU Reference No. 13-315-01

This memorandum documents the input parameters needing definition to successfully complete the Rapid City Area Origin-Destination Study. This meeting serves as the preliminary discussion in development of the Methods and Assumptions Document. Once the Methods and Assumptions Document has been reviewed, finalized, and signed, AirSage will utilize these parameters to complete the data collection process and final origin-destination tables will be created. At the completion of the origin-destination table development process FHU will review the origin-destination tables and provide a Final Report and project deliverables to Rapid City MPO.

The following table defines the input parameters that will be used to define the origin-destination table development. Below, each component has been listed along with a recommendation for how to proceed based on known characteristics of the existing Rapid City Area Travel Demand Model. It is anticipated that Rapid City MPO will use the resulting origin-destination tables to recalibrate the existing model within the next year. If known changes to the structure of the travel demand model are known, those changes should be discussed at this meeting and incorporated into these decisions and the resulting Methods and Assumptions Document.

Parameter	Description	Preliminary Recommendation
Study Area	O-D tables will be developed using a TAZ map corresponding to the travel demand model	Utilize the existing TAZ structure from the RCMPO travel demand model with established external nodes (280 TAZ's and 11 external stations) (note: this process will allow development of Internal-Internal, Internal-External, and External-External trip pairs)
Month of Year	O-D tables will be developed for a one month period	To capture travel during a typical month (school in session), recommend analyzing April 2013
Day of Week	Study will include separate O-D tables for average weekday day and average weekend day	Average Weekday Days: Tues-Thurs Average Weekend Days: Sat & Sun

Day Part Aggregations	Determines the periods into which the final O-D matrices are divided (note: must be at least 3 hours long due to data collection accuracy limitations)	Morning: Midnight-6 AM AM Peak Period: 6AM-9AM Midday: 9AM-4PM PM Peak Period: 4PM-7PM Evening: 7PM-Midnight (note: in order to develop data for the peak hour (consistent with the travel demand model), the three hour period will have to be factored manually)
Resident Classes	Trip characteristics will be used to characterize users as residents and visitors	Resident/Visitor
Trip Purpose	Trip purpose characterizes the originating and destination ends of each trip through the network based on the developed home and work locations for each device.	Trip purposes will be divided into 4 separate classes: 1. HBW: Home-based work 2. HBO: Home-based other 3. WBO: Work-based other 4. OBO: Other-based other (note: while the RCMPO travel demand model utilizes a Home-based school trip purpose, this category is not available from the data collection process)

APPENDIX B   UNDERSTANDING POPULATION MOVEMENTS, AIRSAGE HAND OUT

Understanding Population Movements

1.0 Introduction

AirSage, an Atlanta based wireless information and data provider, has developed an approach to gathering data about population mobility throughout a region. AirSage analyzes anonymous location and movement of mobile devices, which is derived from wireless signaling data, to provide new insights into where populations, are, were, or will be, and how they move about over time and in response to special events or disruptions to the roadway network.

The purpose of this document is to describe the methodology used by AirSage to gather data and to calculate and categorize trips to produce trip matrices.

2.0 AirSage Technology

AirSage provides historic population location, movement, and traffic information derived from analysis of wireless (and in particular, cellular phone) signaling data. Combining patented and proprietary data collection and analysis technologies with signaling data from wireless carriers, AirSage has developed and deployed a secure data collection and reporting network with over 100 million mobile "sensors" (mobile devices) that provide unprecedented visibility into where groups of people are, where they were, where they are likely to be, and how they move from one area to another.

AirSage's WiSE (Wireless Signal Extraction) technology extracts data from wireless carrier networks, as generated by devices in the normal course of operation. Mobile devices frequently communicate with the network through control channel messages, both during use and when the device is in idle mode. The frequency and nature of the signaling data varies based on the network equipment used to provide cellular service to the area. The WiSE technology anonymizes the data stream (ensuring user privacy) and performs multiple stages of analysis to monitor the location and movement of the mobile devices (and thus the population of mobile users).

3.0 AirSage Study Methodology

AirSage uses a modular, multi-step methodology to derive useful information and analytics from wireless signaling data provided by its wireless carrier partners. The core components of the data collection, processing, and delivery process is outlined below.

Device Location Processing: Time-stamped locations (latitude/longitude) are generated for each mobile device (e.g. a cellphone), utilizing the network signaling data generated each time a mobile device interacts with the mobile network. Interaction with the network comes in many forms including sending and receiving text messages or receiving updates or streaming data to/from mobile devices. "Processed Sightings" are created using this information in addition to factoring in the quality of the device and removing any static that might occur within the network that has the potential to obscure the data.

Activity Pattern Analysis: All of the "Device Locations" (Home, Work, etc.) for a device are determined over the course of four to six weeks. The data are run through a series of pattern recognition and statistical clustering algorithms to determine repeated and irregular trip patterns and primary activity locations for a device. These patterns and locations are used to classify trip purpose.

Activity Point Generation: Each Device Location is then combined with other recent sightings and known activity locations to further refine the location, determine if the device is moving or stationary, and calculate additional attributes to create individual "Activity Points." At the most basic level, activity points may be classified as being Home, Work, or Other locations. Home locations are those locations where mobile users spend the majority of their nights. Nighttime is defined between 9:01pm and 6:00 am. Work locations are similarly determined by looking at where subscribers spend the majority of their days between 9:00 am and 5:00 pm. These activity points are then combined to create "Trip Legs" which eventually allow for an overall network of travel behaviors to be established.

Population Synthesis: Using the observed sample devices, the movements for a full population is synthesized. There are two main factors that go into the expansion process: penetration rates and device quality. Penetration rates, simply put, is the ratio of number of resident devices observed by Airsage in a given census tract to the 2010 census population. Currently expansion is performed to census tract but will shift to a more detailed census block group level in a future release. Device quality refers to the number of daily sightings observed for each device. This factor feeds a model which adjusts for the probability of missing trips due to limited visibility of some devices.

Trip Analysis: Each trip is analyzed and classified into various interesting categories such as resident class of subscriber, trip purpose, time of day and day of week. Each of these is explained in detail in the next section.

Data Aggregation and Packaging: For each project a unique study area is defined before the data collection process even begins. This is area is then further subdivided into analysis zones. The trip ends (Activity Points) are assigned to these zones. All of the trip ends within those zones are also assigned a

purpose and time of day during which they took place. The number of trip ends are totaled to determine the total number of trips that took place within each zone. All of this data is then packaged in the form of an O-D Matrix and distributed to clients so that they may use our results to perform their own internal analysis.

4.0 Optional Features in OD Matrix

Resident Classes (Optional): Typically, subscribers are classified as residents, non-residents and through. Residents have a home location within the study area. The 'through' field is actually identifying the type of subscriber and not the trip itself. These subscribers were only seen on one day during the study period and they just passed through the region. They might have made intermediate stops along those trips which are being identified here. On the other hand, non-residents were seen more than couple of days (likely, visitors staying few days in the region). For modeling purposes, non-resident and through trips can be combined into 'visitor' trips. A much more detailed classification of subscribers is also available upon request.

Subscriber classification can also be grouped into six categories: resident worker, home worker, inbound commuter, outbound commuter, short term visitor and long term visitor. Resident worker lives and works within in the study area. Home worker is one whose day and night time clusters are same and are within the study area. Short-terms visitors are the 'through' travelers whereas long term visitors stay more than couple of days. Outbound commuter means the subscriber has a home location in the study area but work location outside the region. Inbound commuter has home location in the external area of the study region area but work location is in one of the internal zones. It should be noted that inbound commuter is only relevant when an 'external analysis' is performed.

Trip Purpose (Optional): Trip purpose is classified as either 3-class or 9-class categories. These are standard definitions of what is used in the travel demand modeling industry – HBW, HBO and NHB for 3-class and HH, HO, OH, HW,WH,WW,WO,OW and OO for 9-class. H indicates 'Home' end, W indicates 'Work' end and O indicates 'Other' end. HH, WW means a trip from home to home or work to work. Trips are classified this way when it is certain that the subscriber has left the origin and made a short trip but the destination location is not exactly captured (for example, jogging in the neighborhood, visiting a very close grocery store, walk to lunch while at work etc.). For modeling purposes, it is suggested to use HH in HBO and WW in NHB categories.

Time of day (Optional): Each trip is grouped by trip start time by the hour of the day. This is aggregated into custom categories for time of day analysis. Standard time of day groups used internally are: Midnight to 6 AM, 6 AM to 10 AM, 10 Am to 3 PM, 3 Pm to 7 PM and 7 Pm to Midnight.

Day of week (Optional): Each trip is also identified by the day of the week travel was made. This allows for interesting analysis of travel variation by each weekday or weekend day.

External Analysis (Optional): In certain cases, external zones are added to the study area to account for external-internal travel. The size of the external zones required for an accurate analysis depends on

the network coverage and travel sheds (interstate, highway locations). In general, a 30 to 45 minute travel time buffer is created around study area to form the external zones. The first time a device coming into the study area is seen in these external zones, an origin trip end is identified. Subsequent end points are connected to this origin. This helps to identify all External – Internal, Internal-External and External-External travel in the region.

APPENDIX B   AIRSAGE SUMMARY REPORTS: APRIL-MAY AND JUNE

RAPID CITY MOBILE DATA ANALYSIS

Mobile Data Date: April 15, 2013 to May 15, 2013

Figure 1 Study Area Map

Figure 2 Sample Characteristics

Table 1 Study Area Demographic Data

Study Areas	Coverage	Census Population 2010	Households 2010	Pop./HH
Rapid City	Total	104,310	46,200	2.25

Table 2 Daily Trips by Purpose (Counts)

Purposes	Total
Home Based Work	88,260
Home Based Other	193,164
Non Home Based	82,242
Trucks Internal	n/a
Total	*363,666*
Through non-Trucks	n/a
Through Trucks	n/a

Table 3 Daily Trips by Purpose (Percentages, only Internal-Internal Trips)

Number of Person Trips by Purpose				
Purpose	I-I		TDOT[1]	FDOT[2]
	Trips	Percent	Percent	Percent
HBW	88,260	24.3%	18% - 27%	12% - 24%
HBO	193,164	53.1%	47% - 54%	45% - 60%
NHB	82,242	22.6%	22% - 31%	20% - 33%
Total	*363,666*	*100%*	*100%*	*100%*

Typical ranges of percent trips by each trip purpose are shown in the following documents:

1. TDOT Standard – Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee, 2003, page 5
2. FDOT Standard – FSUTMS-Cube Framework Phase II: Model Calibration and Validation Standards, 2008, page 2-10

Table 4 Household Person Trip Rates and Population Trip Rates by Purpose

Household Person Trip Rates by Purpose			Population Trip Rate by Purpose
Total			
Purpose	AirSage 2013	TDOT Standard	FDOT Standard	AirSage 2013
HBW	1.91	1.7 - 2.3	n/a	0.63
HBO	4.18	3.5 - 4.8	n/a	1.47
NHB	1.78	1.7 - 2.9	n/a	0.73
Total	*7.87*	*6.9 - 10.0*	*8.0 - 10.0*	*2.82*

Figures: Time of Day Distributions

Hour of Day Distribution (Table 7 part 3)

AVERAGE WEEKDAY : Time of the Day Distribution- Resident Trips By Purpose

AVERAGE WEEKDAY WEEKEND - ALL VISITOR TRIPS COMPARISON
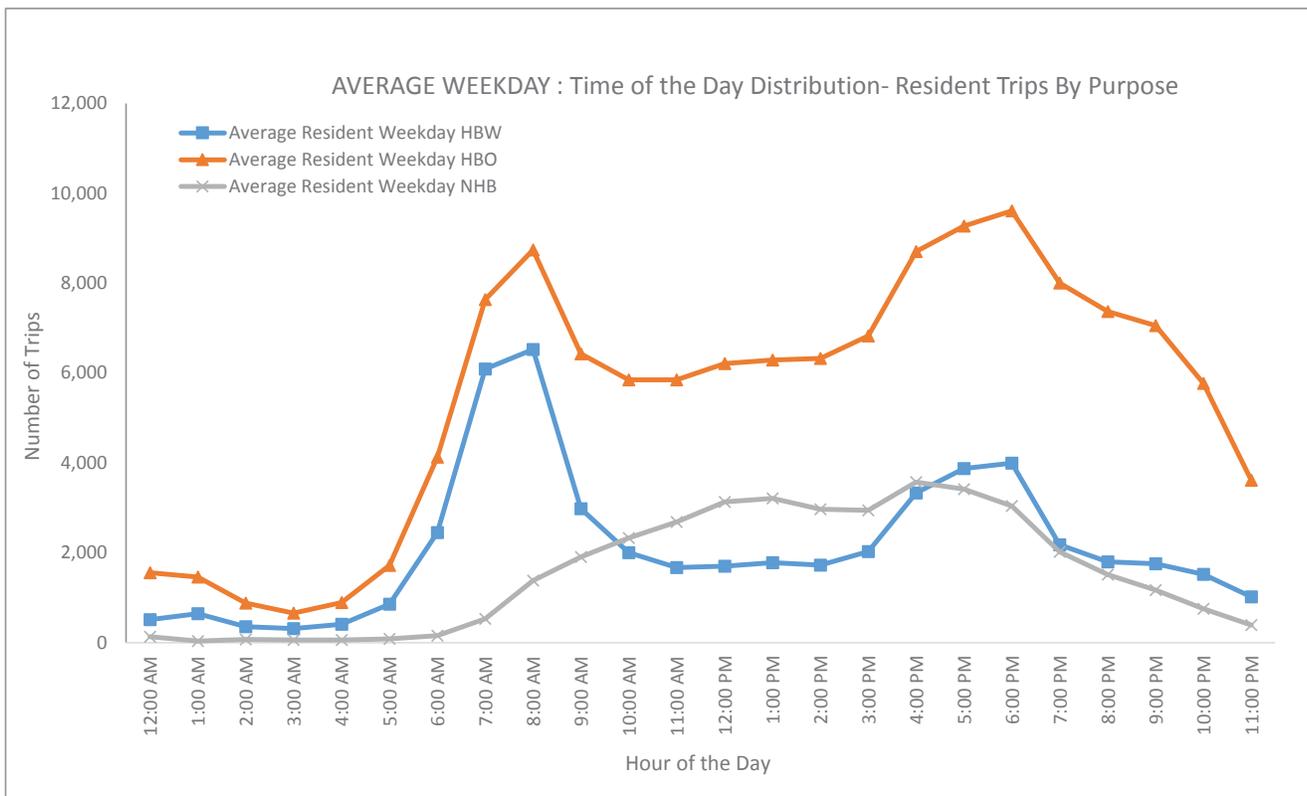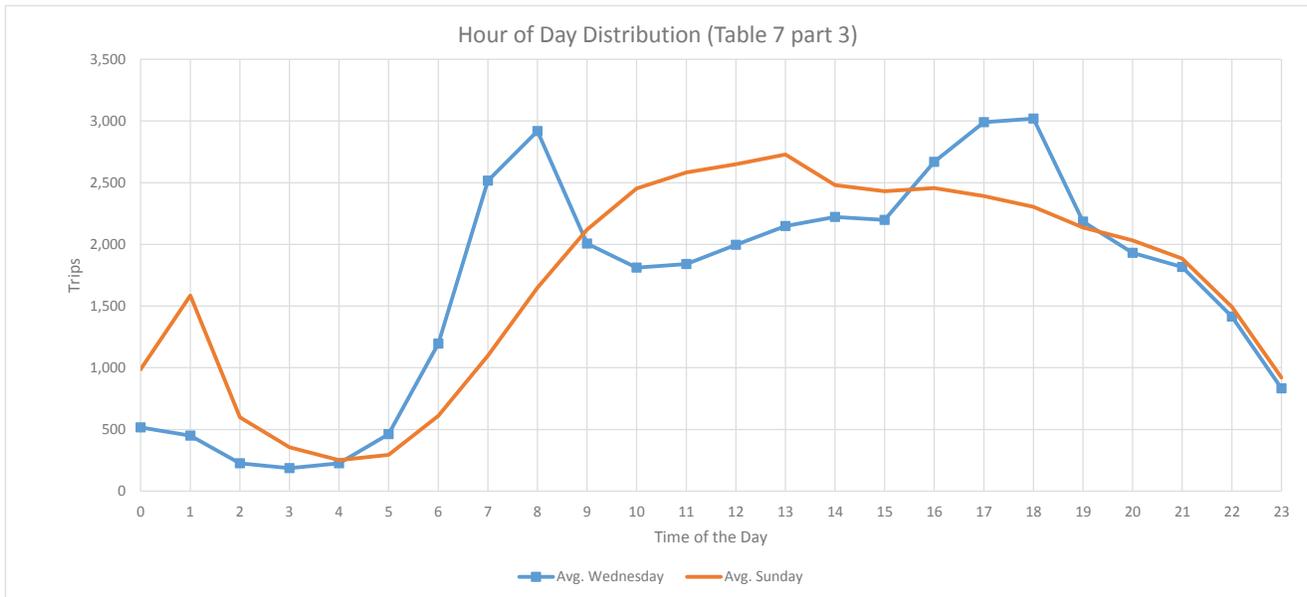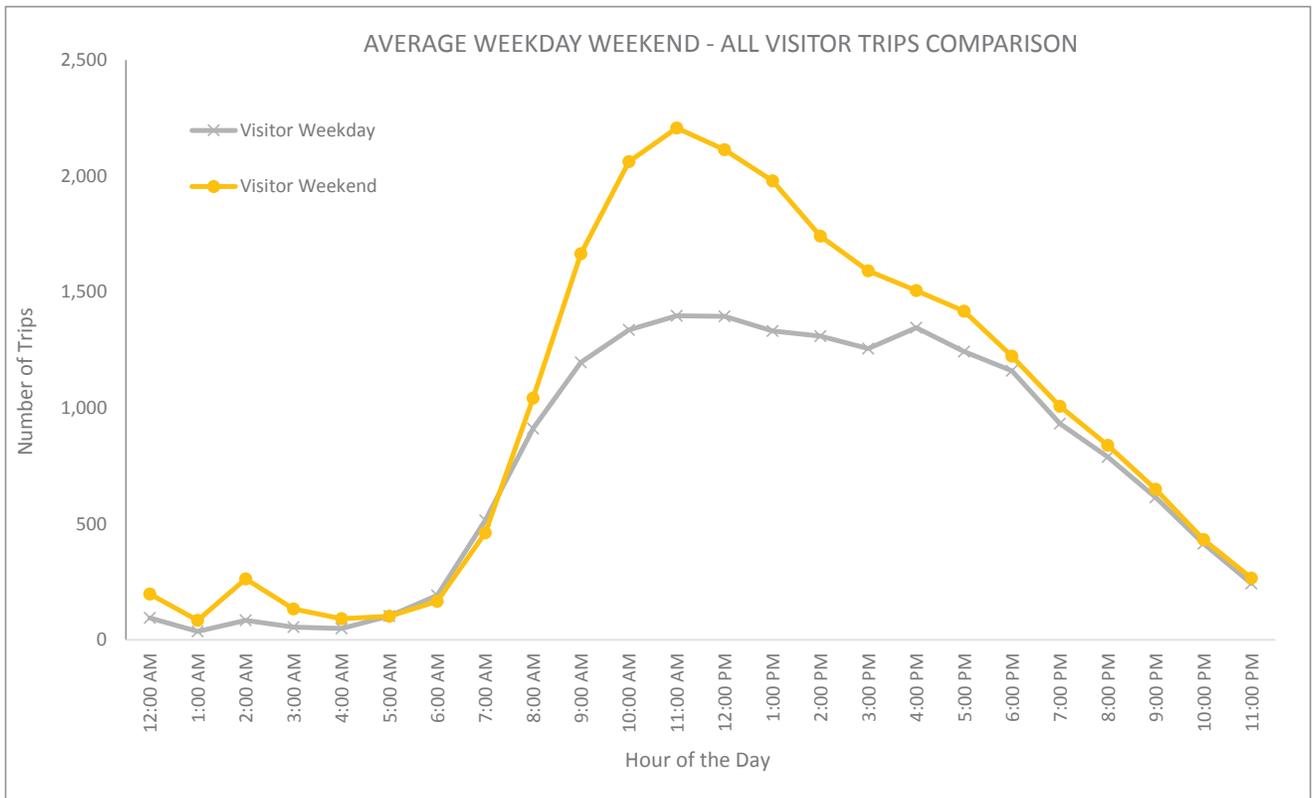
RAPID CITY MOBILE DATA ANALYSIS

Mobile Data Date: June 2013

Figure 1 Study Area Map

Figure 2 Sample Characteristics

Daily Sample Characteristics

Table 1 Study Area Demographic Data				
Study Areas	Coverage	Census Population 2010	Households 2010	Pop./HH
Rapid City	Total	104,310	46,200	2.25

Table 2 Daily Trips by Purpose (Counts)	
Purposes	Total
Home Based Work	79,723
Home Based Other	195,259
Non Home Based	118,722
Trucks Internal	n/a
Total	*393,704*
Through non-Trucks	n/a
Through Trucks	n/a

Table 3 Daily Trips by Purpose (Percentages, only Internal-Internal Trips)				
Number of Person Trips by Purpose				
Purpose	I-I		TDOT[1]	FDOT[2]
	Trips	Percent	Percent	Percent
HBW	79,723	20.2%	18% - 27%	12% - 24%
HBO	195,259	49.6%	47% - 54%	45% - 60%
NHB	118,722	30.2%	22% - 31%	20% - 33%
Total	*393,704*	*100%*	*100%*	*100%*

Typical ranges of percent trips by each trip purpose are shown in the following documents:

1. TDOT Standard – Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee, 2003, page 5
2. FDOT Standard – FSUTMS-Cube Framework Phase II: Model Calibration and Validation Standards, 2008, page 2-10

Table 4 Household Person Trip Rates and Population Trip Rates by Purpose				
Household Person Trip Rates by Purpose			Population Trip Rate by Purpose	
Total				
Purpose	AirSage 2013	TDOT Standard	FDOT Standard	AirSage 2013
HBW	1.73	1.7 - 2.3	n/a	0.63
HBO	4.23	3.5 - 4.8	n/a	1.47
NHB	2.57	1.7 - 2.9	n/a	0.73
Total	*8.52*	*6.9 - 10.0*	*8.0 - 10.0*	*2.82*

Figures: Time of Day Distributions

Hour of Day Distribution (Table 7 part 3)

AVERAGE WEEKDAY : Time of the Day Distribution- Resident Trips By Purpose

AVERAGE WEEKDAY WEEKEND - ALL VISITOR TRIPS COMPARISON
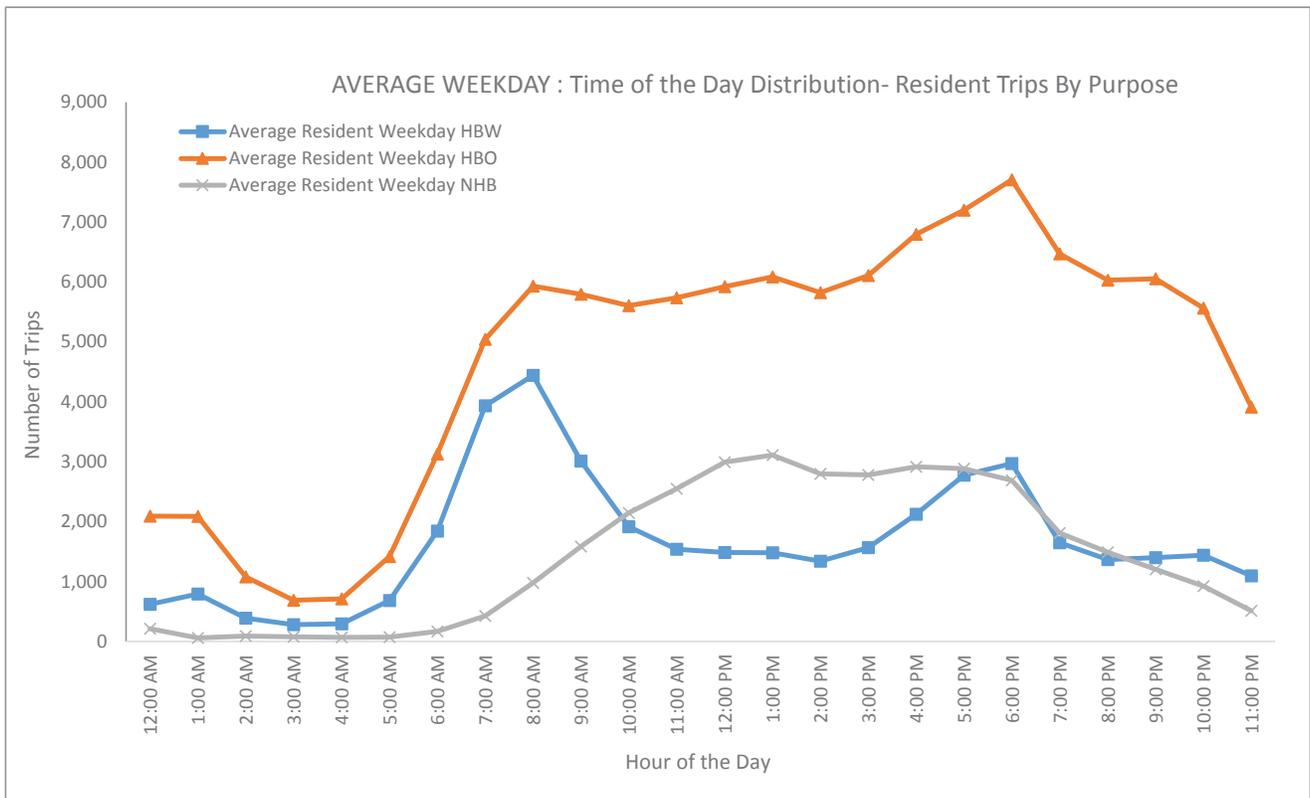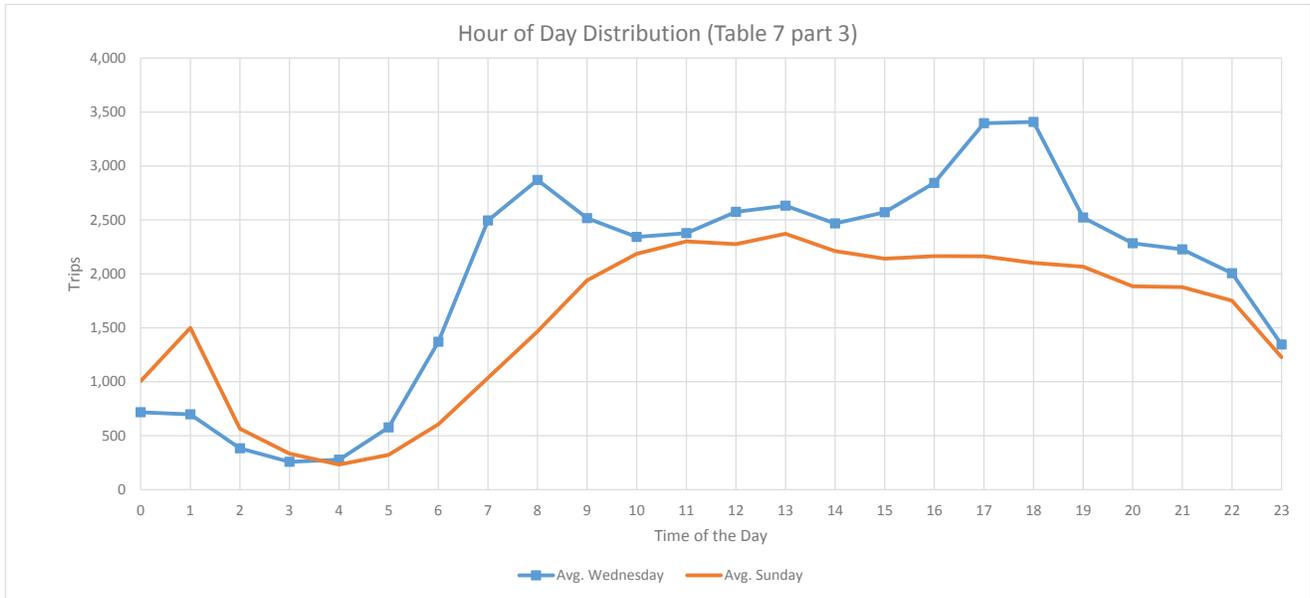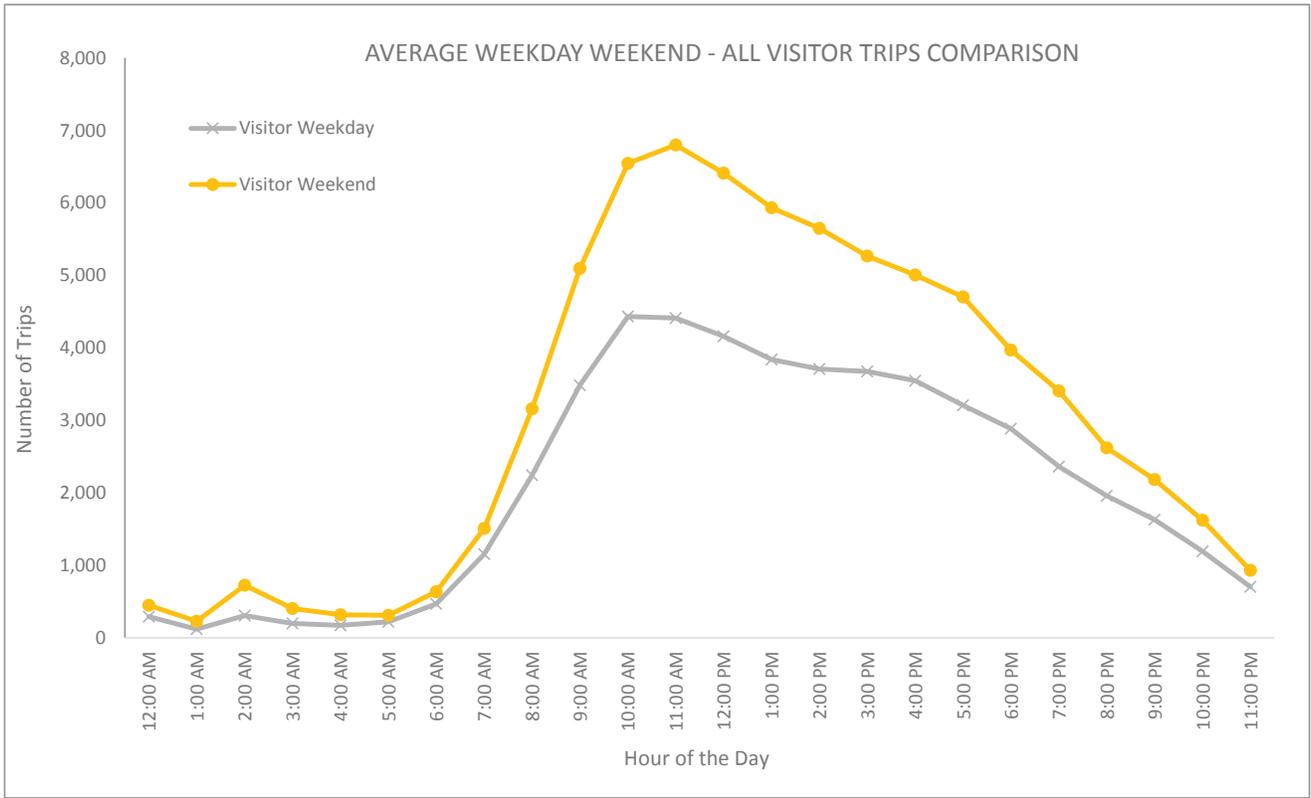
APPENDIX B.   RAPID CITY AREA LONG RANGE TRANSPORTATION MARKET RESEARCH STUDY AND SURVEY

Rapid City Area Long Range Transportation Market Research Study and Survey

Final Report

August 28, 2014

Rapid City Area Long Range Transportation Market Research Study and Survey

Prepared for

Rapid City Metropolitan Planning Organization
Community Planning and Development Services Department
300 Sixth Street
Rapid City, South Dakota 57701

Prepared by	**In association with**
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SECTION ES.
Executive Summary

The Rapid City Area Metropolitan Planning Organization (MPO) and other federal, state, and local governments, as part of their long-range transportation planning process, seek to understand constituents' attitudes and issues regarding transportation in the Rapid City Area. The Rapid City Area MPO contracted with BBC Research & Consulting (BBC) in 2014 to conduct market research as a part of their long-term transportation planning process. The market research obtained through this effort will be used to determine the goals and objectives of the Rapid City Area Long Range Transportation Plan (LRTP).

Methodology

BBC used a number of strategies to gather stakeholder and public input for the Long Range Transportation Plan Study and Survey, including stakeholder interviews and focus groups, public meetings, a website, and telephone surveys.

Stakeholder interviews and focus groups. BBC conducted in-depth interviews with stakeholders in Rapid City to discuss a variety of topics about all aspects of the Rapid City Area's transportation system. BBC also conducted resident interviews at the Canyon Lake Senior Center, Cornerstone Women and Children's Mission, Cornerstone Men's Rescue Mission, and The Hope Center.

BBC moderated three focus groups – one with residents of Piedmont and Summerset; one with persons with disabilities; and one with representatives of the area's business community. Discussions included a variety of topics about all forms of transportation in the Rapid City Area.

Public Meetings. In addition to the interviews and focus groups, the study team and staff of the Rapid City Area MPO hosted two public meetings in open house formats; one meeting was held in Rapid City and a second meeting was held in Box Elder. Attendees reviewed general themes from the market research study and dialogued with the study team about transportation issues in the community.

Survey. BBC designed a survey to collect quantitative information on resident and employer satisfaction with the transportation system as well as the importance of specific components of the system. BBC used separate surveys for residents and for employers. Survey topics included roads, highways, the airport, public transit, parking, and bicycle and pedestrian facilities.

Findings

Roads, Highways and Airport. Overall, stakeholders and residents who participated in the interviews and focus groups expressed satisfaction with the quality of roads and highways in the Rapid City Area. Interviewees were particularly satisfied with road maintenance and improvements, and air travel and access to the airport. Focus group and interview participants expressed dissatisfaction with congestion in different locations throughout the Rapid City Area.

Resident survey respondents reported being moderately satisfied with the conditions of roadways in the Rapid City Area, and very satisfied with the Rapid City Area airport facility. On some topics relating to roadway conditions, underserved populations reported less satisfaction than residents as a whole. Employers and residents expressed similar levels of satisfaction with roads, highways, and the airport. However, many employers expressed a great level of dissatisfaction with the railroad. During stakeholder interviews, many employers discussed the negative impact caused by the railroad crossing through downtown Rapid City at grade.

Both residents and employers expressed the belief that roads, highways and the airport are very important to the Rapid City Area transportation system. Respondents generally felt safe driving in the Rapid City Area, with respondents feeling safer driving in communities and rural areas surrounding Rapid City than in Rapid City itself.

Public Transit. Stakeholders and residents who participated in focus groups and interviews felt that within the City of Rapid City, Rapid Ride provides good coverage to most of the major employment, shopping and medical destinations. Participants indicated dissatisfaction with the lack of public transit outside of the City of Rapid City and insufficient service hours on nights and weekends.

Residents and survey respondents were only asked about the different aspects of public transit in the Rapid City Area if they indicated having used Rapid City public transit in the past. Overall, respondents reported being moderately satisfied with public transit options in the Rapid City Area. Residents and underserved respondents felt that the expansion of Rapid Ride service was very important. Employers were less likely to view Rapid Ride as important, rating it is moderately important to the success of their business. However, some business leaders mentioned that expanded public transit service may help increase pedestrian foot traffic in downtown Rapid City, a key to business success.

Bicyclists. Bicycling as a mode of transportation in Rapid City is in its beginning stages; master planning is complete but implementation is still underway. Stakeholders and focus group participants believed that bicycling will grow in popularity, although feelings about the importance of adding bicycling infrastructure were mixed. Many participants felt that in order for bicycling as a means of transportation to "catch on" both drivers and bicyclists need to become accustomed to sharing the road.

Survey respondents were moderately satisfied with the amount of bicycle infrastructure in Rapid City and communities surrounding Rapid City, but expressed that adding bicycle infrastructure such as bicycle paths was very important. Residents also rated educating drivers about sharing the road with bicyclists as very important. Residents reported feeling very safe bicycling on separated bicycle paths in Rapid City, but reported feeling significantly less safe when bicycling on roads in and around the Rapid City Area.

Pedestrians. Stakeholder and focus group participants reported that the Rapid City area's pedestrian facilities are excellent in some places and missing or disconnected in other locations. Several interview participants acknowledged the ADA sidewalk improvements, particularly in downtown Rapid City. Elsewhere, interviewees expressed concerns about the incomplete system of sidewalks, forcing pedestrians to walk in the shoulder of roads and highways. Focus group

and interview participants also expressed particular concern about investing in safety improvements for children walking to school.

Survey respondents were generally very satisfied with the condition and amount of sidewalks in Rapid City, but were less satisfied with the amount of sidewalks outside of the City of Rapid City. Respondents rated the addition of pedestrian facilities in the Rapid City Area as moderately important, but rated educating drivers about looking out for pedestrians as significantly more important. Overall, respondents felt very safe walking in Rapid City and in communities surrounding Rapid City.

Priorities. Respondents to the resident survey were asked to prioritize the following six issues:

- Maintaining current roads, bridges, and highways;
- Expanding Rapid Ride into a regional transit system, with services at night and on weekends;
- Adding bike lanes, bike paths and bike trails throughout Rapid City and surrounding communities;
- Adding sidewalks and crosswalks throughout Rapid City and surrounding communities;
- Expanding road or highway access to the Rapid City Regional Airport; and
- Improving sustainability and livability (balancing social, economic and environmental issues through complete streets, smart growth, mixed-uses).

Employers were asked to rank all of the issues listed above except for 'Expanding road or highway access to the Rapid City Regional Airport.' Employers were instead asked to rank 'Adding parking to Rapid City.'

Both residents and employers ranked 'Maintaining current roads, bridges, and highways' as their top priority by a significant margin. Residents ranked 'Expanding access to the Rapid City Airport' as their lowest priority, and Employers ranked 'Adding bike lanes, bike paths and bike trails throughout Rapid City and surrounding communities' as their lowest priority. Underserved populations ranked 'Expanding RapidRide into a regional transit system' as their second highest priority.

SECTION I.
Study Methodology

This section details the methodology employed to gather input for the Rapid City Area Metropolitan Planning Organization (Rapid City Area MPO) Market Research Study. The Rapid City Area MPO contracted with BBC Research & Consulting (BBC) in 2014 to conduct market research as a part of their long-term transportation planning process. BBC worked closely with the Rapid City MPO to gather input from a wide range of constituents.

Study Advisory Team

A Study Advisory Team (SAT) was formed to guide the Market Research Study methodology and deliverables. The SAT members included:

- Patsy Horton, City of Rapid City/MPO;

- Brad Remmich, South Dakota Department of Transportation (SDDOT);

- Mark Hoines, Federal Highway Administration (FHWA);

- Bill Rich, Meade County;

- PJ Conover, Pennington County;

- Dan Staton, SDDOT Region; and

- Kip Harrington, City of Rapid City/MPO.

SAT members reviewed interim work products, such as the Methods and Assumptions document; interview and focus group guides; the survey instrument; and participated in interviews, focus groups, and public meetings. We are grateful for their guidance and support.

Methods and Assumptions Document

The Methods and Assumptions Document formalized the project scope of work, including milestones, the study area and data collection methods and the selection of measure for effectiveness. The approved Methods and Assumptions Document is included as Appendix E.

Website

BBC provided content to be used for a project website designed and hosted by the MPO. The purpose of the website is to provide residents and stakeholders with project updates, milestones, and opportunities to provide comment on the study.

Stakeholder Interviews

BBC conducted in-depth interviews with stakeholders in Rapid City to discuss the area's transportation system. Discussions were performed using the discussion guide presented in Appendix A of this report and included a variety of topics about all forms of transportation. BBC interviewed a total of 47 stakeholders. Figure I-1 presents a list of interviewees.

Most interviews were attended by a BBC Managing Director, Patsy Horton of the Rapid City Area MPO, and Brad Remmich of SDDOT. Some interviews were also attended by Mark Hoines of FHWA.

Figure I-1. Stakeholder interviewees

Source:

BBC Research & Consulting.

Interviewee	Organization
Jeanne Hobart and staff	Canyon Lake Senior Center
Tim Rangitsch	Acme Bikes
Bob Eben	Ellsworth Air Force Base
Dennis Berg, Jim Steen, and Janet Kaiser	Rapid City Area School District
Eldene Henderson	Various local committees dealing with sustainability and livability issues
Erik Heikes	FourFront Design
Phil Anderson	City of Piedmont
Bernard Haag	General contractor and realtor
Dale Tech	Rapid City Engineer
Lisa Moderick and Deb Jensen	Mount Rushmore Road Group
Jim Scull	Scull Construction
Danielle Wiebers	Pete Lien
Brad Solon	Building Services Division Manager
Monica Heller	SDDOT Region Traffic Engineer
Bill Addler	Two Wheeler Dealer Bike Shop
Dan Jennissen	Pennington County Planning
Bill Welk	Pennington County Highway
Linda Rabe	Rapid City Chamber of Commerce
Al Todd and Ron Koan	City of Box Elder
George Mandas	City of Summerset
Kibbe Conti and Art Zimiga	Native American Community
Ritchie Nordstrom	City Council
Jeff Patterson	Cranky Jeff's Bike Shop
Rich Sagen	Rapid Transit
Dave Thorsgaard	GCC of America
Dan Senftner	Destination Rapid City
Jay Pond	Sustainability committee
Linda Sandvik	Neighborhood Association
Bob Borgmeyer	Selador Ranches
Bill Rich	Meade County Planning and Equalization
Ann Van Loan and Mike Pendo	Western Resources for dis-Abled Independence
Ben Snow and Jim Mirehouse	Rapid City Economic Development
Robert Rowell	Mayor's Disability Committee
Black Hills Works staff	Black Hills Works
Jerry Wright	City Council

Focus Groups and In-depth Interviews

BBC moderated three focus groups—one with residents of Piedmont and Summerset; one with persons with disabilities; and one with representatives of the area's business community—and conducted in-depth interviews with seniors, low income residents, and residents experiencing homelessness. Discussions were performed using the focus group guide presented in Appendix B of this report and included a variety of topics about all forms of transportation. The study team is grateful for the assistance of MPO staff and community organizations who hosted and assisted with recruiting participants:

■ For the Piedmont-Summerset focus group, Patsy Horton, of the Rapid City Area MPO, and her team recruited residents from both communities to attend the discussion. Participants included residents, members of the school board, City Commissioners and business owners.

■ Staff from Black Hills Works recruited persons with disabilities to participate in a focus group at their location. BBC also met with staff members at Black Hills Works to discuss their perspectives on transportation.

■ For the business owners' focus group, BBC recruited participants with the help of Rapid City Economic Development, Rapid City Chamber of Commerce, Destination Rapid City and Foothills Area Chamber of Commerce.

■ Resident interviews were conducted at Canyon Lake Senior Center; Cornerstone Women and Children's Mission; Cornerstone Men's Rescue Mission; and The Hope Center.

Focus groups and in-depth interviews were conducted by a BBC Senior Consultant, and most were attended by Patsy Horton of the Rapid City Area MPO.

Public Meetings

In addition to the interviews and focus groups, the study team and Patsy Horton of the Rapid City Area MPO hosted two public meetings in open house formats; one meeting was held in Rapid City and the second meeting was held in Box Elder. A total of 15 residents and stakeholders participated. Attendees had the opportunity to review broad themes from the market research study and to dialogue with the study team about transportation issues in the community.

Survey

BBC designed a survey instrument for residents and one for employers, in consultation with the Study Advisory team. Each instrument measured satisfaction with aspects of the transportation system as well as the importance of each aspect. Topics included roads, highways and the airport, public transit, parking, and bicycle and pedestrian facilities. Residents and underserved populations were only asked about the different aspects of public transit in the Rapid City Area if they indicated having used Rapid City public transit in the past.

A total of 856 surveys were completed by residents, underserved populations, and employers. A portion of the participants in the resident survey were members of the underserved population, so the number of completed surveys reported by groups exceeds the 856 completed surveys due to overlap.

Resident survey. Surveys of residents included a statistically valid, representative sample of 536 respondents. For most reported resident survey results, the margin of error is +/-4.2% at the 95% confidence level. The resident survey instrument is included as Appendix C.

Underserved population. A total of 288 traditionally underserved residents participated in the surveys. To reach traditionally underserved populations, postage-paid paper surveys were distributed to organizations serving these populations. Survey distribution locations included the Canyon Lakes Senior Center, day and night shelters for persons experiencing homelessness, organizations serving persons with physical, mental and intellectual disabilities and the campus of the United Tribes Technical College. For most reported resident survey results, the margin of error is +/-5.8% at the 95% confidence level.[1] The underserved population survey instrument is included in Appendix C.

Employer survey. A total of 202 randomly selected business owners and managers participated in the statistically valid and representative employer telephone survey. For most reported employer survey results, the margin of error is +/-5.8% at the 95% confidence level. Businesses were located throughout the MPO region and represented a mix of industries and sizes. The employer survey is included as Appendix D.

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[1] By design, the underserved population sample was not a random sample. Therefore, the survey results for that group may be biased and the margin of error on survey results may be greater than +/-5.8%. Due to the small sample size, a margin of error was not calculated for any transit user results.

SECTION II.
Roads, Highways and Airport

This section provides resident and stakeholder perspectives on Rapid City area's roads and highways and the airport based on the focus groups, interviews, public meetings and surveys.

Current System

Overall, stakeholders and residents who participated in the interviews and focus groups are pleased with the quality of the road and highway portion of the transportation system. Several people cited new roads that have improved connections between communities.

Strengths. Most participants in interviews and focus groups felt that local entities have done a good job maintaining and improving roads. Participants felt that they were able to get around the area easily, and that development of some major corridors had improved transportation.

Road maintenance and improvements. Participants shared their perspectives on the quality of road maintenance and improvements to the system that have reduced congestion and have improved connections between communities.

- *"The road upkeep is excellent compared to other places we have lived. Rapid City does a really good job with keeping the roads up to date."*

- *"I think the major corridors have made a big difference. Like 5th Street and Omaha Street, you can actually get where you need to go faster. I know some of the older people don't like how the medians have been put down the middle to prevent you from making left hand turns, but it has made a huge safety difference."*

- *"I think Catron Boulevard was a big improvement because that takes a lot of people out of that main stream there. And the lights and the extra turn lanes off Catron Boulevard going off of 8th Street was a big improvement."*

- *"They've succeeded in keeping up with some of the main infrastructure, developing the main corridors and so forth. One thing we faced for several years was not enough east-west corridors because of the topology here. But a few years ago with the development of Catron Boulevard, the loop around the south side of town, had we not developed that, transportation in the city would have been much more difficult."*

Air travel and access to the airport. Overall, interview and focus group participants had very positive comments about air travel in the Rapid City area. Strengths of air travel include competitive prices and having service to multiple destinations provided by multiple airlines.

■ *"It's a significant asset that the airport has so many carriers. They may not go many places, but it's easy to get to a major hub from Rapid City. Having multiple airlines also helps keep prices down."*

■ *"The airfare I don't think is that bad for Rapid. That needs to be expanded too. You have to go from here to Denver or Minneapolis. They want to start a flight direct to Atlanta."*

■ *"It seems like our airport does a good job, you can get where you need to go through Salt Lake or Denver or Minneapolis. It seems like a real easy place to travel out of, to me."*

■ *"The airport is actually great. We fly out both commercial and we take private flights out too and we have always had really good luck on it. They've made major improvements on the access out to there over the years."*

Weaknesses. With respect to roads, highways and the airport, the primary weaknesses shared by focus group and interview participants centered on congestion and accessing the airport from Box Elder.

Congestion. Participants provided examples of congestion within the Rapid City area.

■ *"Everyone is coming in on Sheridan Lake Road and then trying to get over to Park Drive. It's probably a 10 minute window of congestion."*

■ *"Certainly the morning drive and to a lesser extent the afternoon peak traffic volumes are an issue for Box Elder because the [Air Force] Base is certainly a big impact on traffic in Box Elder. Those are probably the biggest issues that Box Elder has as far as trying to address traffic."*

■ *"Another one would be East Highway 44 coming in from the airport. I understand that can be pretty heavy at times also."*

■ *"Our biggest issue is probably congestion with busses and cars around schools."*

■ *"There is just one artery through town. All we have is Omaha, there really is no way if you are living out there in Sheridan Lake Road, you either come in on Highway 16 south of town or else you come into town and then come through."*

■ *"Sturgis Road has always been a concern, traffic on there. That can get quite congested. I think it would need some widening, it might need some signalization in some locations."*

Access to the airport from Box Elder. In stakeholder interviews, participants discussed the need for better routes to the airport from Box Elder.

■ *"Access to the airport could be better from Box Elder and Ellsworth. They have what they call the Radar Hill Road, which connects Box Elder with Highway 44 just outside of the airport. Again, with growth in the area there is talk of another major connector between I-90 and Highway 44 at the airport. People have always envisioned that. If that were to happen that would certainly benefit Box Elder and Ellsworth. Eventually it will happen but support for it is mixed because people in Rapid City don't want to see traffic bypass the city."*

Survey

As part of the 2014 Rapid City Area Market Study, residents and underserved populations rated the following aspects of roads, highways, parking, and the airport in the Rapid City area:

■ Satisfaction;

■ Importance; and

■ Safety.

Among residents, 96 percent reported driving a personal vehicle as a mode of transportation. Among underserved respondents, 76 percent reported driving a personal vehicle as a mode of transportation.

Responses from residents were compared to responses from underserved respondents and analyzed for statistical differences between responses. In general, the difference in responses between residents and underserved respondents was not statistically significant. In these cases, the data reported contains responses from residents of the Rapid City area, a population which contains a representative proportion of underserved individuals. For questions where a statistical difference exists between resident and underserved respondent responses, the difference is highlighted and discussed.

As part of the 2014 Rapid City Area Market Study, employers rated overall satisfaction and importance of roads, highways, parking, rail, and the airport in the Rapid City area.

Satisfaction. Residents and underserved respondents rated their satisfaction on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of the following seven aspects of roads, highways, parking, and the airport in the Rapid City area:

■ Condition of roadways in Rapid City;

■ Condition of roadways in communities surrounding Rapid City;

■ Condition of roadways in rural areas surrounding Rapid City;

■ Ease of parking in downtown Rapid City;

■ The airport facility;

■ Ease of access to the airport; and

■ Airport parking.

Employers rated their overall satisfaction, on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, about how roads, highways, parking, rail, and the airport serve their business. Ratings for all responses are divided into the following subcategories: very dissatisfied (0 to 3), moderately satisfied (4 to 6) and very satisfied (7 to 9).

Condition of roadways in Rapid City. Overall, residents and underserved respondents were moderately satisfied with the condition of roadways in Rapid City. As shown in Figure II-1, 89 percent of residents reported being either moderately or very satisfied with the condition of roadways in Rapid City. However, residents and underserved respondents did not express the same levels of satisfaction with the condition of roadways in Rapid City. One out of every nine residents expressed that they were very dissatisfied with the condition of roadways in Rapid City, while nearly one in five underserved respondents reported that they were very dissatisfied with road conditions in Rapid City.

Figure II-1.
Satisfaction with condition of roadways in Rapid City
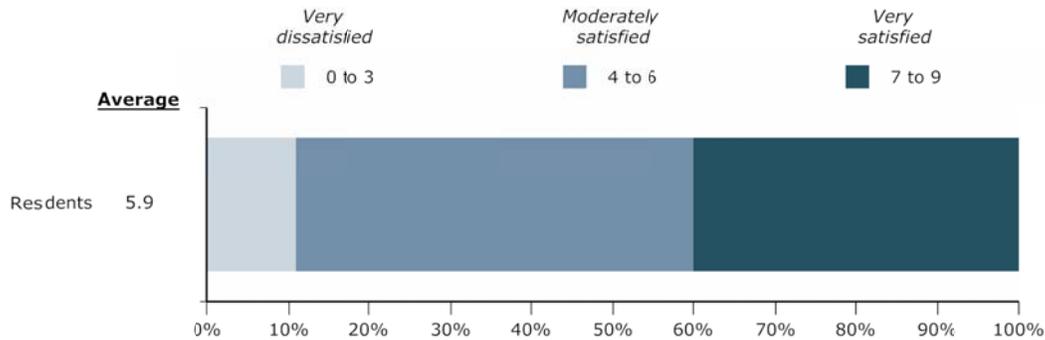
Note: n=517.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Condition of roadways in communities surrounding Rapid City. On average, residents and underserved respondents were moderately satisfied with the condition of roadways in communities surrounding Rapid City. As shown in Figure II-2, 48 percent of residents reported being very satisfied with the condition of roadways in communities surrounding Rapid City. Again, there is a statistical difference in satisfaction with roadway conditions in communities surrounding Rapid City for residents and underserved respondents. Only 7 percent of residents reported being very dissatisfied with the condition of roadways in communities surrounding Rapid City, a statistic that doubles to 14 percent for underserved respondents.

Figure II-2.
Satisfaction with condition of roadways in communities surrounding Rapid City
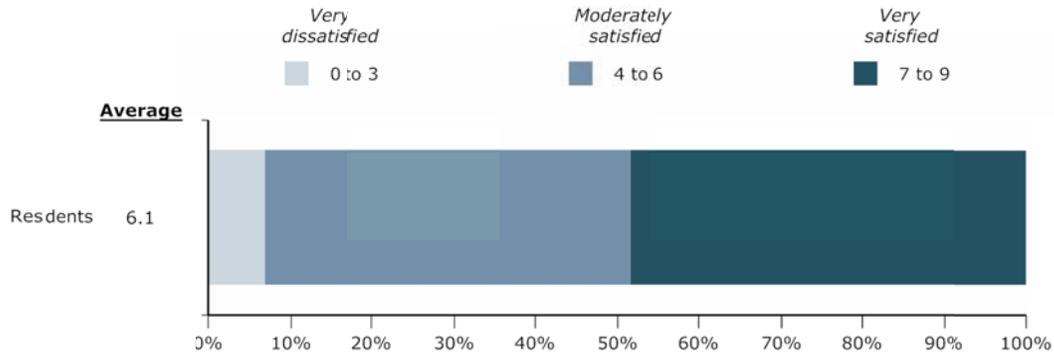
Note: n=481.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Condition of roadways in rural areas surrounding Rapid City. On average, residents and underserved respondents were moderately satisfied with the condition of roadways in rural areas surrounding Rapid City. As shown in Figure II-3, 92 percent of residents were at least moderately satisfied with the condition of rural roadways. Once again, however, residents and underserved respondents reported statistically different levels of satisfaction with the conditions of roadways in rural areas surrounding Rapid City. Only 8 percent of residents reported being very dissatisfied with the conditions of roadways in rural areas surrounding Rapid City, while 14 percent of underserved respondents reported a similar level of dissatisfaction.

Figure II-3.
Satisfaction with condition of roadways in rural area surrounding Rapid City
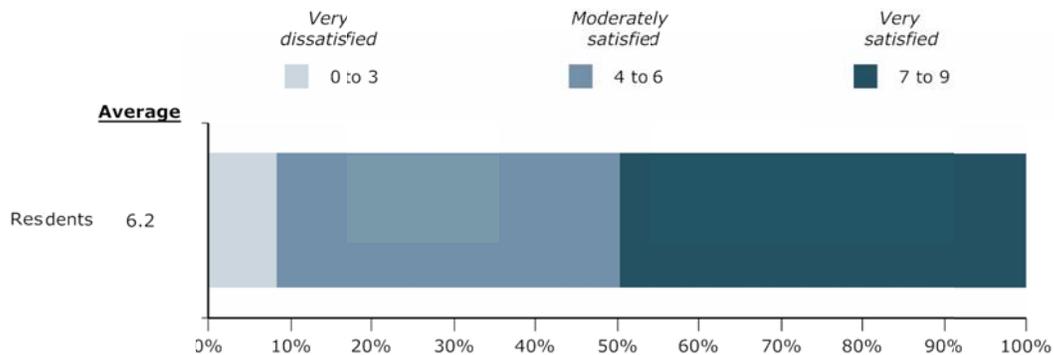
Note: n=486.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Ease of parking in downtown Rapid City. Overall, residents were moderately satisfied with the ease of parking in downtown Rapid City, with 41 percent of residents reporting moderate satisfaction. As shown in Figure II-4, a larger percentage (32%) of residents reported being very dissatisfied with the ease of parking in downtown Rapid City compared to 26 percent of residents who reported being very satisfied.

Figure II-4.
Satisfaction with ease of parking in downtown Rapid City
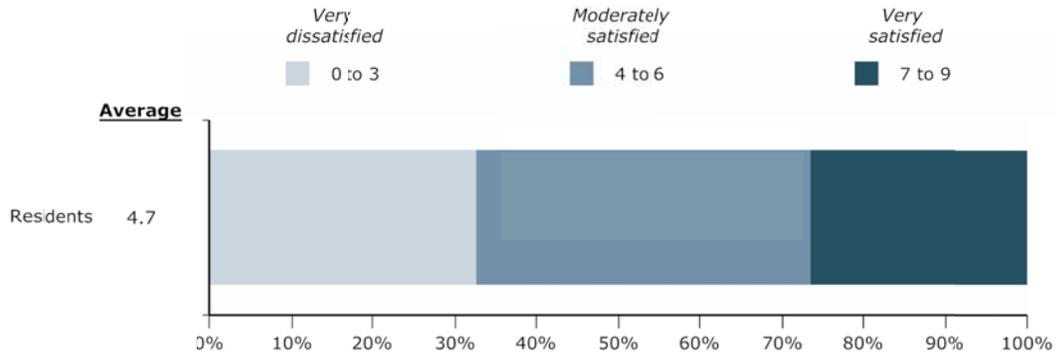
The airport facility. Overall, residents and underserved respondents were very satisfied with the Rapid City Area airport. As shown in Figure II-5, only 1 percent of residents reported being very dissatisfied with the airport. Although both groups reported being very satisfied with the Rapid City Area airport, underserved respondents were less satisfied than residents. Eighty-eight percent of residents reported being very satisfied with the airport facility, while only 83 percent of underserved respondents reported being very satisfied with the Rapid City Area airport.

Figure II-5.
Satisfaction with Rapid City Area airport facility
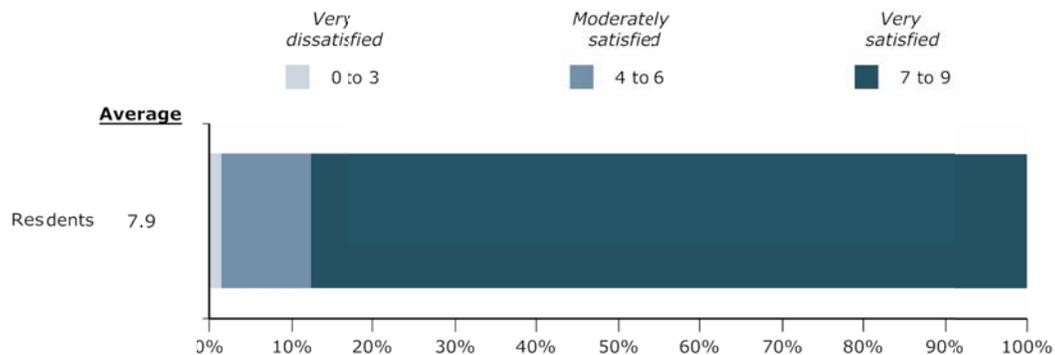
Ease of access to the airport. On average, residents were very satisfied with the ease of access to the airport. As shown in Figure II-6, 86 percent of residents reported being very satisfied with the ease of access to the airport.

Figure II-6.
Satisfaction with ease of access to the airport
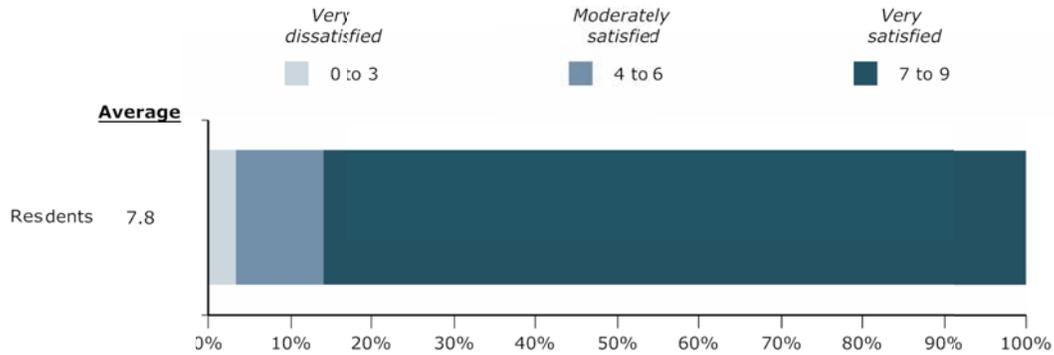
Airport parking. Overall, residents were very satisfied with airport parking. As shown in Figure II-7, 82 percent of residents reported being very satisfied with parking at the Rapid City Area airport. Only two percent of residents reported being very dissatisfied with airport parking.

Figure II-7.
Satisfaction with airport parking
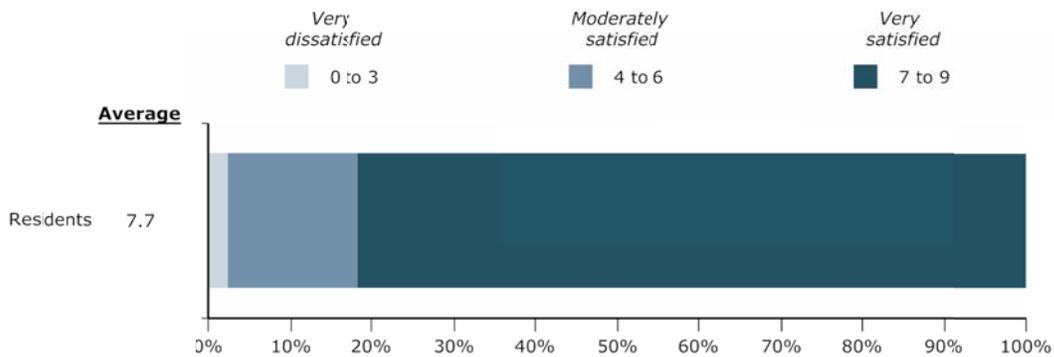
Employer satisfaction with roads. On average, employers were very satisfied with how roads served their business. As shown in Figure II-8, a majority (75%) of businesses surveyed reported being very satisfied with roads in the Rapid City area. Only 3 percent of employers reported being very dissatisfied with roads.

Employer satisfaction with highways. Overall, employers were very satisfied with how highways served their business. As shown in Figure II-8, nearly 79 percent of businesses surveyed reported being very satisfied with highways. Five percent of businesses reported being very dissatisfied with highways.

Employer satisfaction with parking. Overall, employers were moderately satisfied with how parking served their business. As shown in Figure II-8, nearly two-thirds (65%) of employers reported being very satisfied with parking. One out of every nine employers reported being very

dissatisfied with parking. Stakeholders generally felt that parking downtown was not an issue, but there may be a need for more parking structures in the future, *"[Whether downtown parking is an issue] depends on the drivers. Right now, I think downtown parking is not an issue. With a bunch of big trip generators, like president's plaza or other places that would require them I would say that could change."*

Employer satisfaction with rail. On average, employers were very dissatisfied with how the rail line through Rapid City affected their business. As shown in Figure II-8, nearly two-thirds (64%) of employers reported being very dissatisfied with rail. Additionally, only 19 percent of employers reported being very satisfied with how rail affects their business.

During stakeholder interviews, many employers expressed dissatisfaction with the negative impact caused by the railroad crossing through downtown Rapid City at-grade. Employers detailed problems caused by the current railroad configuration including road congestion and traffic delays.

Employer satisfaction with the airport. On average, employers were moderately satisfied with how the airport served their business. As shown in Figure II-8, 76 percent of employers were at least moderately satisfied with how the airport served their business. Over half (54%) of all employers were very satisfied with how the airport served their business.

Figure II-8.
Satisfaction with roads, highways, parking, rail, and the airport - Employers
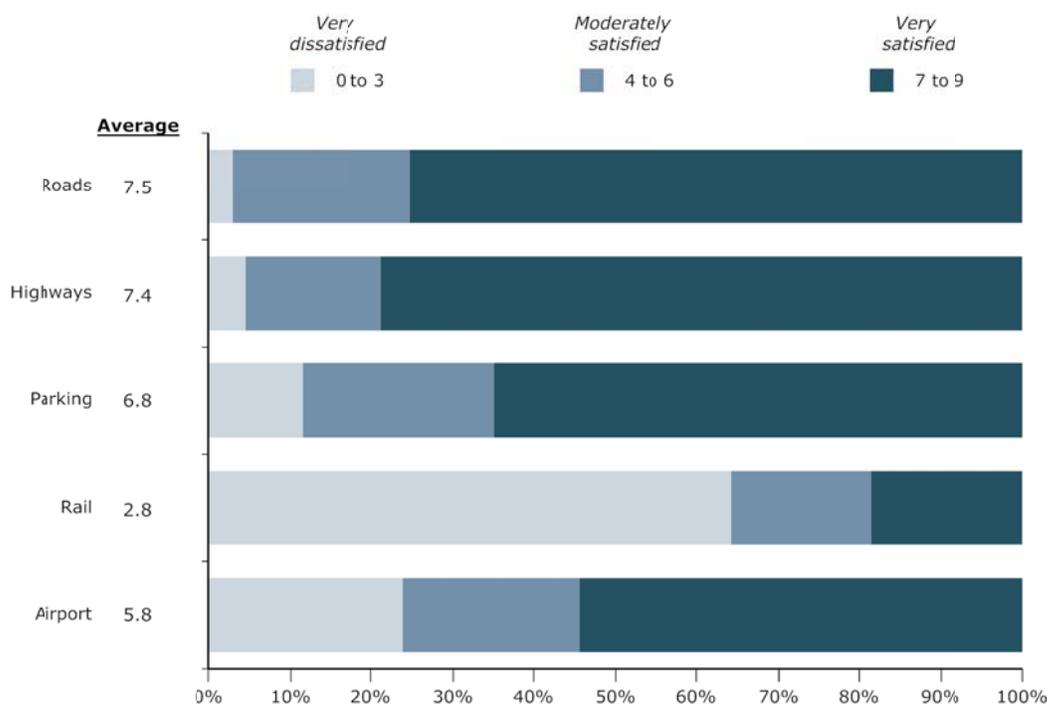
Note: Roads n=202, Highways n=198, Parking n=192, Rail n=151, Airport n=180.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Importance. Residents rated the importance (on a scale of 0 to 9, where 0 means very unimportant and 9 means very important) of the following five aspects of roads, highways, parking, and the airport in the Rapid City Area:

■   Improving the condition of roadways in the Rapid City Area ;

■   Adding parking in downtown Rapid City;

■   The airport facility;

■   Ease of access to the airport; and

■   Airport parking.

Employers rated how important, on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, having access to roads, highways, parking, rail, and the airport is to their business's continued success and growth. Ratings for all responses are divided into the following subcategories: very unimportant (0 to 3), moderately important (4 to 6) and very important (7 to 9).

Residents – Improving the condition of roadways in the Rapid City Area. Overall, residents felt it was very important to improve the condition of roadways in the Rapid City Area. As shown in Figure II-9, nearly three-quarters (72%) of survey respondents rated improving road conditions as a very important issue. Only 5 percent of residents felt that improving the condition of roadways in the Rapid City Area was a very unimportant issue.

Residents – Adding parking in downtown Rapid City. On average, residents felt adding parking in downtown Rapid City was very important. As shown in Figure II-9, nearly three-quarters (73%) of residents felt that it was very important to add parking in downtown Rapid City.

Residents – The airport facility. Overall, residents felt that the airport was very important. As shown in Figure II-9, 83 percent of residents reported that they believed the Rapid City Area airport was very important.

Residents – Ease of access to the airport. On average, residents felt that ease of access to the airport was very important. As shown in Figure II-9, 82 percent of residents felt that ease of access to the airport was very important, with less than 5 percent stating that ease of access to the airport was very unimportant.

Residents – Airport parking. Overall, residents felt that airport parking was very important. More than three in four residents indicated that airport parking was very important. Results presenting residents' opinions on the important of airport parking are presented below in Figure II-9.

Figure II-9.
Importance of five aspects of roads, highways, parking, and the airport in the Rapid City Area
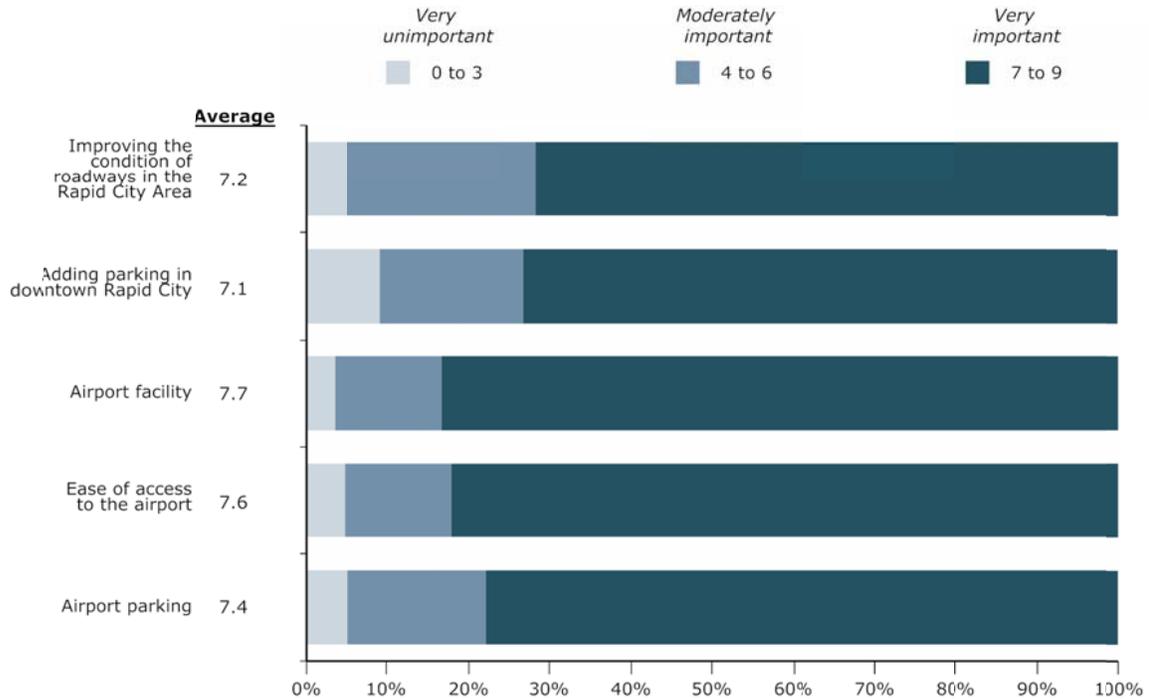
Note: Condition of roadways n=509, Adding parking n=506, Airport facility n=491, Airport access n=493, Airport parking n=489.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers — importance of roads. Overall, employers felt access to roads was very important to their business's continued success and growth. As shown in Figure II-10, more than 90 percent of employers rated access to roads as very important. Less than 2 percent of employers rated access to roads as very unimportant to the continued success and growth of their business. Of the five aspects of roads, highways, parking, rail, and the airport, employers indicated that roads were the most important factor influencing their business's continued success and growth.

Employers — importance of highways. On average, employers rated access to highways as very important for the continued success and growth of their business. As shown in Figure II-10, 83 percent of employers rated access to highways as very important.

Employers — importance of parking. On average, employers felt that access to parking was very important for the continued success and growth of their business. As shown in Figure II-10, 70 percent of employers rated access to parking as very important. However, it should be noted that 17 percent of employers felt that parking was very unimportant to their business's continued success and growth.

Employers — importance of rail. Overall, employers felt access to rail was very unimportant for the continued success and growth of their business. As shown in Figure II-10, more than three-quarters (78%) of employers rated access to rail as very unimportant. As discussed earlier in the report, many employers are very dissatisfied with how the rail line through downtown Rapid City negatively affects their business. Dissatisfaction with the disruption caused by rail in downtown Rapid City, and limited use of rail for transport are likely explanations for why

employers believe that access to rail was very unimportant for the continued success and growth of their business.

Employers — importance of the airport. On average, employers felt that access to the airport was moderately important for the continued success and growth of their business. As shown in Figure II-10, there is a divide between employers who believe that the airport is very unimportant and employers who believe that the airport is very important to the success of their business. Forty-three percent of employers rated the airport as very unimportant to their business, while 38 percent rated the airport as very important to the success of their business.

Figure II-10.
Importance of roads, highways, parking, rail, and the airport - Employers
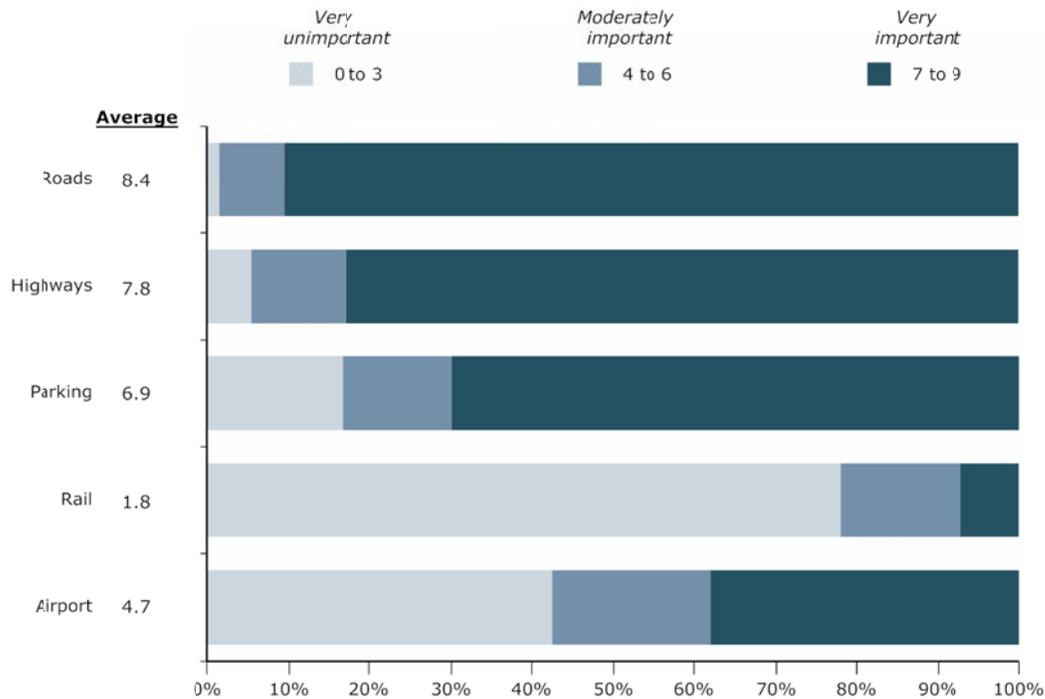
Note: Roads n=201, Highways n=201, Parking n=200, Rail n=196, Airport n=200.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Safety. Residents rated the safety, on a scale of 0 to 9, where 0 means very unsafe and 9 means very safe, of the following three aspects of driving in and around the Rapid City area:

■   Driving in Rapid City;

■   Driving in communities surrounding Rapid City; and

■   Driving in rural areas surrounding Rapid City.

Ratings for all responses are divided into the following subcategories: very unsafe (0 to 3), moderately safe (4 to 6) and very safe (7 to 9).

Driving in Rapid City. On average, residents and underserved populations felt moderately safe driving in Rapid City. As shown in Figure II-11, 60 percent of residents felt very safe driving in

Rapid City. However, underserved populations rated driving in Rapid City as less safe than did residents. Only 7 percent of residents reported feeling unsafe driving in Rapid City, while 13 percent of underserved populations felt unsafe driving in Rapid City.

Driving in communities surrounding Rapid City. Residents and underserved respondents showed a significant difference of opinion regarding the safety of driving in communities surrounding Rapid City. Residents reported feeling very safe driving in communities surrounding Rapid City, while underserved respondents reported feeling moderately safe. Seventy-nine percent of residents felt very safe driving in communities surrounding Rapid City while only 66 percent of underserved respondents felt very safe driving in communities surrounding Rapid City. Figure II-11 shows how residents rated the safety of driving in communities surrounding Rapid City.

Driving in rural areas surrounding Rapid City. Overall, residents felt very safe driving in rural areas surrounding Rapid City. As shown in Figure II-11, more than 80 percent of residents rated driving in rural areas as very safe. There was no statistically significant difference between the responses of resident and underserved populations regarding the safety of driving in rural areas surrounding Rapid City.

Figure II-11.
Safety of driving in various locations in the Rapid City Area
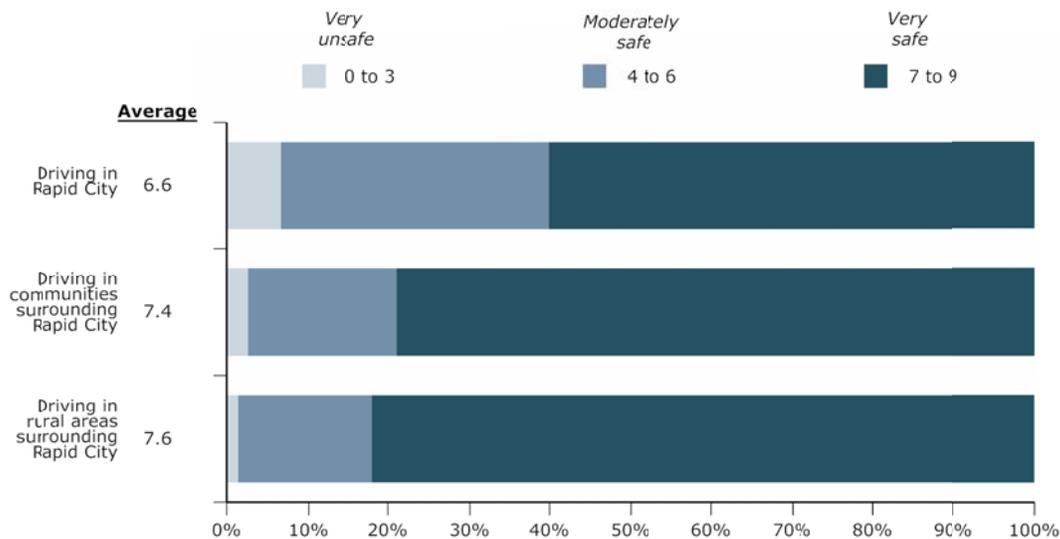
Note: Driving in Rapid City n=514, Driving in communities surrounding Rapid City n=499, Driving in rural areas surrounding Rapid City n=499.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Future Priorities

Stakeholders and residents who participated in the focus groups and interviews would recommend that the Rapid City area continue to maintain the quality of existing facilities while working to minimize congestion and improve connections between communities and access to the airport.

- *"Maintenance of roads is very important."*

- *"Sheridan Lake Road corridor – there are parts of it that are maxed out or pretty close to it and we need to probably think about getting that widened and not just for today's needs but we should look ahead to future needs. That could be said about many of our arterial corridors. To me it all goes back to funding, we can have great plans in place but if you can't afford to do the basics what good does that plan do."*

- *"I know in the past we have talked about a linkage between the airport and the Interstate. I think the county would like to see something other than just Radar Hill Road or some improvements to it or whatever to at least provide a good linkage."*

- *"I know 44 can get kind of busy, but I think it handles the traffic pretty well. Eventually I'd like to see some better connections up on the north end of the valley, by Homestead Lane, and maybe the completion over to reservoir."*

- *"Exit 46 to Sturgis is scary for drivers as well as pedestrians."*

SECTION III.
Public Transit

This section presents resident and stakeholder perspectives on public transit in the Rapid City area based on stakeholder and resident interviews, focus groups and the telephone survey of residents.

Current System

Presently, regularly scheduled fixed route public transit is available only within the City of Rapid City in the form of the Rapid Ride bus system. In the summer months, the City View Trolley provides a narrated tour of points of interest. Outside of Rapid City, Prairie Hills Transit provides on-call transportation service for medical appointments, meals and shopping trips to residents living within its service area boundaries. Rapid Ride offers a Dial-a-Ride service for persons with disabilities for trips within Rapid Ride's service area. Black Hills Works is currently implementing a pilot transportation program for persons with disabilities, attempting to meet clients' transportation needs not currently met by the Rapid Ride system.

Strengths. Within the City of Rapid City, Rapid Ride provides good coverage to most of the major employment, shopping and medical destinations. Service is provided Monday through Friday from 6:20 am through 5:50 pm and from 9:50 am to 4:40 pm on Saturdays. Rapid Ride offers six routes operating on 35 minute intervals. Based on interviews and focus groups, Rapid Ride serves the area's most vulnerable populations—youth, persons with disabilities, low income residents and persons experiencing homelessness. Without the Rapid Ride service, it would be difficult for portions of those underserved populations to get to work, run errands or engage in other community activities.

- *"Where Rapid Ride has coverage, the service is really good."*

- *"It's a good service at a fair price. Rapid Ride has a great and friendly staff. They let you know what stop is coming up and help you find where you need to go."*

- *"I like Rapid Ride. It's very helpful with my job search. There's a stop at the Department of Labor and where the day laborers wait for work. That's very good."*

The Dial-a-Ride service is highly valued by persons with disabilities who rely on the service to access employment opportunities, medical appointments, and shopping. Dial-a-Ride is a lifeline to Rapid City area residents who otherwise would be homebound.

- *"Having Dial-a-Ride gives dignity to people."*

- *"I really appreciate the two transit systems (Rapid Ride and Dial-a-Ride)."*

Weaknesses. From the perspective of residents and stakeholders who participated in the interviews and focus groups, the two greatest weaknesses of the current public transit system are hours of operation and limitations on geographic coverage. Communications about route changes and schedule/route information materials are also a potential weakness.

Hours of operation. Ceasing service before 6:00 pm on weekdays creates difficulties for residents seeking to commute using Rapid Ride, particularly those who work in the retail or service sectors whose shifts may not end until 10:00 pm or later or require Sunday hours.

- *"It's really hard to keep a job when you have to ask for certain shifts because you rely on the bus and service stops or doesn't exist on Sundays."*

- *"I'm really happy that Rapid City has transit. But, with the early ending of service, it makes it hard for people to work. I worked at the southside Wal-Mart and I didn't get off until 9:30. That meant I had to walk home or try to find a ride with someone."*

- *"In a needs assessment survey of human services providers in the region, transportation was the number one issue. Providers believe there is a very strong need for Rapid Ride service to extend to 9:00 or 10:00 pm. This would accommodate more work schedules as well as allow clients to go to dinner and a movie. They also recommended adding Sunday service from 7:00 am to 1:00 pm so that residents can go to church."*

Geographic coverage. In general, within Rapid City, focus group and interview participants thought that Rapid Ride provides good geographic coverage for most major destinations. Exceptions include service to Sioux San Indian Hospital, Black Hills State University at the University Center, Oglala Lakota College at the College Center, Western Dakota Tech, the Department of Motor Vehicles, and the food bank.

- *"There is not a bus connection to Sioux San Indian Hospital."*

- *"The two biggest complaints from students at Black Hills State University are that there is no transit and that they have to pay for parking."*

- *"The bus doesn't go to Oglala Lakota College at the College Center. It would really help me finish school if I could take the bus to school and be able to take night classes with bus service at night. Really, Rapid Ride should go to all the schools in the area and should provide service at night as late as the classes go. Otherwise, you run into problems finishing your degree and completing your major."*

The lack of regional public transportation service is also seen as a weakness of the current system.

- *"We need a bus/mass transit to reach the surrounding communities so people can use it to get to Rapid City."*

- *"A bus from Piedmont or Summerset should get people to the mall, Rushmore Crossing, Baken Park, downtown Rapid City and the hospital."*

- *"Serving at Ellsworth as transportation engineer, I always think about it would be nice to have better transit opportunities between the base and Rapid City and I don't see much*

development or initiative from the military side, there's really not any resources or programs on the military side to enhance those options. So anything coming from the Rapid City side or from the MPO side would be great to provide transit opportunities."

■ *"Rapid Ride should be expanded to Black Hawk, Piedmont and Box Elder through some sort of route system. Maybe one bus a day each way."*

■ *"I think [Box Elder has] an overabundance of trailer, and lower income housing people that possibly don't even have transportation. There are a lot of elderly people that probably don't have good transportation. We're trying to get grocery stores and those type of things, they need to go to clinical stuff or grocery stores we don't have any public source to get them to that point. So if we figured out a way of getting people some type of transportation...the ideal thing with Rapid City is the Rapid Ride, if we could have some type of extension of the Rapid Ride out this way since it's an established organization."*

Communication. Several of the stakeholders and residents shared their perception that as an organization Rapid Ride could improve its communications with residents and riders about changes or additions to routes as well as its schedule and route materials.

■ *"When changes are made, such as a route expansion, Rapid Ride must do a better job of advertising the change so that people can take advantage. When a route was added to go to Western Dakota Tech, it only lasted for two months, and it was discontinued before anyone knew it was an option."*

■ *"They need an App for Rapid Ride that has the schedule and the routes. Like a trip planner. Portland has a good one."*

■ *"It's hard to figure out how to use Rapid Ride; to figure out where you need to stand to get where you need to go."*

■ *"The current bus route maps are very difficult to understand. It would be great if Rapid Ride could create a large scale map that could be hung in the Mission entrance."*

Survey

As part of the 2014 Rapid City Area Market Study, residents and underserved populations rated the following aspects of public transportation in Rapid City:

■ Satisfaction;

■ Importance; and

■ Safety.

Residents and underserved populations also discussed how frequently they use Rapid Ride. As shown in Figure III-1, nearly nine in ten residents never use Rapid Ride, and half of underserved respondents never use Rapid Ride. Among underserved respondents, one in four use Rapid Ride either every day or at least once a week.

Figure III-1.
How frequently do you use Rapid Ride?

Residents

Everyday (1%)
At least once a week (2%)
A couple times per month (1%)
Rarely (9%)
Never (87%)

Underserved Populations

Everyday (16%)
At least once a week (7%)
A couple times per month (5%)
Once a month (1%)
Rarely (19%)
Never (53%)
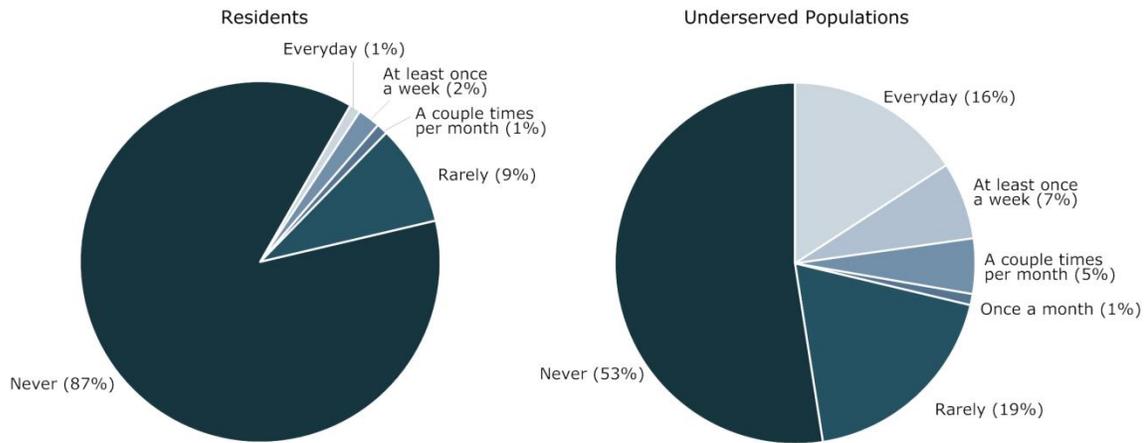
Note: Resident n=524, Underserved population n=285.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

As part of the 2014 Rapid City Area Market Study, employers rated overall satisfaction and importance of access to transit for their employees and customers. Employers also discussed whether their business was located along or near an existing Rapid Ride route and whether their employees or customers use Rapid Ride. As shown in Figure III-2, 65 percent of businesses surveyed were located along or near an existing bus route.

Figure III-2.
Is your business currently located along or near an existing Rapid Ride bus route?

Note:
n=158.

Source:
BBC Research & Consulting 2014 Rapid City Area Market Study.

No (35%)

Yes (65%)
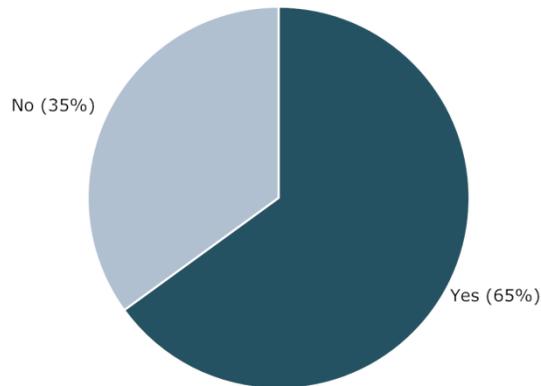
As shown in Figure III-3, slightly more than one in three businesses reported that their employees or customers use Rapid Ride.

**Figure III-3.
Do you or any of your employees or customers use Rapid Ride or bus transit to commute to your business?**

Note:
n=136.

Source:
BBC Research & Consulting 2014 Rapid City Area Market Study.

Yes (35%)

No (65%)
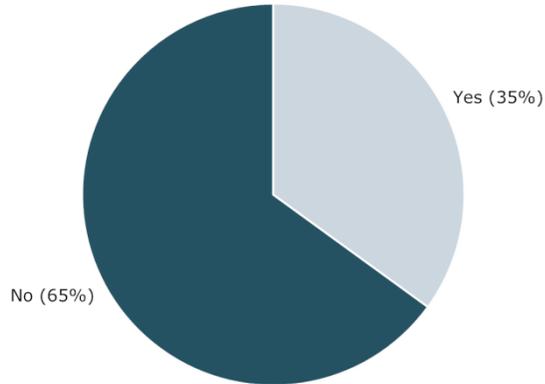
Satisfaction. Those residents who use Rapid Ride at least some of the time were asked to rate their satisfaction on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied. Survey participants were asked to rate their satisfaction with:

■ Bus routes;

■ Weekday hours of bus service;

■ Weekend hours of bus service; and

■ Comfort at bus shelters.

Employers were also asked to rate their overall satisfaction, on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of how transit/bus serves their business. Ratings for all responses are divided into the following subcategories: very dissatisfied (0 to 3), moderately satisfied (4 to 6) and very satisfied (7 to 9).

Residents – Bus routes. Overall, Rapid Ride riders were moderately satisfied with current bus routes. Over half (53%) of riders were very satisfied with bus routes. Only 14 percent of riders indicated that they were very dissatisfied with Rapid Ride bus routes.

Residents – Weekday hours of bus service. On average, riders were moderately satisfied with weekday hours of bus service. As shown in Figure III-4, 50 percent of riders were very satisfied with weekday hours. Seventeen percent of riders indicated that they were very dissatisfied with weekday hours of bus service.

Residents – Weekend hours of bus service. On average, riders were moderately satisfied with weekend hours of bus services. However, they were considerably less satisfied with weekend hours than with weekday hours. For example, one in six riders were very dissatisfied with weekday hours, while almost twice as many were very dissatisfied with weekend hours. Figure III-4 shows how riders rated their satisfaction of weekend hours of bus service.

Residents – Comfort at bus shelters/stops. Overall, riders were moderately satisfied with comfort at bus shelters/stops. Among riders, 45 percent of respondents were very satisfied with comfort, while 22 percent of respondents reported being very dissatisfied with comfort. Figure III-4 shows how riders rated their satisfaction with comfort at bus shelters/stops.

Figure III-4.
Satisfaction with aspects of Rapid Ride
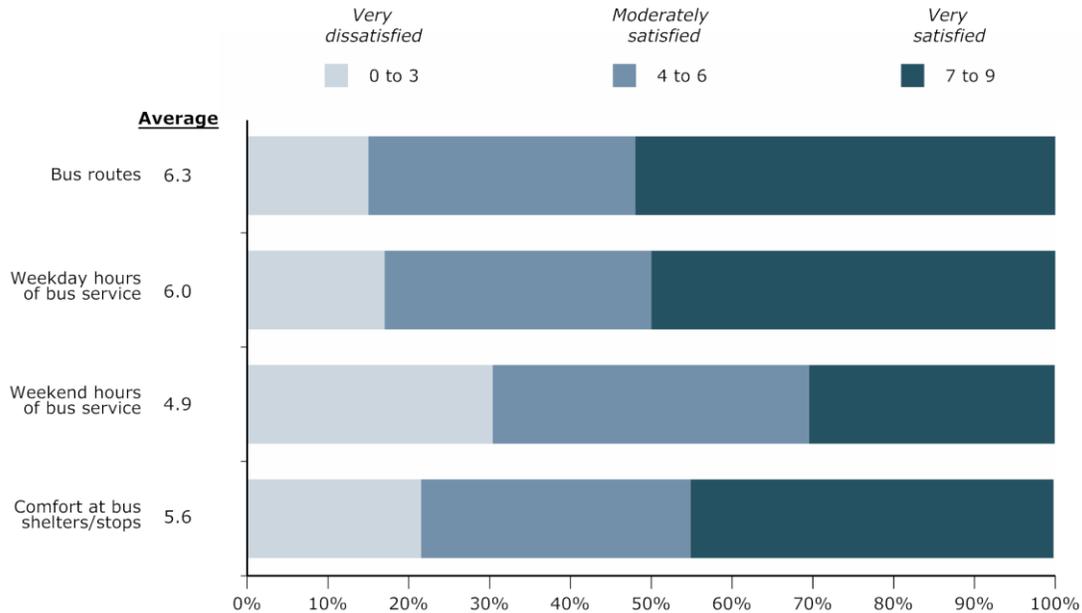
Note: Bus routes n=127, Weekday hours n=126, Weekend hours n=115, Comfort at bus shelters n=129

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. On average, employers were moderately satisfied with how transit/bus serves their business. As shown in Figure III-5, a slightly higher percentage of employers were very satisfied with how transit/bus serves their business (36%) than employers who were very dissatisfied with how transit/bus serves their business (31%).

Figure III-5.
Employer satisfaction with transit/bus
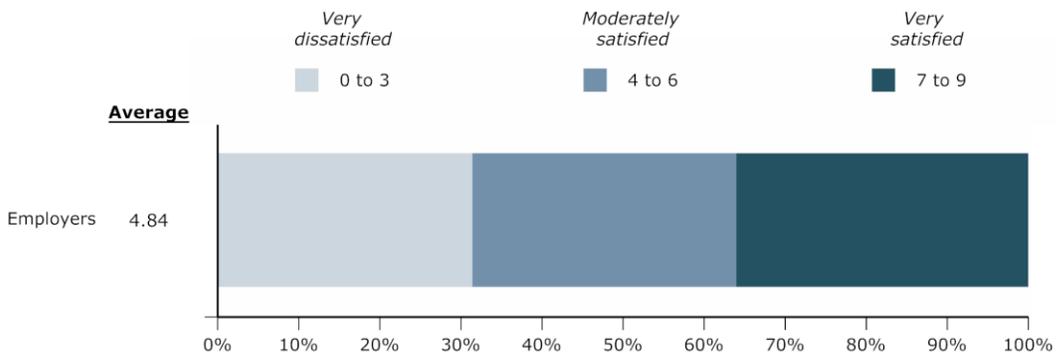
Note: n=175.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Importance. Transit riders rated the importance on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, of the following three aspects of Rapid Ride:

- Adding new bus routes to reach the communities surrounding Rapid City;

- Expanding service hours into the evening (up to 10:00 P.M.); and

- Adding bus service on Sunday.

Employers rated how important, on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, having access to transit/bus is to their business's continued success and growth. Ratings are again divided into the following subcategories: very unimportant (0 to 3), moderately important (4 to 6) and very important (7 to 9).

Residents – Adding new bus routes. Overall, adding new bus routes was very important to respondents who currently use transit service. Among riders, nearly three in four respondents felt adding new bus routes was very important. As shown in Figure III-6, only 8 percent of riders felt that adding new bus routes was very unimportant.

Residents – Expanding service hours into the evening. On average, respondents who currently use transit services felt that expanding service hours into the evening was very important. Seventy-two percent of riders rated expanding service hours as very important. Figure III-6 shows how riders rated the importance of expanding service hours.

Residents – Adding bus service on Sunday. Overall, adding bus service on Sunday was very important to respondents who currently use transit services. Similar to responses about expanding service hours, 69 percent of riders felt that adding bus service on Sunday was very important. As shown in Figure III-6, only one in eight riders rated adding bus service on Sunday as very unimportant.

Figure III-6.
Importance of potential changes to Rapid Ride
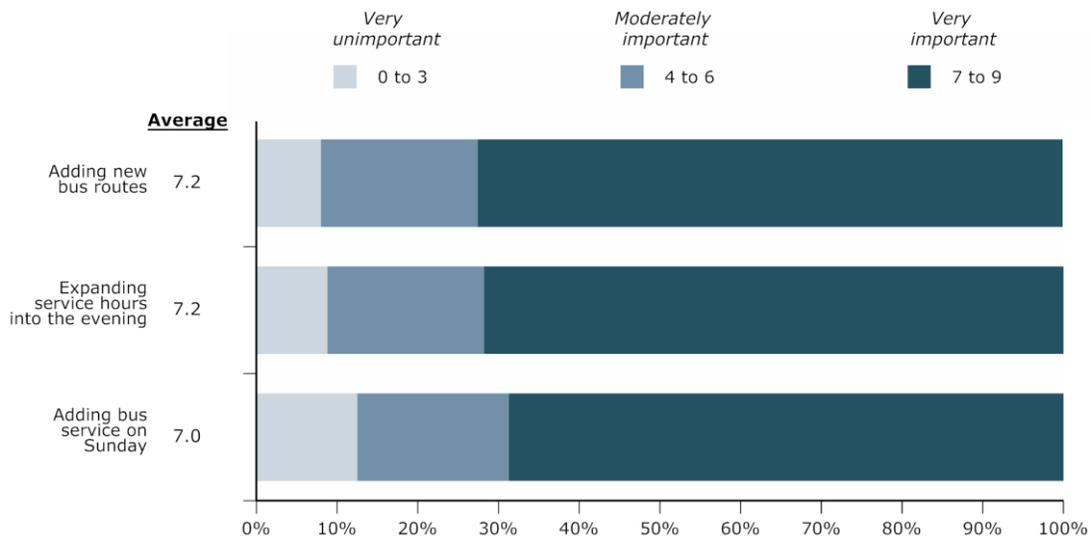
Note: New bus routes n=124, Expanding service hours into the evening n=124, Sunday bus service n=128.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. On average, transit/bus was moderately important to employers. As shown in Figure III-7, almost half of employers surveyed rated transit/bus as very unimportant to the continued success and growth of their business.

Figure III-7.
Importance of transit/bus - Employers
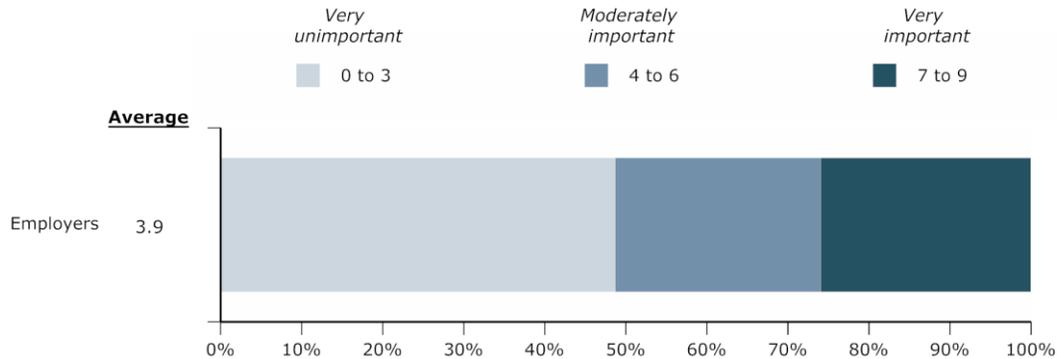
Note: n=201.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Safety. Residents rated the safety, on a scale of 0 to 9, where 0 means very unsafe and 9 means very safe, of using Rapid Ride. Overall, residents felt very safe using Rapid Ride. As shown in Figure III-8, three out of four residents felt very safe using Rapid Ride. Approximately one in twenty residents felt very unsafe using Rapid Ride. There was no statistical difference in how residents and underserved respondents viewed the safety of using Rapid Ride.

Figure III-8.
Safety of using Rapid Ride
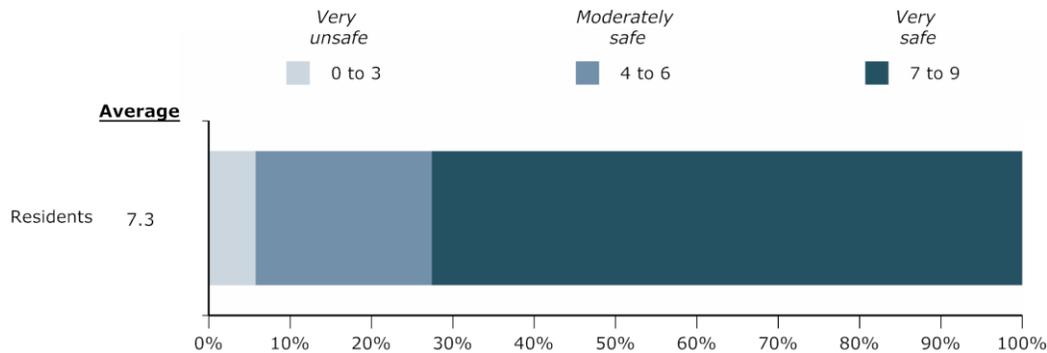
Note: Residents n=226.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Challenges reported by employers. Employers were surveyed to see if any of their employees or customers used Rapid Ride or bus transit to commute to their business. Of the employers who confirmed that they have employees or customers that use Rapid Ride or bus transit to commute to their business, employers discussed whether their employees or customers encountered any challenges or difficulties due to Rapid Ride's current hours and days of operations. As shown in Figure III-9, nearly seven in ten employers reported no known

challenges or difficulties. Among the 31 percent of employers that reported challenges or difficulties, the following issues were mentioned:

- Lack of consistent hours of operation;

- Evening service hours;

- Weekend service hours and lack of service on Sunday;

- Unclear bus schedule; and

- Limited frequency of busses.

Figure III-9.
Do your employees or customers encounter any challenges or difficulties due to Rapid Ride's current hours and days of operation?

Note:
n=45.

Source:
BBC Research & Consulting 2014 Rapid City Area Market Study.

Yes (31%)

No (69%)
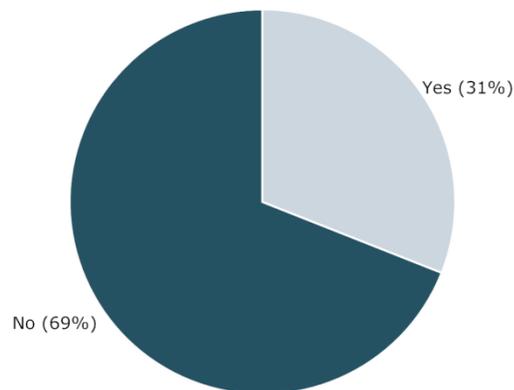
Supporting downtown Rapid City with public transit. Business leaders discussed the importance of pedestrian traffic to downtown Rapid City's economic success. They suggested that Rapid Ride offer service before and after downtown events, such as those held in Main Street Square, to encourage residents to take the bus and walk around downtown. They also thought this option would help alleviate parking pressures during popular events. Residents who are transit-dependent would like to see Rapid Ride hours extended for special events so that they can participate in these community functions.

- *"Downtown's economic vitality is dependent on pedestrian traffic, especially in the summertime. We need to encourage people to take Rapid Ride, walk downtown or ride their bikes downtown. This will help with traffic and parking while getting people out on the streets and walking into local businesses."*

- *"You need wireless service at the hub, super cool presence there, longer hours, drunk crowd, the drunk bus, the 7:00 pm from downtown to get home, a perception that it is somewhat cool and it's not just people who lost their license for DUI."*

- *"There needs to be a change in perspective among residents and the city that devalues building more parking and accommodating the car and starts to value transit, biking and walking. The current thinking —car first— is enabling bad behavior."*

- *"It would be nice if Rapid Ride would run for longer hours on days where there are events or festivals, because then we could participate. Now, we can't get there because of transportation issues."*

Connection to Pine Ridge. Many of the Native American people and service providers who participated in interviews and focus groups expressed a desire for bus service from Rapid City to the Pine Ridge Reservation. Most envisioned this route would operate at least once a week.

- *"Many of the men served by Cornerstone would like to be able to take a bus to Pine Ridge."*

- *"For Native people, there needs to be an organization working on Native issues and helping the Natives living in Rapid City connect with the reservation; a bus route would be a great service."*

- *"Pine Ridge has its own bus system, but it doesn't have a bus that comes to Rapid. It would be really good if there was a bus to Pine Ridge from Rapid, even just on certain days."*

- *"There is no bus to Pine Ridge, so I can't go see family and they can't come see me."*

Perceptions of public transit from non-riders. While low income and special needs populations are not the only Rapid Ride customers, stakeholders shared their perspective that currently, residents with access to a personal vehicle are unlikely to use Rapid Ride. Stakeholders shared their perception that residents largely rely on cars for transportation and that will be a hard mentality to change. There was also discussion about the stigma some residents associate with riding the bus.

- *"The bus and Dial-a-Ride is very important to have, but I don't use it. I drive. If people don't drive themselves, they carpool to get here."*

- *"I think it is going to be used more by elderly or people that don't/can't drive for whatever reasons. I think most of the younger people are going to drive; Rapid City is not that hard of a city to get around. It's not too bad driving around. So I think transit is mainly going to be used by people who can't or don't drive."*

- *"I don't know how you are going to change the younger generation's mind about using the bus and not your car; it's really going to be tough. It's even more stressed now-a-days cause all the young kids have their own cars. I don't think you are going to change their mind."*

- *"There is a little bit of a stigma about riding the bus. It's like 'Well I can't afford a car…' For kids I think that's part of it."*

Future Priorities

In focus groups and interviews, participants shared their opinions regarding the future of public transit in the Rapid City area and how they would prioritize further investments in the system. By far, addressing the system's current weaknesses—hours of operation and geographic coverage—were the top priorities. Participants conceived of a future system that is regional in nature and provides extended hours of operation, including weeknights and Sunday services. Several participants noted the interest, particularly among younger residents, in sustainability and how expanded public transit could support efforts to increase the region's sustainability.

- *"Much of the region's growth in the next 25 years will be in outlying areas, especially to the East. People in outlying areas are already frustrated that there is not transit connection between their community and Rapid City."*

- *"A big trend is the increased interest in sustainability among the youth. The community will need to support this trend through expanding transit and opportunities for biking and walking."*

- *"Creating a park-and-ride system might be a good step toward developing a regional system, but only if bus service starts early enough and ends late enough to transport people to and from work."*

- *"The system needs to grow to surrounding areas; expand regionally. There are airmen who don't have cars."*

- *"Extended hours and expanded service area is a critical need."*

- *"Creating a route to Pine Ridge is a huge need."*

SECTION IV.
Bicyclists

This section presents resident and stakeholder perspectives about bicycling and bicycle facilities in the Rapid City area based on the stakeholder and resident interviews, focus groups and telephone surveys.

Current System

In 2011, the City of Rapid City completed the Bicycle and Pedestrian Master Plan, which is intended to guide development of a network of bicycle and pedestrian facilities that make commuting by these modes viable as well as to enhance the quality of life in the community.

Bicycling as a transportation mode is in its nascent stages in the Rapid City area. Master planning is complete, but implementation is not. Over the long term, residents who participated in interviews and focus groups predicted that bicycling will grow in popularity, especially as both drivers and bicyclists become accustomed to sharing the road. There were mixed feelings among stakeholder interview participants about bicycling in Rapid City. Some felt that there are not enough bicyclists to merit updating streets with bike lanes. Others felt that bike lanes were important upgrades as bicycling "catches on" in the community.

- *"You build a bike lane and people are like 'Why are you doing that?' We put one on Canyon Lake Drive and people complain 'I never see people on it.' It's like well, it's coming, but you can't really like tell where to build a bridge just by how many people you see swimming across a river."*

- *"Is it one of those build it and they will come? I don't know. We're starting to put bicycle paths in, but truly I don't see that many people on the roads. I would like to see us be a lot more bike-friendly. If we want to keep or bring young people here, we need to have the right amenities to do that. That's the mentality of our area—we drive."*

Strengths. Few participants in the interviews and focus groups shared their perceptions of strengths of the current system of bicycle facilities. This is likely due to the fractured nature of the current system and the early stage of adoption of bicycling as more than just a recreational activity. A strength that was not necessarily directly articulated but implied is the fact that the region has begun to invest in bicycle facilities and has begun to think about accommodating and facilitating alternative modes of transportation. "Sharrows" have been put in place on several streets to indicate shared-use car and bicycle lanes. Rapid City's shared-use Swanny Pathway is a popular choice for recreational bicycling and is the backbone of the city's 16-plus miles of bicycle trails, lanes and paths.

- *"When people ask me what I love about my city, I can walk to golf, I can walk to fly fishing, I can ride my bike and do world class single track all right in our core. That kind of connectivity doesn't always require the car or parking."*

- *"I think they have done a really good job expanding and getting the bicycle routes throughout town, I think that is a huge improvement. Maybe a little better on the signage for those bicycle routes.*

- *"We have a bike path all the way along the creek and that's what most people use."*

- *"We have our multiple use path which is recreational, but I like the idea of bike routes to be street surface level, like wide outside lane idea. When you give them a separate spot, like they did on Kansas City Street. So there's like a sidewalk and then some park benches and median strips and then a bike path and then the street, and that just doesn't seem to work as well as just putting the bike lane on the street."*

- *"The Health System's Move 360 Wellness program is trying to promote biking and making it easy and safe to ride bikes."*

Weaknesses. Stakeholders and residents shared their perspectives of weaknesses in the current bicycle transportation system. Currently, bicycle facilities are not well integrated into the transportation system. Connectivity is a challenge, as is finding safe routes. There is a tension between bicyclists and motorists that stakeholders attribute to a lack of education—for drivers and bicyclists—about safely sharing the road.

Need for bicycle facilities. Those focus group and interview participants who bicycle for recreation or commuting offered a few suggestions for places that need some form of bicycle facility or shared use trail. More generally, many participants thought it was appropriate to incorporate bicycle facilities on existing roads that are wide enough.

- *"Elk Creek needs a trail or a path for people on horseback, biking or walking."*

- *"It would nice if they could get that bike lane idea on Rail Trail deal out to the airport."*

- *"The unincorporated areas are really lacking in sidewalks and safe places to ride bikes."*

- *"I would like to see us widen more roads, for bicycle safety, some of our roads get pretty narrow and a lot of it is just because we don't have the right of way. Country Road would be a good example, and Reservoir Road and Anderson Road."*

Connectivity and wayfinding. Focus group and interview participants described the current system of bike paths, trails and lanes as disconnected, both within Rapid City and especially between Rapid City and neighboring communities. From their perspective, some routes are not well marked.

- *"It's dangerous to commute by bike. There are no marked bike lanes. There are some bike trails out by Canyon Lake Drive, but there is not a cohesive, connected bike system."*

- *"For people who want to commute to work in Rapid City by bike, it takes a while to find a safe route to take. Some bike routes are not marked on streets and there is a lack of connectivity between routes."*

Motorist and bicyclist education. As bicycling continues to grow in popularity as a mode of transportation, the tension expressed by stakeholders and residents between motorists and bicyclists may increase if there is not a concerted effort to educate both motorists and bicyclists about how to safely share the road. Most interviewees felt that bicycle safety was an important issue that needed to be addressed, specifically through education for drivers and bicyclists.

■ *"The bicycle path worries me a little bit because again that's new to this area and people aren't looking for bikes and don't understand that they actually have a legal right on the side of the road. I think there needs to be public service announcements or something telling people that the street has a bike lane and you do have to yield to them, or allow them on there, because I don't think people understand that."*

■ *"There have been some things done for bicycle traffic, and I don't know if this is an education program or what, but I don't see drivers paying a whole lot of attention or even noticing that there are even bikers. We have blinders on. We don't notice people who are riding bicycles. There are all kinds of opportunities in Rapid City to make this a biking Mecca almost."*

Survey

As part of the 2014 Rapid City Area Market Study, residents and underserved populations rated the following aspects of bicycling in Rapid City:

■ Satisfaction;

■ Importance; and

■ Safety.

Among residents, 24 percent reported riding a bicycle as a mode of transportation they used in a typical month. Among underserved respondents, 20 percent reported riding a bicycle as a mode of transportation they used in a typical month.

Responses from residents were compared to responses from underserved respondents and analyzed for statistical differences between responses. In general, the difference in responses between residents and underserved respondents was not statistically significant. In these cases, the data reported contains responses from residents of the Rapid City Area, a population which contains a representative proportion of underserved individuals. For questions where a statistical difference exists between resident and underserved respondent responses, the difference is highlighted and discussed.

As part of the 2014 Rapid City Area Market Study, employers rated overall satisfaction and importance of bicycle lanes or paths in Rapid City.

Satisfaction. Residents rated their satisfaction on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of the following two aspects of bicycling in Rapid City:

■ Amount of bicycle paths and lanes in Rapid City; and

■ Amount of bicycle paths and lanes in communities surrounding Rapid City.

Employers were also asked to rate their overall satisfaction, on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of how bicycle lanes or paths serve their business. Ratings for all responses are divided into the following subcategories: very dissatisfied (0 to 3), moderately satisfied (4 to 6) and very satisfied (7 to 9).

Amount of bicycle paths and lanes in Rapid City. Overall, residents were moderately satisfied with the amount of bicycle paths and lanes in Rapid City. As shown in Figure IV-1, 45 percent of respondents were very satisfied with the amount of bicycle paths and lanes, while only 15 percent reported being very dissatisfied with the amount of bicycle paths and lanes.

Amount of bicycle paths and lanes in communities surrounding Rapid City. On average, residents were moderately satisfied with the amount of bicycle paths and lanes in communities surrounding Rapid City. However, survey respondents were considerably less satisfied with the amount of bicycle paths and lanes in surrounding communities compared to within Rapid City. For example, 15 percent of residents were very dissatisfied with the amount of bicycle paths and lanes in Rapid City, but that number nearly doubled (27%) when respondents were asked about communities surrounding Rapid City. Figure IV-1 shows how respondents rated their satisfaction with the amount of bicycle paths and lanes in the Rapid City Area.

Figure IV-1.
Satisfaction with amount of bicycle paths and lanes in the Rapid City Area
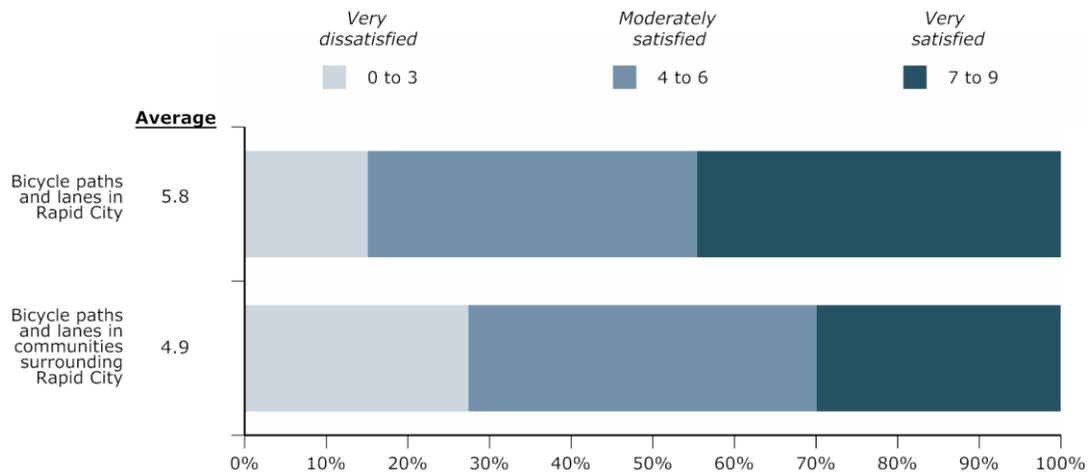
Note: Paths in Rapid City n=464, Paths in communities surrounding Rapid City n=401.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. On average, employers were moderately satisfied with how bicycle lanes and paths serve their business. As shown in Figure IV-2, 41 percent of employers were very dissatisfied with bicycle lanes and paths, while only 29 percent of employers were very satisfied with bicycle lanes and paths.

Figure IV-2.
Employer satisfaction with bicycle lanes or paths
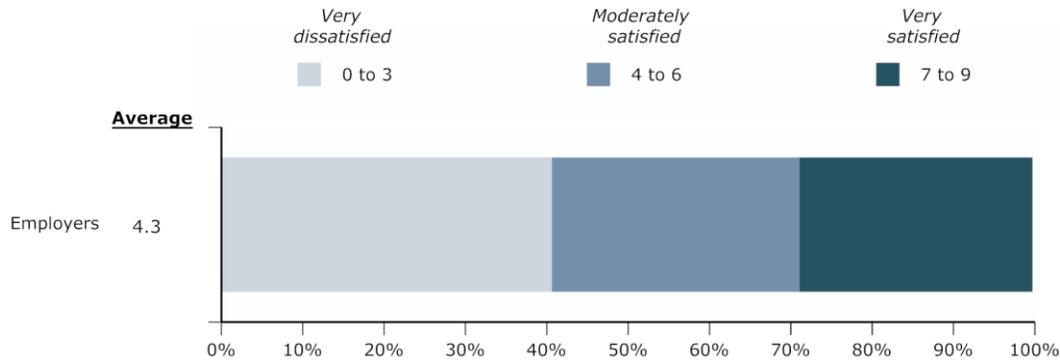
Note: n=171.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Importance. Residents and underserved respondents rated the importance on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, of the following three aspects of bicycling:

- Adding shared lanes along roadways for bicyclists;

- Adding bicycle paths that are separate from roads and highways; and

- Educating drivers about sharing the road with bicyclists and looking out for pedestrians.

Employers were also asked to rate how important, on a scale of 0 to 9, having access to bicycle lanes or paths is to their business's continued success and growth. Ratings for all responses are divided into the following subcategories: very unimportant (0 to 3), moderately important (4 to 6) and very important (7 to 9).

Adding shared lanes along roadways for bicyclists. Overall, residents felt that adding shared lanes was moderately important. Over half (52%) of residents felt that adding shared lanes was very important. Figure IV-3, shows how residents rated the importance of adding shared lanes.

Adding bicycle paths that are separate from roads and highways. On average, adding bicycle paths that are separate from roads and highways was very important to residents. As shown in Figure IV-3, nearly three-quarters of respondents felt adding bicycle paths was very important. Only 9 percent of residents felt adding bicycle paths was very unimportant.

Educating drivers about sharing the road with bicyclists and looking out for pedestrians. Overall, residents felt that educating drivers about sharing the road with bicyclists and looking out for pedestrians was the most important topic regarding bicyclists. As shown in Figure IV-3, four out of five respondents felt educating drivers was very important, a statistically larger percentage of respondents than those who felt adding shared lanes along roadways and/or adding bicycle paths separate from roads was important. Less than 5 percent of respondents felt that educating drivers was very unimportant. Additionally, a statistical difference existed between how

residents and underserved respondents viewed the importance of educating drivers. Eighty percent of residents felt that educating drivers was very important, while more than 85 percent of underserved respondents felt that educating drivers about sharing the road and looking out for cyclists was very important.

Figure IV-3.
Importance of adding shared lanes, adding bicycle paths, and educating drivers
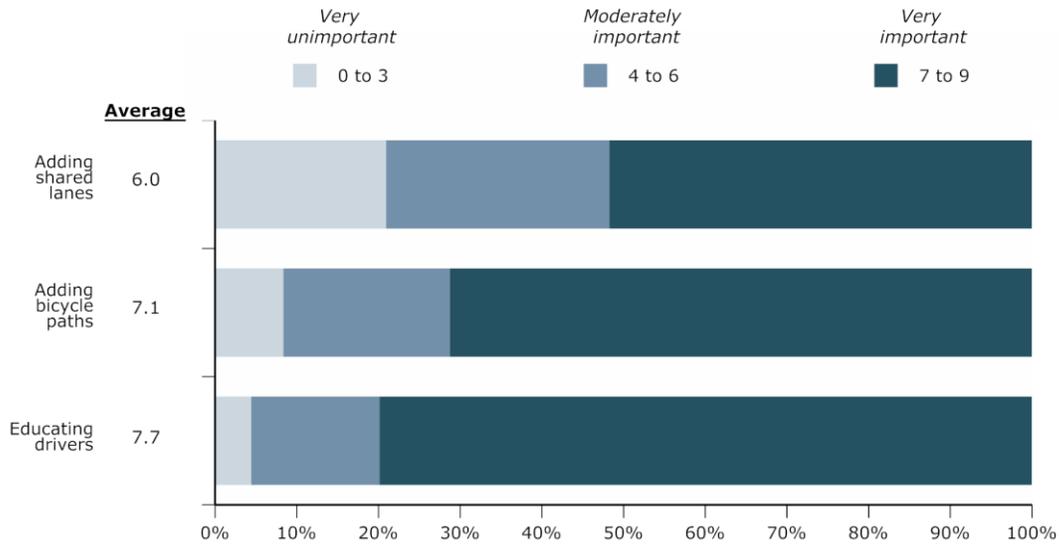
Note: Shared lanes n=497, Bicycle paths n=491, Educating drivers n=497.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. Overall, employers felt that access to bicycle lanes or paths was very unimportant to the continued success and growth of their business. As shown in Figure IV-4, over half of employers rated the access to bicycle lanes or paths as very unimportant.

Figure IV-4.
Importance of bicycle lanes or paths - Employers
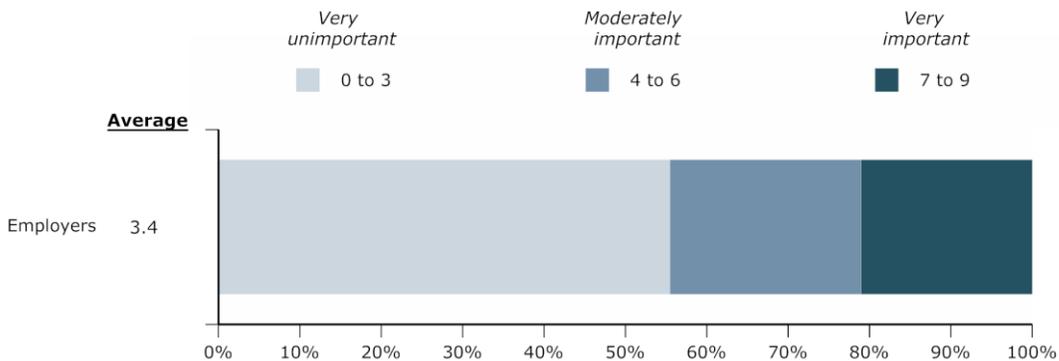
Note: n=200.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Safety. Residents and underserved respondents rated the safety, on a scale of 0 to 9, where 0 means very unsafe and 9 means very safe, of the following four aspects of bicycling in and around Rapid City:

- Bicycling on roads in Rapid City;

- Bicycling on bicycle paths in Rapid City;

- Bicycling on roads in communities surrounding the Rapid City Area; and

- Bicycling on roads in rural areas surrounding the Rapid City Area.

Ratings for all responses are divided into the following subcategories: very unsafe (0 to 3), moderately safe (4 to 6) and very safe (7 to 9).

Bicycling on roads in Rapid City. Overall, residents felt that bicycling on roads in Rapid City was moderately safe. However, as shown in Figure IV-5, a greater percentage of residents felt that bicycling on roads in Rapid City was very unsafe (33%) than felt bicycling on roads in Rapid City was very safe (23%).

Bicycling on bicycle paths in Rapid City. On average, residents and underserved respondents felt very safe bicycling on paths in Rapid City. As shown in Figure IV-5, 77 percent of residents rated the bicycling on bicycle paths in Rapid City as very safe. A statistical difference exists between how safe residents and underserved respondent felt while bicycling on bicycle paths in Rapid City. Although 77 percent of residents rated bicycling on bicycle paths in Rapid City as very safe, only 69 percent of underserved residents felt very safe bicycling on bicycle paths in Rapid City.

Bicycling on roads in communities surrounding the Rapid City Area. On average, residents felt moderately safe bicycling on roads in communities surrounding the Rapid City Area. As shown in Figure IV-5, three in four residents reported feeling at least moderately safe while bicycling on roads in communities surrounding the Rapid City Area. Residents felt significantly safer bicycling on roads in communities surrounding the Rapid City Area than they felt bicycling on roads in Rapid City.

Bicycling on roads in rural areas surrounding the Rapid City Area. Overall, residents felt moderately safe bicycling on roads in rural areas surrounding the Rapid City Area. However, as shown in Figure IV-5, one in four residents felt very unsafe bicycling on roads in rural areas surrounding the Rapid City Area. Residents felt significantly safer bicycling on roads in rural areas surrounding the Rapid City Area than they felt bicycling on roads in Rapid City.

Figure IV-5.
Safety of bicycling in various locations in the Rapid City Area
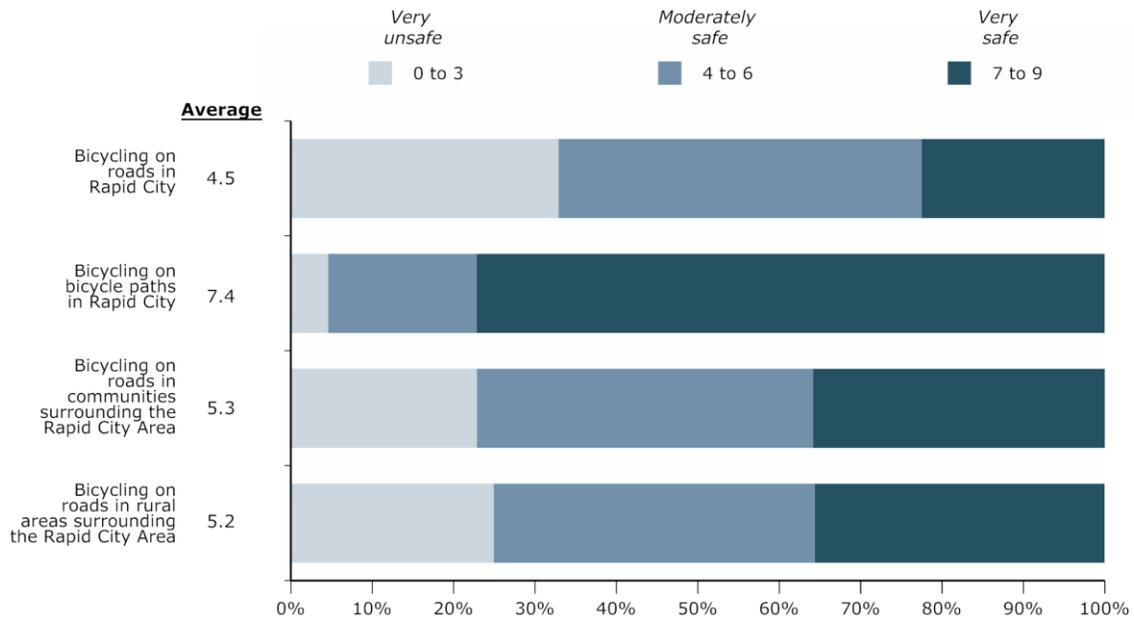
Note: Roads in RC n=444, Bicycle paths in RC n=434, Roads in communities surrounding RC n=407, Roads in rural areas surrounding RC n=421.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Future Priorities

Residents and stakeholders who participated in interviews and focus groups see the Rapid City area becoming more bicycle friendly over time. Most shared the perspective that investing in bicycle infrastructure will increase safety and encourage more people to ride for recreation or as a transportation mode. That said, they believe that personal vehicles will continue to be the preferred mode of transportation for most residents.

■   *"Bike and pedestrian improvements should be integrated with roadway improvements whenever the street/road is wide enough."*

■   *"Create a Bicycle/Pedestrian Citizen's Committee to review existing and proposed bike routes, bicycle and pedestrian facilities."*

■   *"Bike trails are important. It's important that the community starts to think green and bikes are going to be more important in the future."*

■   *"As Box Elder grows and as Rapid City grows, as those two communities grow together then opportunities for pedestrian and bicycle certainly should become more readily available and more feasible. Looking ahead to see how that might be done, long term planning with Rapid City and Box Elder."*

■   *"The community needs to become more bike friendly, and drivers need to learn that bikes are a mode of transportation and belong on the street, not the sidewalk. People who ride want the*

community to become more bike friendly; it will take education and experience for those who do not ride to learn to safely co-exist."

■ *"Bicyclists in this town, for the most part, are enthusiasts or recreational. We have a remarkable trail system for bicyclists. I'm always perplexed that we will build bike lanes when we have a bike path right down the creek. I like bicycles. I think they are great. I think there are other priorities that are a whole lot more important. I think accessibility to the bike path is important."*

SECTION V.
Pedestrians

This section discusses transportation facilities for pedestrians based on the focus groups, interviews and surveys.

Current System

Based on the focus group and interview discussions, the Rapid City area's pedestrian facilities are excellent in some places and missing or disconnected in others. Participants acknowledged that Rapid City in particular has made great progress in making ADA improvements to curb cuts downtown. However, some residential streets do not have sidewalks, and other streets may have sidewalks along certain stretches that suddenly end.

As described in Section III - Public Transit, once passengers reach the "end of the line," many walk some miles along the shoulder of highways to reach their final destination. Providing safe routes for children to walk to school or their bus stops was very important to both representatives of the school district as well as parents in Piedmont and Summerset.

Strengths. Stakeholder interview participants complimented Rapid City's investments in ADA sidewalk improvements and sidewalk improvements in general downtown.

- *"We might be lacking in some of the crossing for pedestrians, but certainly ADA accessibility we do a pretty good job of addressing."*

- *"One of things I used to hate about being downtown or shopping downtown was bad sidewalks that you had to worry about tripping over and such, but again I think that's all pretty good now."*

- *"Certain area sidewalks are decent, the City has really put a lot of effort to rearrange the corners and make sure they are wheelchair accessible sidewalks. Other areas around town, there is no way that you can get a wheel chair up onto the curb, you have to travel a lot in the streets. Around Kmart, there are hardly any areas there that I am able to get on the sidewalk. It's hard to maintain the sidewalks with the weather out here, so I can understand the cracks in the sidewalks and things like that."*

Weaknesses. With respect to pedestrians, focus group and interview participants were most concerned about investing in safety improvements for children walking to school or the bus stop and pedestrian safety overall. The incomplete system of sidewalks that leads pedestrians to walk in the shoulder of roads was also a concern. Finally, some crosswalks in downtown Rapid City may not allow sufficient time for people to safely cross busier streets.

Safe routes to schools. While the school districts are actively trying to eliminate hazards for children to safely walk or bike to school, there are still many hazardous routes.

- *"We need better lighting around school bus stops; kids are waiting on the highway in the dark (for the bus)."*

- *"Children have to cross Sturgis Road to get to the bus stop on the side of the highway in Summerset. It's dangerous."*

- *"Well, I know one area that isn't safe and that's Haines, it's just like cars backing out into the road. There are kids walking along those streets."*

Incomplete system. Focus group and interview participants considered the incomplete nature of the area's pedestrian facilities to be a weakness. They discussed specific places where sidewalks or other pedestrian facilities are needed to improve safety. Many of the locations most in need of improvements are outside of Rapid City's downtown core.

- *"In most places, it is safe to walk, especially in Rapid City. Once you get out of the city, you have to walk along the highway to get to some places, like the DMV or the IHS."*

- *"The area needs to be connected with actual sidewalks along Sturgis Road, Elk Creek and Peaceful Pines, especially across bridges."*

- *"On Canyon Lake by Mountain View there are no sidewalks. Need connections between sidewalks in town. They shouldn't start and then suddenly stop."*

- *"Omaha going into downtown needs sidewalks on the right hand side."*

- *"Need sidewalks going through the Gap on Main."*

- *"Elk Creek Bridge (exit 46) is an issue. Pedestrians and bicyclists use it for crossing and it is not safe. It needs to be widened, made safe for pedestrian and bike crossing."*

Pedestrian crossings. In some places, interview and focus group participants believe that additional crosswalks are needed. Persons with disabilities, in particular, spoke about the need for timed crosswalks (so that they know how much time they have to cross).

- *"It's really hard to walk across Mount Rushmore Road; it's hard to cross Omaha. Speed of traffic is a problem. They are gunning for you."*

- *"I like the crosswalks that have the countdown, so that you know how much time you have to get across the street. Mount Rushmore by the YMCA needs a countdown for the crosswalk."*

Survey

As part of the 2014 Rapid City Area Market Study, residents and underserved populations rated the following aspects of walking in Rapid City:

- Satisfaction;
- Importance; and
- Safety.

Among residents, 39 percent reported walking as a mode of transportation they used in a typical month. Survey responses did not indicate a statistical difference between the percentage of residents and underserved respondents who reported walking as a mode of transportation they used in a typical month.

Responses from residents were compared to responses from underserved respondents and analyzed for statistical differences between responses. In general, the difference in responses between residents and underserved respondents was not statistically significant. In those cases, the data reported contains responses from residents of the Rapid City Area, a population which contains a representative proportion of underserved individuals. For questions where a statistical difference exists between resident and underserved respondent responses, the difference is highlighted and discussed.

As part of the 2014 Rapid City Area Market Study, employers rated overall satisfaction and importance of sidewalks in Rapid City.

Satisfaction. Residents and underserved respondents rated their satisfaction on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of the following four aspects of walking in the Rapid City area:

- Walkability of downtown Rapid City;

- Condition of sidewalks in Rapid City;

- Amount of sidewalks in Rapid City; and

- Amount of sidewalks in communities surrounding Rapid City.

Employers rated their overall satisfaction, on a scale of 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, of how sidewalks serve their business. Ratings for all responses are divided into the following subcategories: very dissatisfied (0 to 3), moderately satisfied (4 to 6) and very satisfied (7 to 9).

Residents – Walkability of downtown Rapid City. Overall, residents were very satisfied with the walkability of downtown Rapid City. As shown in Figure V-1, 83 percent of residents reported being very satisfied with the walkability of downtown Rapid City. Just over 1 percent of residents indicated they were very dissatisfied with the walkability of downtown Rapid City.

Residents – Conditions of sidewalks in Rapid City. On average, residents were moderately satisfied with the condition of sidewalks in Rapid City. As shown in Figure V-1, over half (56%) of all survey respondents were very satisfied with sidewalk conditions.

Residents – Amount of sidewalks in Rapid City. Overall, residents were very satisfied with the amount of sidewalks in Rapid City. As shown in Figure V-1, nearly three out of four (73%) residents indicated that they were very satisfied with the amount of sidewalks in Rapid City. Underserved respondents were significantly less satisfied than residents. Only 65 percent of underserved respondents indicated that they were very satisfied with the amount of sidewalks in Rapid City.

Residents – Amount of sidewalks in communities surrounding Rapid City. Overall, residents were very satisfied with the amount of sidewalks in communities surrounding Rapid City, but significantly less so than with the amount of sidewalks in downtown Rapid City. As shown in Figure V-1, only 45 percent of residents were very satisfied with the amount of sidewalks in communities surrounding Rapid City, compared to 73 percent of residents who were very satisfied with the amount of sidewalks in Rapid City.

Figure V-1.
Satisfaction with four aspects of walking in the Rapid City Area
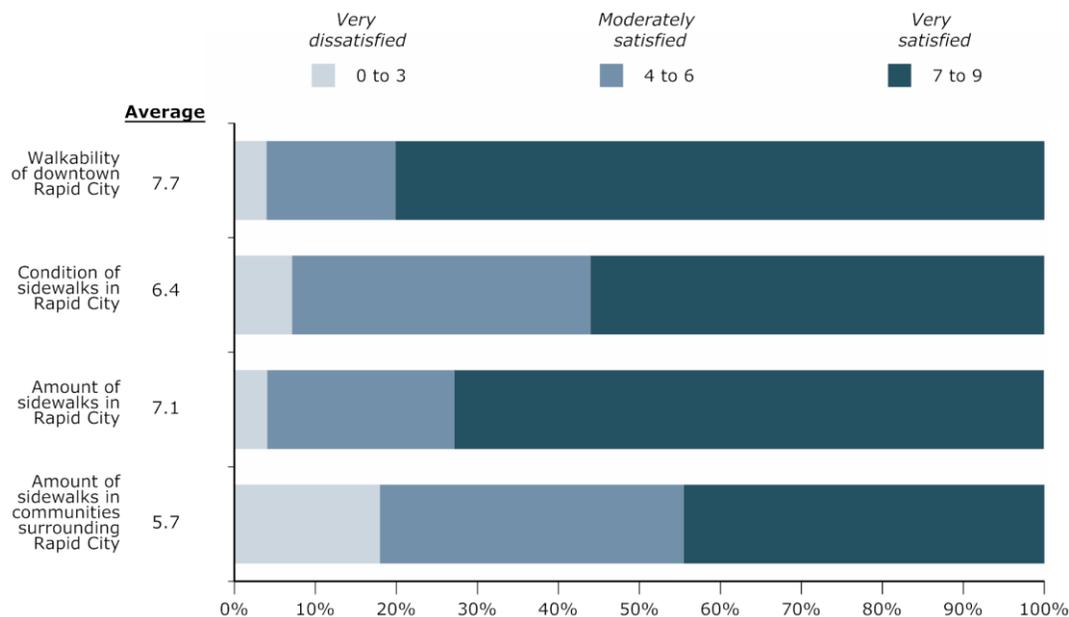
Note: Walkability n=504, Condition of sidewalks n=505, Amount of sidewalks in Rapid City n=511, Amount of sidewalks in communities surrounding Rapid City n=440.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. Employers were moderately satisfied with how sidewalks served their business. As shown in Figure V-2, 63 percent of employers reported being very satisfied with how sidewalks served their business. Although employers were very satisfied overall, it is important to note that one in six employers were very dissatisfied with how sidewalks served their business.

Figure V-2.
Employer satisfaction with sidewalks
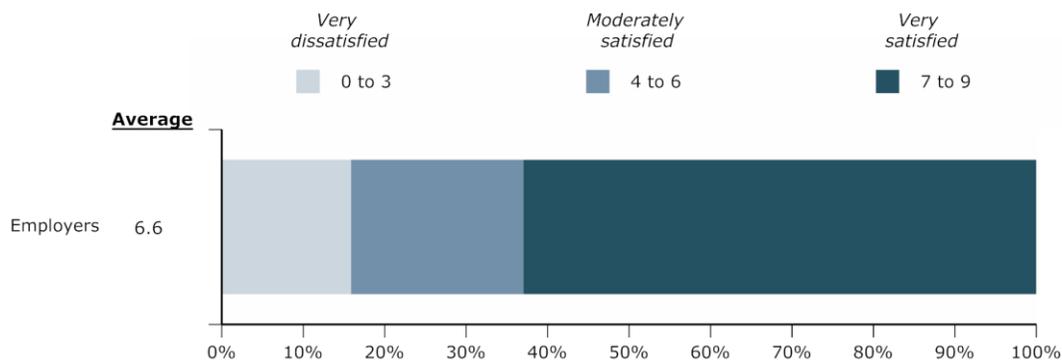
Note: n=189.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Importance. Residents and underserved respondents rated the importance on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, of the following two aspects of walking in the Rapid City Area:

■   Adding new sidewalks and crosswalks in the Rapid City Area; and

■   Educating drivers about sharing the road with bicyclists and looking out for pedestrians.

Employers rated how important, on a scale of 0 to 9, where 0 means very unimportant and 9 means very important, having access to sidewalks is to their business's continued success and growth.

Residents – Adding new sidewalks and crosswalks in the Rapid City Area. On average, residents felt that adding new sidewalks and crosswalks was moderately important. As shown in Figure V-3, three in five survey respondents rated adding new sidewalks and crosswalks as very important.

Residents – Educating drivers about sharing the road with bicyclists and looking out for pedestrians. Overall, residents felt that educating drivers about sharing the road with bicyclists and looking out for pedestrians was very important. As shown in Figure V-3, a majority (80%) of residents felt educating drivers was very important. Nearly 86 percent of underserved respondents felt educating drivers was very important, a statistically larger proportion than residents who felt educating drivers about sharing the road with bicyclists and looking out for pedestrians was very important.

Figure V-3.
Importance of two aspects of walking in the Rapid City Area
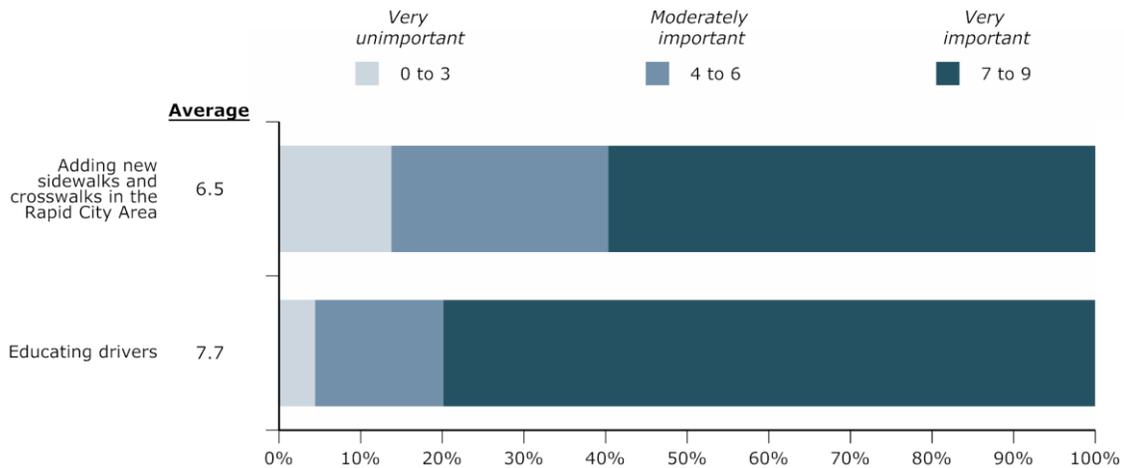
Note: Adding sidewalks and crosswalks n=497, Educating drivers n=497.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers. Overall, employers felt that having access to sidewalks was moderately important to their business's continued success and growth. As shown in Figure V-4, almost half (49%) of employers rated the importance of sidewalks as very important. It should be noted that nearly one in three employers felt that access to sidewalks was very unimportant for their business.

Figure V-4.
Importance of sidewalks - Employers
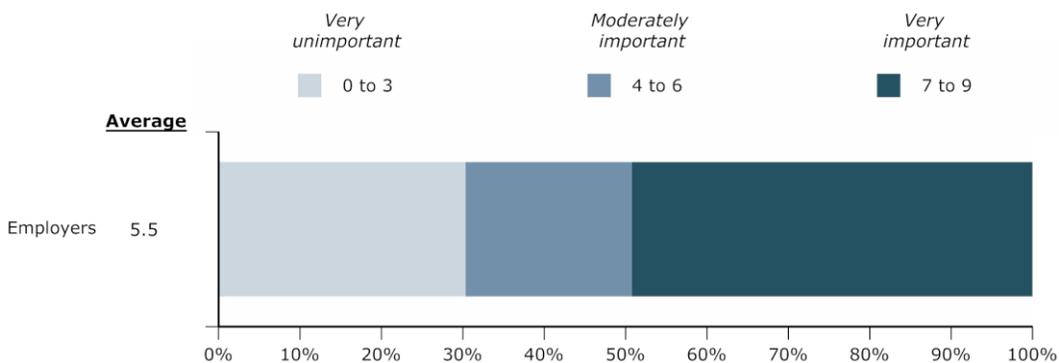
Note: n=201.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Safety. Residents and underserved respondents rated the safety, on a scale of 0 to 9, where 0 means very unsafe and 9 means very safe, of the following two aspects of walking in and around Rapid City:

■ Walking in Rapid City; and

■ Walking in communities surrounding the Rapid City Area.

Residents – Walking in Rapid City. Overall, residents felt moderately safe walking in Rapid City. As shown in Figure V-5, three in five residents felt very safe walking in Rapid City. Only 6 percent of residents reported feeling very unsafe walking in Rapid City.

Residents – Walking in communities surrounding the Rapid City Area. On average, residents felt moderately safe walking in communities surrounding the Rapid City Area. As shown in Figure V-5, greater than two in three (68%) residents felt very safe walking in surrounding communities. Again, a small portion of residents (6%) reported feeling very unsafe walking in communities surrounding the Rapid City Area.

Figure V-5.
**Safety of walking in the Rapid City Area**
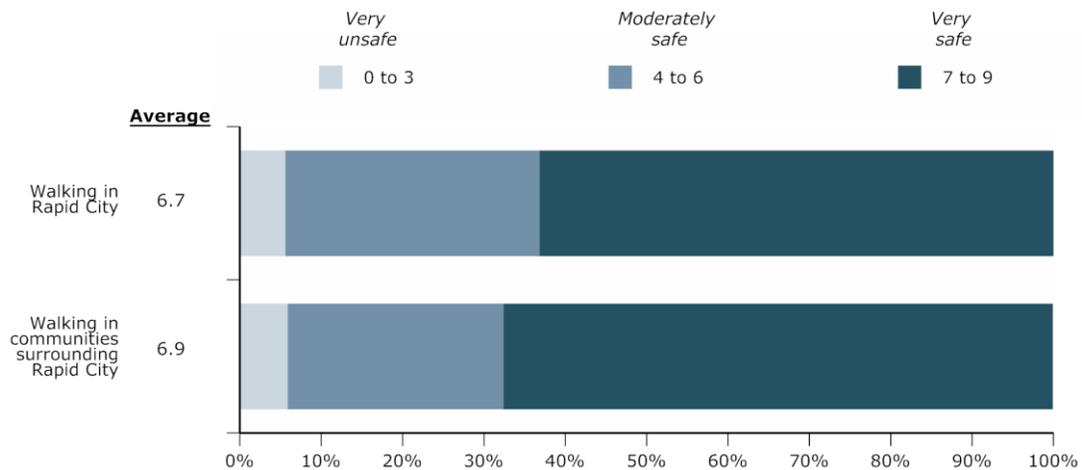
Note: Walking in Rapid City n=500, Walking in communities surrounding Rapid City n=453.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Future Priorities

With respect to pedestrian facilities, focus group and interview participants discussed the need for the region to continue to invest in safety improvements, and specifically improvements that will improve conditions for children getting to school and strengthening connections between existing facilities.

- *"In five years, the school population in Summerset/Piedmont is expected to grow significantly by 300 to 400 kids. Around schools there needs to be good traffic flow, sidewalks, bike paths and safe crossings of Sturgis Road."*

- *"My #1 priority—making safety improvements for vehicles, bikes and pedestrians at exit 46."*

- *"Most parents drive their kids to school, but some might switch to walking or biking if it were safer."*

- *"Black Hawk just got a grant to put in sidewalks around the schools. There are still hazardous routes for school children that we are always working to fix."*

SECTION VI.
Priorities

This section discusses transportation priorities for the Rapid City Area. As part of the 2014 Rapid City Area Market Study, respondents prioritized the following six issues:

■ Maintaining current roads, bridges, and highways;

■ Expanding Rapid Ride into a regional transit system, with services at night and on weekends;

■ Adding bike lanes, bike paths and bike trails throughout Rapid City and surrounding communities;

■ Adding sidewalks and crosswalks throughout Rapid City and surrounding communities;

■ Expanding road or highway access to the Rapid City Regional Airport; and

■ Improving sustainability and livability (balancing social, economic and environmental issues through complete streets, smart growth, mixed-uses).

As part of the 2014 Rapid City Area Market Study, employers ranked all of the issues listed above except for 'Expanding road or highway access to the Rapid City Regional Airport.' Based on interviews and focus groups, expanding access to the airport was determined to not be an issue for employers. However, adding parking in Rapid City was an issue many employers discussed. In addition to the five issues listed above that employers ranked, 'Adding parking to Rapid City' was added.

Top Priorities

Figure VI-1 presents the proportion of residents and underserved populations ranking each of the transportation issues as one of their top two priorities. The greatest proportion of residents and underserved respondents ranked road, bridge and highway maintenance in their top two most important transportation priorities. As shown in Figure VI-1, a significantly larger percentage of underserved populations ranked expanding Rapid Ride into a regional transit system, with services at night and on weekends in their top two most important priorities than did residents. The proportion of underserved respondents who use Rapid Ride is a likely explanation for why underserved populations rank expanding Rapid Ride as a higher priority than do residents. Only 3 percent of residents reported using Rapid Ride at least once per week, while nearly 25 percent of underserved respondents reported using Rapid Ride at least once per week.

For residents, there is no obvious second most important priority after maintaining current roads, bridges, and highways. Residents ranked improving sustainability and livability (33%), adding bike infrastructure (32%), adding sidewalks and crosswalks (29%) and expanding Rapid Ride into a regional transit system (27%) in their top two priorities at similar rates. It should be

noted that underserved populations ranked expanding bike infrastructure in their top two priorities at a statistically lower rate than did residents. For both residents and underserved respondents, expanding access to the Rapid City Airport was viewed as the least important issue.

Figure VI-1.
Top two priorities – Residents and underserved populations
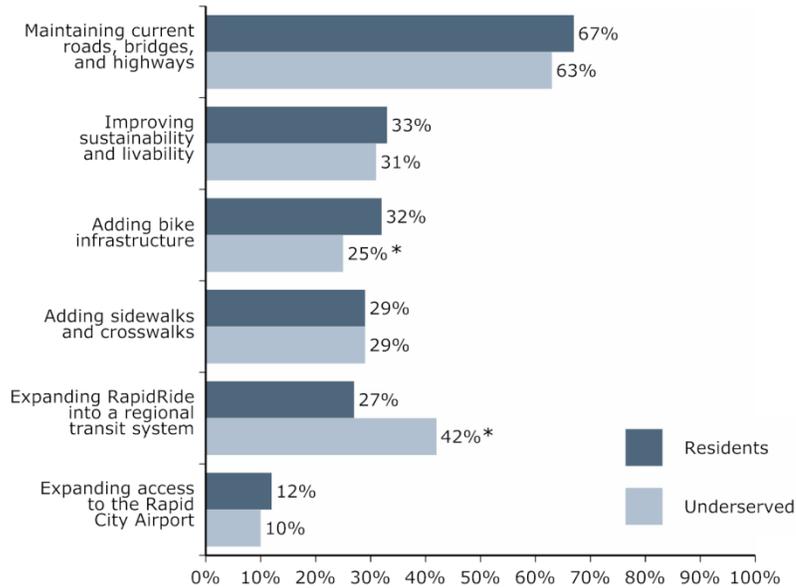
Note: *Indicates a statistically significant difference between resident and underserved responses.
       Resident n=454, Underserved population n=217.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

Employers also ranked maintaining roads, bridges, and highways as their top priority by a significant margin. As shown in Figure VI-2, 78 percent of employers ranked maintaining current roads, bridges, and highways as one of their top two priorities. Adding parking in Rapid City was ranked in the top two priorities by 35 percent of employers. Improving sustainability and livability (29%), expanding Rapid Ride into a regional transit system (27%) and adding sidewalks and crosswalks throughout Rapid City and surrounding communities (23%) were ranked in the top two priorities of employers at similar rates. Employers ranked adding bike infrastructure as their lowest priority, with only 9 percent of employers ranking bike infrastructure in their top two priorities.

Figure VI-2.
Top two priorities - Employers

Maintaining current roads, bridges, and highways: 78%
Adding parking in Rapid City: 35%
Improving sustainability and livability: 29%
Expanding RapidRide into a regional transit system: 27%
Adding sidewalks and crosswalks: 23%
Adding bike infrastructure: 9%
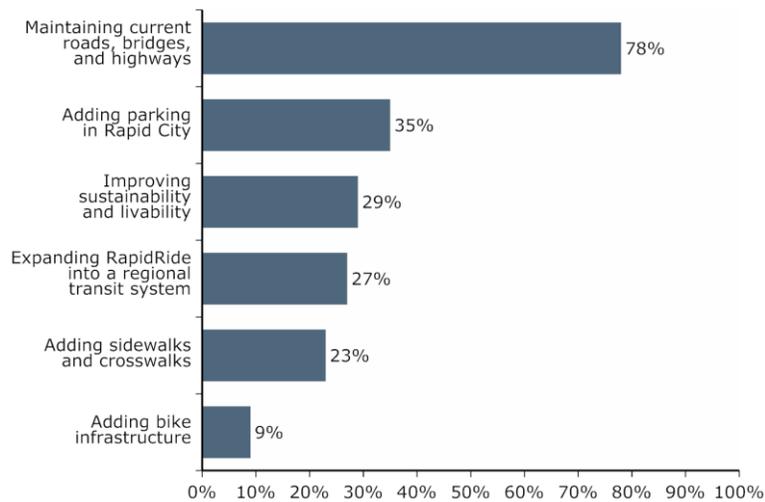
Note: n=195.

Source: BBC Research & Consulting 2014 Rapid City Area Market Study.

As can be seen from the data presented in this section, residents, underserved populations, and employers in the Rapid City Area all view maintaining current roads, bridges, and highways as the highest priority transportation-related issue in the Rapid City Area.

Appendix A.

Stakeholder Discussion Guide

STAKEHOLDER INTERVIEW GUIDE

Date and Time: _____

Location: _____

Individual and Organization: _____

Topics:

1. **What are the strengths of the Rapid City Area's transportation system? [Show map, so they understand what's included in the area.] [Probe: transit, bike, pedestrian, freight/intermodal, air, rail, local road, Interstate highway]**

    a.

    b.

    c.

2. **What should be the top goals for the Rapid City Area's transportation system over the next 25 years?**

    a.

    b.

    c.

3. **Why (goals)?**

    a.

    b.

    c.

4. **What types of transportation services and infrastructure would you like to see developed in the Rapid City Area given unlimited resources?**

    a.

    b.

    c.

5. **[Using the attached map – circle areas] What geographic areas in the Rapid City Area should receive highest priority for transportation improvements in the next 25 years? [Follow up about downtown Rapid City, rural communities, and regional connections – why or why not selected?]**

6. **Thinking of the areas you indicated, what types of improvements are needed? To what end?**

7. **What do you think are the most important problems in the Rapid City Area's transportation system? [Probe: Connectivity, condition, bike paths, sidewalks, transit service (routes, fares, hours of operation), air service and air fares, traffic congestion, and traffic safety]**

    a.

    b.

    c.

8. **Do you have any suggestions for improving these problems?**

    a.

    b.

    c.

9. **Do you think that the Rapid City Area's transportation system is well-prepared for an aging population? If not, what improvements are needed to sustain a good quality of life?**

10. **How much do you know about how the Rapid City Area's transportation system is funded? [Ask to explain]**

11. **[Provide info] How would you fund the Rapid City Area's transportation system?**

12. **How important is investment in transportation (either maintaining or improving system) relative to other investments that could be made in the Rapid City Area?**

13. **How does the current transportation system in the Rapid City Area support or hinder economic development?**

14. **What role should non-automobile transportation have in the Rapid City Area's transportation system during the next 25 years? [Probe about transit, bicycle and pedestrian network and safety, if one is not mentioned.]**

15. **In developing goals for the next 25 years, what transportation topics or questions should we ask local area employers, residents, or transit users about?**

    a.

    b.

    c.

16. **Other comments?**

Study Area

Legend:

Study Area
- Box Elder City Limits
- Piedmont City Limits
- Rapid City City Limits
- Summerset City Limits
- Rapid City MPO Boundary

Labels on map: Piedmont, Summerset, Blackhawk, Ellsworth Air Force Base, Box Elder, Rapid City, Rapid Valley

N
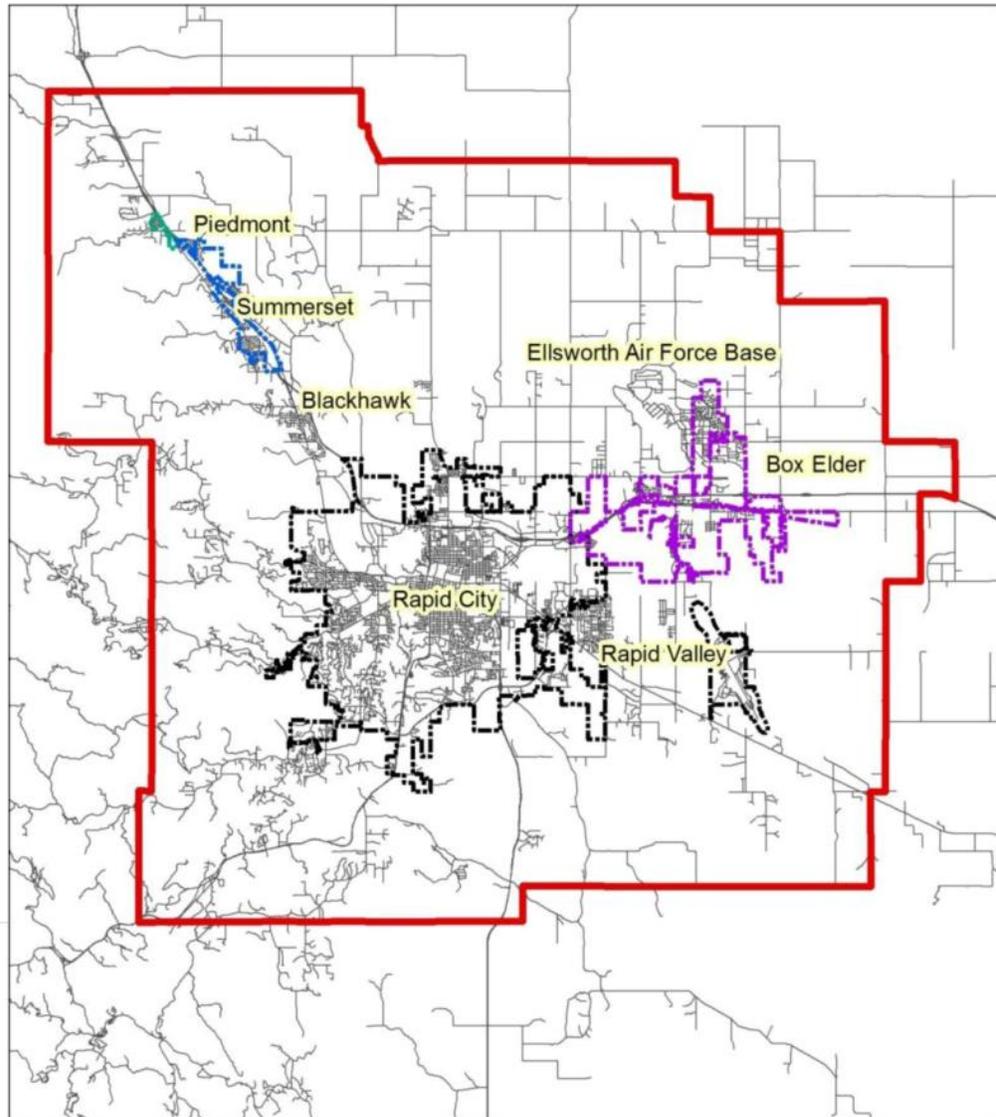
Appendix B.

Focus Group Guide

MEMORANDUM

To:	Pasty Horton
From:	Todd Pickton and Jen Garner
Re:	Rapid City Transportation Focus Group Guide
Date:	March 12, 2014

Note for review: Questions will be tailored based on the focus group respondents. For example, questions related to economic development in the business owner focus group will be phrased to address how their own business success is supported or hindered by the transportation system.

Map: If it is possible to print three large-scale maps of the area we will use them in the groups to identify specific aspects of the transportation system that need improvements, expansion, etc.

Pictures: It would be helpful to show participants examples of bike lanes with separation and lanes with sharrows.

1. Introduction.

Who we are: I am Jen Garner with BBC Research & Consulting. We have been contracted by the Rapid City Area Metropolitan Planning Organization to conduct a study to help guide their transportation planning process. We are here today to learn about your experiences with the Rapid City Area transportation system, to discuss specific improvements, and to learn what you recommend the goals for the system should be over the next 25 years.

■ **What a focus group is:** Have any of you participated in a focus group before? For those of you have not, a focus group is an informal, interactive discussion to explore perceptions and ideas. A focus group is not a survey. It's really just a discussion among you all. Ideally, I will hardly talk at all. My role is to ask questions, keep us on topic and help keep the discussion flowing. Any opinions and ideas are important to us. *There are no right or wrong answers; just opinions.*

■ **Rules:** The only ground rules are … please don't talk all at once. We have to go back and analyze our discussion, and if everyone talks all at the same time, we'll miss important feedback. Also, we have a lot of ground to cover, so please try to stay on topic.

Please feel free to come into the conversation at any time. If somebody says something, I always like to know how other people around the table feel. Sometimes people agree and other time people have different views. You don't have to wait for me to ask you a question. If I cut you off, please don't be offended. We need to make sure everyone here gets a chance to participate.

- ■ **Alert to:** Tape recording: We are taping this session. This is for our own analysis, so we can keep our full attention on what you're saying, rather than taking notes.

- ■ **Confidentiality.** What you say is confidential in that we won't be quoting anyone by name in our report. We want you all to be comfortable and to express your true opinions.

2. Warm-up.

Let's start by introducing ourselves. Tell us your name and how long you've lived in the community. [Go around the table; use map. For business owners, ask the business name, location and what it is.]

How do you think the Rapid City Area will change over the next 25 years?

With respect to quality of life in this community over the next 25 years, what will be important to maintain? To improve?

3. Perceptions of the current transportation system.

What are the main strengths of the existing Rapid City Area transportation system? [Which of these do you think is most important to maintain over the next 25 years?]

How do you typically get around the area when you go to work, appointments, shopping, etc? [Probe: Do you ever get around by using transit, walking or riding a bike?]

Is it easy to get around to access services you need, get to work, medical appointments, shopping and social activities? [Why or why not?] What would need to change to make it easier for you to get around? [Refer to map; probe: Sidewalks/pedestrian crossing, bike lanes, road connections, transit stop locations/hours of service/frequency]

What are the weaknesses of the current transportation system? How do those affect you personally?

Do you have suggestions for improving these problems? [Of all the suggestions, which would be your top priority?]

What types of additional transportation services and infrastructure would you like to see in the Rapid City Area?

4. Non-automobile transportation.

If you had a friend or neighbor [or business customer; phrasing will vary by group] who could no longer drive, how easy or difficult would it be for them to get to the places they need to go, like the grocery store, the bank, church and visiting friends? [What makes it easy/difficult? Show on the map where it's easy to go; where they couldn't get to]

How would you change the transportation system to make it easier for someone who can't drive to still live a full life in the community?

Public transit

Do you ever use public transit? How often? Are you able to get where you need to go on public transit? [If none use transit ask: do you have friends or neighbors who use public transit? What have they shared with you about their experiences?]

How could the Rapid City Area improve public transit? How could the Rapid City Area improve ridership on public transit?

How important is having public transit available in the area to you? In the scheme of things related to the overall transportation system, what emphasis would you place on maintaining or improving the public transportation system? Is it a low, medium or high priority?

Bicycling

[Note: only ask if seniors/persons with disabilities appear physically able to ride] How many of you ride a bike for recreation, errands or getting to work? What has been your experience riding a bike in the area? [Probe: recreation vs commuting, safety, improvements to the system]

In general, is the Rapid City Area bicycle friendly? [Why/why not]

Do you think drivers understand how to interact with bicyclists? Do you think bicyclists feel safe riding on streets with bike lanes? [Probe: lack of driver education, bicyclist/driver conflicts] What recommendations would you have to make things safer for bicyclists and still convenient for drivers?

Are there streets that should have a bike lane but don't? [Where would you add bike lanes? Show on map. Probe preference between bike lane with separation vs. sharrows.]

In the scheme of things related to the overall transportation system, what emphasis would you place on maintaining or improving bicycle facilities, such as bike lanes and trails? Is it a low, medium or high priority?

Walking

How many of you walk for recreation or to get around the area? How would you describe the pedestrian experience in the Rapid City Area? Are there places where you wouldn't feel comfortable

walking because of traffic or a lack of sidewalks? [Where? Show on map. What would make these places safer for people walking?

We've heard that Omaha and Mount Rushmore are challenging for people walking to cross. Has that been your experience? Do any other streets share this problem? [Which ones; show on map.]

In general, is the Rapid City Area pedestrian friendly? What is the overall condition of pedestrian facilities in Rapid City—such as sidewalks, crosswalks, trails?

What changes to the transportation system would you suggest to make the Rapid City Area a better place for people to walk?

In the scheme of things related to the overall transportation system, what emphasis would you place on maintaining or improving pedestrian facilities, such as sidewalks, crosswalks, and trails? Is it a low, medium or high priority?

5. At-Risk Populations.

What are the transportation issues facing [seniors, persons with disabilities] in the community?

Do you think that the Rapid City Area transportation system is well-prepared for a growing aging population? [Why/why not?]

How many of you are familiar with the Dial-a-Ride transit service? Have you ever used the Dial-a-Ride? How would you describe your experience? What are its strengths and weaknesses?

What transportation improvements would be helpful for the [aging population/persons with disabilities] to improve their ability to get around the area?

6. Economic Development.

What improvements to the transportation system are most needed for economic development in the region?

7. Outlying areas.

What transportation issues do outlying communities, such as Box Elder, Piedmont, Summerset and Rapid Valley face? [Probe: regional public transit]

What geographic areas in the Rapid City Area should receive highest priority for transportation improvements in the next 25 years? Why? What improvements should be made?

8. Funding and Priorities.

Out of all of the aspects of the transportation system we've discussed today, which one do you think should be the number one priority to address in the transportation plan? Why?

What would be your second most important priority? The third?

How much do you know about how maintenance and improvements to the transportation system in the Rapid City Area are funded?

Do you think that local area residents would be willing to pay slightly higher taxes to fund some of the specific transportation improvements we've discussed? If so, which improvements?

9. Wrap-up.

I promised you that at the end of the session we'd come back to any issues that you'd like to revisit. Does anyone have any comments that you didn't get a chance to bring up?

Thank you all for coming.

Appendix C.

Resident Survey Instrument

Market Study – DRAFT Resident Survey

Hello, my name is _____ calling from Davis Research. We are calling on behalf of the Rapid City Area Metropolitan Planning Organization, which does transportation planning in Rapid City, nearby communities, and rural areas. As a resident of the Rapid City Metropolitan Planning area, your opinions about transportation are very important. To help shape the direction of transportation within the region, would you be willing to participate in the survey? It will take about 10 to 12 minutes of your time.

 [IF YES, say, "Thanks for volunteering your time to participate in the survey," and begin with screener questions.]

[IF NO, say, "Thank you anyway. Have a great day," and terminate the phone call.]

[Screen for over 18 and to demographically balance respondents.]

So that we can be sure we are speaking with residents from across the region, what city, town or county do you live in?

[READ LIST]

> Rapid City
> Box Elder
> Summerset
> Piedmont
> Ellsworth Air Force Base
> Rapid Valley
> Black Hawk
> Unincorporated Meade County
> Unincorporated Pennington County

For the purposes of this survey, the Rapid City Metropolitan Planning Area includes Rapid City, all of the nearby surrounding communities and rural areas.

Rapid City Area Transportation System

A1.   On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please rate your level of satisfaction with the ease of travel for the following places within the Rapid City area. (When considering this question please think about the amount of time it takes you to travel between destinations, the level of congestion along your route, etc.) **[RANDOMIZE]**

	Very Dissatisfied								Very Satisfied		Refused	Don't Know
Box Elder/Ellsworth AFB	0	1	2	3	4	5	6	7	8	9	88	99
BlackHawk/Summerset/ Piedmont area	0	1	2	3	4	5	6	7	8	9	88	99
Rapid Valley area	0	1	2	3	4	5	6	7	8	9	88	99
Rural areas surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Within Rapid City	0	1	2	3	4	5	6	7	8	9	88	99

A2.   In a typical month, what are the different modes of transportation you may use for getting to work, running errands or recreation? Do you… **[RANDOMIZE, READ]**

Drive a personal vehicle ....Y N

Ride a bicycle..Y N

Walk ....Y N

Ride RapidRide (the bus)..Y N

Use the Dial-a-Ride bus service..Y N

Use other transportation service such as that
provided by a church, senior center, medical provider,
the VA or Black Hills Works..Y N

Other (specify)...Y N

Safety

B1. Now, I would like to get your thoughts about the safety of different types of transportation activities in the Rapid City area. On a scale from 0 to 9, where 0 indicates very unsafe and 9 indicates very safe, please rate how safe you feel about the following types of transportation. **[RANDOMIZE]**

	Very Unsafe								Very Safe		Refused	Don't Know
Driving in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Driving in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Driving in rural areas surrounding the Rapid City area	0	1	2	3	4	5	6	7	8	9	88	99
Bicycling on roads in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Bicycling on bicycle paths in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Bicycling on roads in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Bicycling on roads in rural areas surrounding the Rapid City Area	0	1	2	3	4	5	6	7	8	9	88	99
Walking in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Walking in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Using the RapidRide bus	0	1	2	3	4	5	6	7	8	9	88	99

Bus and Transit

C1.   Thinking about RapidRide, the bus system that serves the City of Rapid City, how frequently do you use Rapid Ride? **[READ]**

Every day 1

At least once a week 2

A couple times per month.. 3

Once a month.. 4

Rarely 5

Never.. 6

Refused.. 88

DK/NS 99

IF C1 = 6, 88, 99 SKIP to D1]

C2.   On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please indicate your level of satisfaction with the following aspects of RapidRide: **[RANDOMIZE]**

	Very Dissatisfied							Very Satisfied			Refused	Don't Know
Bus routes	0	1	2	3	4	5	6	7	8	9	88	99
Weekday hours of bus service	0	1	2	3	4	5	6	7	8	9	88	99
Weekend hours of bus service	0	1	2	3	4	5	6	7	8	9	88	99
Comfort at bus shelters/stops	0	1	2	3	4	5	6	7	8	9	88	99

C3.   On a scale from 0 to 9, where 0 means very unimportant and 9 means very important, please indicate the importance of the following for RapidRide: **[RANDOMIZE]**

	Very Unimportant							Very Important			Refused	Don't Know
Adding new bus routes to reach the communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Expanding service hours into the evening (up to 10:00 P.M.)	0	1	2	3	4	5	6	7	8	9	88	99
Adding bus service on Sunday	0	1	2	3	4	5	6	7	8	9	88	99

Pedestrians and Bicyclists

D1.   On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please indicate your level of satisfaction with: **[RANDOMIZE]**

	Very Dissatisfied								Very Satisfied		Refused	Don't Know
Walkability of downtown Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Condition of sidewalks in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Amount of sidewalks in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Amount of sidewalks in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Amount of bicycle paths and bicycle lanes in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
Amount of bicycle paths and bicycle lanes in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99

D2.   On a scale from 0 to 9, where 0 means very unimportant and 9 means very important, please rate the importance of: **[RANDOMIZE]**

	Very Unimportant								Very Important		Refused	Don't Know
Adding new sidewalks and crosswalks in the Rapid City area	0	1	2	3	4	5	6	7	8	9	88	99
Adding shared lanes along roadways for bicyclists	0	1	2	3	4	5	6	7	8	9	88	99
Adding bicycle paths that are separate from roads and highways	0	1	2	3	4	5	6	7	8	9	88	99
Educating drivers about sharing the road with bicyclists and looking out for pedestrians	0	1	2	3	4	5	6	7	8	9	88	99

Roads and Highways

E1.   On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please indicate your level of satisfaction with: **[RANDOMIZE]**

	Very Dissatisfied								Very Satisfied		Refused	Don't Know
The condition of roadways in Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
The condition of roadways in communities surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
The condition of roadways in rural areas surrounding Rapid City	0	1	2	3	4	5	6	7	8	9	88	99
The ease of parking in downtown Rapid City	0	1	2	3	4	5	6	7	8	9	88	99

E2.   On a scale from 0 to 9, where 0 means very unimportant and 9 means very important, please indicate the importance of: **[RANDOMIZE]**

	Very Unimportant								Very Important		Refused	Don't Know
Improving the condition of roadways in the Rapid City area	0	1	2	3	4	5	6	7	8	9	88	99
Adding parking in downtown Rapid City	0	1	2	3	4	5	6	7	8	9	88	99

Airport

On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please indicate your level of satisfaction with: **[RANDOMIZE]**

	Very Dissatisfied								Very Satisfied		Refused	Don't Know
Airport facility	0	1	2	3	4	5	6	7	8	9	88	99
Ease of access to the airport	0	1	2	3	4	5	6	7	8	9	88	99
Airport parking	0	1	2	3	4	5	6	7	8	9	88	99

On a scale from 0 to 9, where 0 means very unimportant and 9 means very important, please indicate the importance of: **[RANDOMIZE]**

	Very unimportant								Very important		Refused	Don't Know
Airport facility	0	1	2	3	4	5	6	7	8	9	88	99
Ease of access to the airport	0	1	2	3	4	5	6	7	8	9	88	99
Airport parking	0	1	2	3	4	5	6	7	8	9	88	99

Priorities

As I mentioned, the Rapid City Metropolitan Planning Organization is developing a long-range transportation plan for the area. I would like to understand how you would prioritize the various transportation issues we've asked about. I'm going to read you a list of 6 issues and ask you to rank them in order of priority, from your top priority to the lowest priority.

[READ LIST; RANDOMIZE LIST. AFTER READING LIST, ask for #1 priority, and so forth until all are ranked from 1 to 6]

Maintaining current roads, bridges, and highways

Expanding RapidRide into a regional transit system, with services at night and on weekends

Adding bike lanes, bike paths and bike trails throughout Rapid City and surrounding communities

Adding sidewalks and crosswalks throughout Rapid City and surrounding communities

Expanding road or highway access to the Rapid City Regional Airport

Improving sustainability and livability (balancing social, economic and environmental issues through complete streets, smart growth, mixed-uses)

Corridors with Transportation Issues

Are there specific corridors, roadways, or highways that pose a safety or other transportation issue in the area that you think need to be addressed?

        Yes

        No [Skip to F1]

If yes, Where? [DO NOT READ, RECORD]

I90, I190, Main, St. Pat., Omaha, Sturgis Road, Mt. Rushmore Road, 5th, Catron, US 16, US 16B, SD 79, SD 44, Sheridan Lake Road, East Chicago, Deadwood, Roadways outside the City of Rapid City

Demographics

Our last questions are about you and your family. The answers to these questions help us statistically classify the results we obtain and will only be used when combined with the hundreds of other interviews conducted for this survey.

F1.   How old are you?

        Years: .... _____
        Refused... 88
        DK/NS 99

F2.   How long have you lived in the Rapid City area?

        [DO NOT READ LIST]

        Years: .... _____

        Also code:

        Less than one year 1
        1 to 5 years... 2
        6 to 10 years.. 3
        11 to 15 years.. 4
        16 to 20 years.. 5
        More than 20 years... 6
        Refused... 88
        DK/NS 99

F3.   What is the last year of schooling that you have completed?

        [READ LIST]

1st – 11th grade	1
High school graduate	2
Non-college post H.S.	3
Some college	4
College graduate	5
Graduate school	6
Refused..	88
DK/NS	99 ⇒ *Do not read*

F4.   What is your current employment status?

[READ LIST]

Employed outside the home	1
Work from home..	2
Student..	3
Retired...	4
Stay at home parent..	5
Not currently employed...	6
Unemployed, looking for work	7
Disabled or on disability...	8
Refused..	88
DK/NS	99 ⇒ *Do not read*

F5.   Which of the following income groups includes your family's total annual income from all sources in 2012?

[READ LIST]
[ALLOW ONLY ONE RESPONSE]

Less than $15,000	1
$15,000 but less than $30,000..	2
$30,000, but less than $45,000...	3
$45,000, but less than $60,000...	4
$60,000, but less than $75,000...	5
$75,000, but less than $90,000...	6
$90,000, but less than $105,000...	7
$105,000 or over	8
Refused..	88 ⇒ *Do not read*
DK/NS	99 ⇒ *Do not read*

F6.   What of the following categories best describes your ethnic background?

[READ LIST]
[ALLOW ONLY ONE RESPONSE]

Caucasian/White (non-Hispanic origin)	1

Hispanic/Latino 2
Asian/Asian Indian/Pacific Islander 3
African American/Black 4
Native American/Indian 5
Other (specify)_____ 77
Refused .... 88 ⇒ *Do not read*

Appendix D.

Employer Survey Instrument

Market Study – DRAFT Employer Survey

Hello, my name is _____ calling from Davis Research. We are calling on behalf of the Rapid City Area Metropolitan Planning Organization, which does transportation planning in Rapid City, nearby communities, and rural areas. This is not a sales call.

The Rapid City Area MPO is collecting information from local business owners and managers about transportation and parking to help set regional transportation priorities for the next 25 years. It will only take 5 minutes of your time. Who can I speak with to get the information we need from your business?

[AFTER REACHING AN APPROPRIATELY SENIOR STAFF MEMBER, THE INTERVIEWER SHOULD RE-INTRODUCE THE PURPOSE OF THE SURVEY AND BEGIN WITH QUESTIONS. RECORD POSITION.

RECORD JOB TITLE OF INTERVIEWEE.

RECORD INDUSTRY TYPE FROM SAMPLE---RETAIL, SERVICES, MANUFACTURING, ETC.]

So that we can be sure we are speaking with businesses from across the region, what city, town or county is your business located in?

[READ LIST]

       Rapid City
       Box Elder
       Summerset
       Piedmont
       Ellsworth Air Force Base
       Rapid Valley
       Black Hawk
       Unincorporated Meade County
       Unincorporated Pennington County

[FOR THE PURPOSES OF THIS SURVEY, THE RAPID CITY METROPOLITAN PLANNING AREA INCLUDES RAPID CITY, ALL OF THE NEARBY SURROUNDING COMMUNITIES AND RURAL AREAS.]

Rapid City Area Transportation System

1.	On a scale from 0 to 9, where 0 means not important at all and 9 means very important, please rate how important having access to each of the following aspects of the transportation system is to your business's continued success and growth.

	[RANDOMIZE]
	- Sidewalks
	- Bicycle lanes or paths
	- Transit/bus
	- Roads
	- Highways
	- Parking
	- Rail
	- Airport

2.	On a scale from 0 to 9, where 0 means very dissatisfied and 9 means very satisfied, please rate your satisfaction with how the following transportation options serve your business:
	[RANDOMIZE]
	- Sidewalks
	- Bicycle lanes or paths
	- Transit/bus
	- Roads
	- Highways
	- Parking
	- Rail
	- Airport

3a.	[ASK ONLY OF BUSINESSES LOCATED WITHIN THE CITY OF RAPID CITY.] Is your business currently located along or near an existing RapidRide bus route?
	Yes [Go to 3a]	No [Skip to 4]	Don't know/not sure [Skip to 4]

3b.	Do you or any of your employees or customers use RapidRide or bus transit to commute to your business?
	Yes [Go to 3c]	No [Skip to 4]	Don't know/not sure [Skip to 4]
	3c.	Do your employees or customers encounter any challenges or difficulties due to RapidRide's current hours and days of operation?
		Yes [Go to 3d]	No [Skip to 4]	Don't know/not sure [Skip to 4]
		3d. Please explain.

Priorities

4.	As I mentioned, the Rapid City Metropolitan Planning Organization is developing a long-range transportation plan for the area. I would like to understand how you would prioritize the

various transportation issues we've asked about. I'm going to read you a list of 6 issues and ask you to rank them in order of priority for your business, from your top priority to the lowest priority.

[READ LIST; RANDOMIZE LIST. AFTER READING LIST, ask for #1 priority, and so forth until all are ranked from 1 to 6]

Maintaining current roads, bridges, and highways

Expanding RapidRide into a regional transit system, with services at night and on weekends

Adding bike lanes, bike paths and bike trails throughout Rapid City and surrounding communities

Adding sidewalks and crosswalks throughout Rapid City and surrounding communities

Adding parking in Rapid City

Improving sustainability and livability (balancing social, economic and environmental issues through complete streets, smart growth, mixed-uses)

5.   Are there specific corridors, roadways, or highways that pose a business-related transportation issue in the area that you think need to be addressed?

Yes

No [Skip to F1]

5a.   If yes, Where? [DO NOT READ, RECORD]

I90, I190, Main, St. Pat., Omaha, Sturgis Road, Mt. Rushmore Road, 5th, Catron, US 16, US 16B, SD 79, SD 44, Sheridan Lake Road, East Chicago, Deadwood, Roadways outside the City of Rapid City

6. I have one last question for validation purposes. What is your first name?

(RECORD FIRST NAME)

1=VERBATIM

Thank you very much for your participation. If you have any questions, please contact Patsy Horton at Rapid City Area MPO. Ms. Horton's phone number is 605-394-4120.

APPENDIX E.

Methods and Assumptions Document
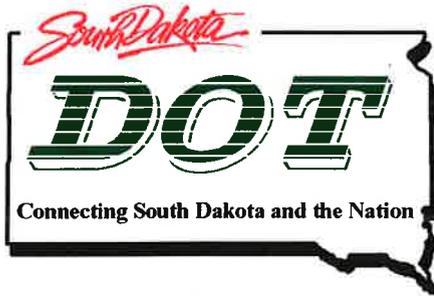
January 27, 2014

Rapid City Area MPO Long Range Transportation Market Research Study and Survey

Methods and Assumptions Document

Method and Assumptions Meeting
Held January 8, 2104

Prepared for
Patsy Horton, Division Manager
Long Range Planning Division
Community Planning & Development Services
City of Rapid City
300 Sixth Street
Rapid City, South Dakota 57701

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1. Stakeholder Acceptance Page

The undersigned parties concur with the Methods and Assumptions for the Rapid City Area MPO Long Range Transportation Market Research Study and Survey as presented in this document.

Rapid City Area MPO:

_____
Signature
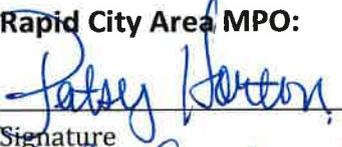
MPO Coordinator
_____
Title

2-13-14
_____
Date

SDDOT:

_____
Signature

MPO Coordinator
_____
Title

2-18-14
_____
Date

FHWA:

_____
Signature

Planning/Civil Rights Spec
_____
Title

2/13/14
_____
Date

NOTES:

(1) Participation on the Study Advisory Team and/or signing of this document does not constitute approval of the Rapid City Market Research Study's Final Report or conclusions.

(2) All members of the Study Advisory Team will accept this document as a guide and reference as the study progresses through the various stages of development. If there are any agreed upon changes to the assumptions in this document a revision will be created, endorsed and signed by all the signatories.

2. Introduction and Project Description

The Rapid City Area MPO seeks to understand constituents' attitudes and issues regarding transportation. The market research obtained through this effort will be used to determine the goals and objectives of the Rapid City Area Long Range Transportation Plan.

Study Advisory Team members. The Study Advisory Team (SAT) will be comprised of:

- Patsy Horton, City of Rapid City/MPO;
- Brad Remmich, SDDOT;
- Mark Hoines, FWHA;
- Bill Rich, Meade County;
- PJ Conover, Pennington County;
- Dan Staton, SDDOT Region; and
- Kip Harrington, City of Rapid City/MPO.

Schedule. Figure 1 presents the overall project schedule on a task basis.

Figure 1.
Project schedule
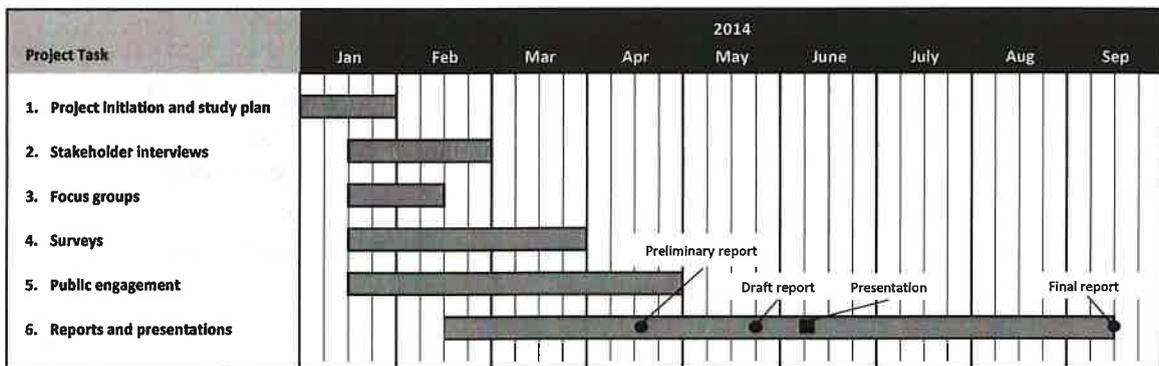
Source: BBC Research & Consulting, 2014.

Figure 2 presents the anticipated milestone schedule.

Figure 2.
Anticipated project milestones

Milestone	Date
Conduct kickoff meeting	January 7
Conduct M&A document meeting	January 8
Deliver draft M&A document	January 27
Schedule focus groups/stakeholder interviews	January 27 through February 7
Provide draft website copy to TAC	January 31
Revise website copy based on TAC review	February 7
Conduct focus groups/stakeholder interviews	February 11 - 13
Meet with TAC re survey instrument development	February 17
Deliver initial draft of survey instrument to TAC	February 19
Collect feedback from TAC on survey instrument	February 21
Deliver revised draft to TAC for review	February 25
Collect feedback from TAC on revised draft	February 28
Program survey instruments	March 3
Publish websurvey on Survey Monkey	March 7
Test CATI script	March 7
Pilot telephone surveys	March 8
Field surveys (citizens, employers and underserved)	March 10 - March 23
Close web survey	March 27
BBC receive telephone survey results	March 27
Analyze survey data	March 27 - April 4
Deliver draft preliminary report	April 18
Conduct public meetings	Week of April 28
Deliver draft report	May 23
Present study	Week of June 9
Deliver final report	September 15

Source: BBC Research & Consulting, 2014.

3. Study Area

As shown in Figure 3, the market research study area includes:

- Cities of Rapid City, Box Elder, Summerset, and Piedmont;

- Ellsworth Air Force Base (Ellsworth AFB);

- Unincorporated areas of Black Hawk and Rapid Valley; and

- Developing areas of Pennington County and Meade County within the Metropolitan Planning Area.

Figure 3.
Long Range Transportation Market Research Study Area
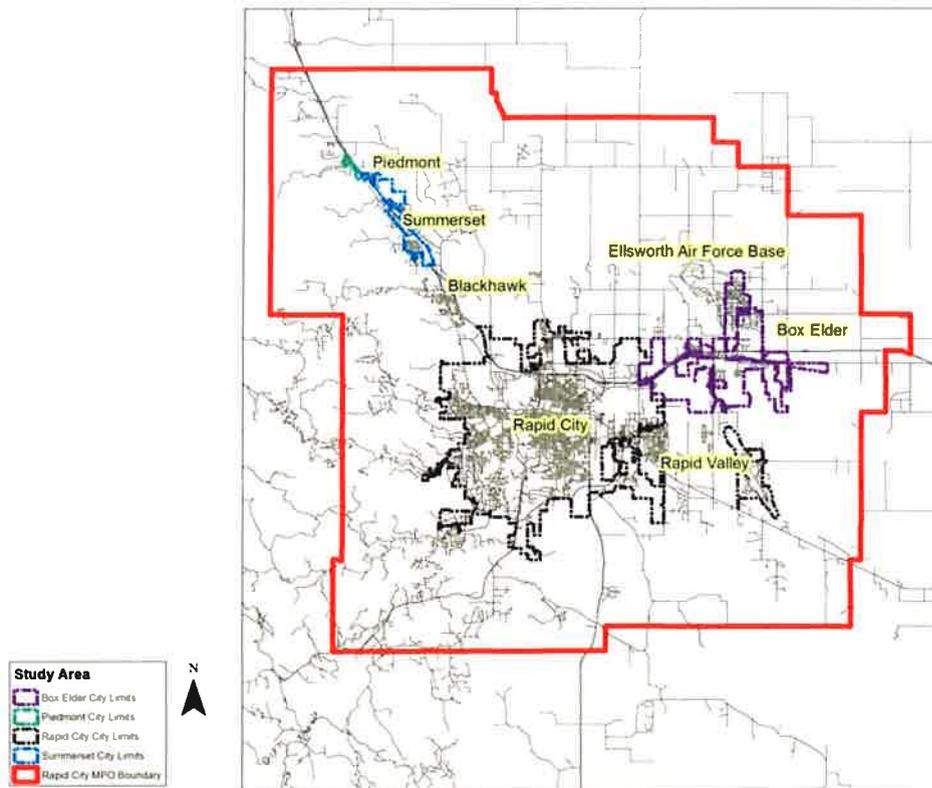
4. Analysis Years/Periods

Section 5 is not applicable to this study.

5. Data Collection

BBC will use a number of methods to gather stakeholder and public input for the Long Range Transportation Plan Study and Survey, including:

- Stakeholder interviews and focus groups;
- Surveys;
- Website; and
- Public meetings.

Each of these efforts is discussed here in more detail.

Stakeholder interviews and focus groups. Stakeholder interviews and focus groups will enable BBC to gather input on local transportation issues and needs directly from local area government staff and interested community members. Information collected during this phase will directly inform the goals and objectives of the Long Range Transportation Plan and

indirectly inform the questions used on the community survey. Organizations and individuals that we will reach out to for stakeholder interviews and focus groups include:

- Development community;
- Freight industry;
- Elderly;
- Transit users;
- Persons with disabilities;
- Cities within the MPO area;
- Representatives from Meade and Pennington Counties;
- Representatives from Ellsworth AFB;
- Local transit agencies;
- Local school districts;
- Local colleges and technical schools;
- Local committees dealing with sustainability and livability issues;
- Local chambers of commerce;
- Members of the Rapid City Historic Preservation Commission; and
- Members of the Mount Rushmore Road Group.

Stakeholder interviews. BBC will work with the Rapid City Area MPO and the SAT to schedule and conduct the interviews. BBC will request contact information for agencies, groups, and individuals from Rapid City Area MPO and the SAT. BBC will be responsible for arranging the meetings. We will hold the stakeholder interviews at the stakeholders' offices or another agreed upon location. Prior to the stakeholder interviews, BBC and FHU, with the SAT's input, will craft a "discussion guide" that will help inform the discussion topics.

Todd Pickton, BBC Managing Director, will conduct the initial stakeholder interviews in the Rapid City area during the week of February 10, 2014. If required, Mr. Pickton will rely on a translator (including American Sign Language) where primary language or participant disability might present a communication barrier. As necessary, additional stakeholder interviews will be conducted by telephone during the remainder of the study.

Focus groups. BBC will conduct at least three focus groups with individuals from select agencies and organizations listed above. The focus groups will be 60- to 90-minute discussions and we will attempt to have at least six individuals present. With FHU and the SAT's assistance, BBC will develop and use a discussion guide to facilitate the focus groups.

Todd Pickton will facilitate the focus groups in Rapid City during the week of February 10, 2014. Mr. Pickton will follow the Rapid City MPO LEP plan if a communication barrier is present. If focus groups cannot be conducted at the group or agency's location, then the Rapid City Area MPO will be responsible for providing appropriate space.

The focus groups will present an opportunity for members of the SAT to observe the discussion. Ideally, no more than two members of the SAT would be present at the focus group. Any observers would be seated away from the participant table and not be an integral part of the discussion. Mr. Pickton, as facilitator, will offer any observers the opportunity to ask follow up questions at one or more points during (or at the end) of the discussion.

Surveys. BBC will complete a statistically valid survey with citizens, employers, and underserved populations within the study area.

Survey instrument design. BBC will draft three survey instruments for use in the citizen, employer, and underserved population surveys, using the following sources:

- Interviews with Study Advisory Team members;
- Results from the stakeholder interviews and focus groups;
- Input from Felsburg Holt & Ullevig (FHU), our study Subconsultant; and
- Review of survey instruments used in RapidTRIP 2035 and the similar Sioux Falls transportation market research.

Initial drafts of the survey instruments will be provided to the SAT for review and comment. BBC will then revise the survey instruments and provide the revised drafts to the SAT for review and comments. Based on feedback, BBC will use the final survey instruments to:

- Program the Computer Aided Telephone Interview (CATI) scripts;
- Program web surveys using Survey Monkey; and
- Create paper surveys for distribution to underserved populations.

Per our proposal, the final surveys will need to be no longer than 12 minutes in length to minimize non-response bias and remain within the proposed project cost estimates.

Survey fielding. BBC will work with Davis Research to field the employer and resident surveys. Davis Research will use random selection methods within the study area to complete the employer and resident surveys. Davis Research will include a cell phone sample for the resident survey, to insure that residents without a land line are included in the study.

BBC and Davis Research will complete at least 400 resident surveys and 200 employer surveys, providing minimum confidence intervals of 4.8 and 6.9 percent, respectively, at the 95 percent confidence level.

BBC will work with the Rapid City Area MPO, local support organizations, and community organizations to field the underserved population survey. BBC will obtain at least 200 completed surveys from this population. This will provide statistically reliable results for the group overall, though there may be some bias in the results depending upon the degree to which certain underserved population segments are under- or over-represented in the sample.

Our primary means of collecting completed surveys will be to distribute paper surveys and postage-paid return envelopes to residents at transit stops and at support and community organizations. BBC recommends that the surveys be printed with the Rapid City Area MPO logo and that we use Rapid City Area MPO labeled return envelopes. BBC will be responsible for collecting the completed surveys from the City of Rapid City and entering the survey data for analysis.

BBC will supplement the telephone and hard copy surveys with web surveys programmed in Survey Monkey and accessible through the project website and, if feasible, websites maintained by the Cities of Rapid City and Box Elder and Pennington and Meade Counties . BBC will be responsible for programming the survey instruments, downloading the completed survey data, and analyzing the information.

Upon completion of the surveys, BBC will clean, code and analyze all survey information. We will provide the raw data to the Rapid City Area MPO and we will include analyses in the preliminary, draft, and final reports and in the presentation.

Website. BBC and FHU will draft an informational website for use in the project that:

- Describes this project and the LRTP Update;
- Enables interested individuals and businesses to submit information related to the LRTP Update;
- Provides access to online surveys;
- Provides information about the open houses/public meetings, including where and when they will be held; and
- Allows the public to access the final report.

BBC will provide the draft website copy to the Rapid City Area MPO and it will be the responsibility of the MPO to host the website.

Information submitted through the website by the public will be integrated into the draft and final reports along with results from the stakeholder interviews, focus groups, and surveys.

Public meetings. Following collection and analysis of the survey data, BBC will produce a preliminary analysis of survey data and a short presentation to be used at two open houses/public meetings to be held in late April or early May on back-to-back days. BBC will ensure that the timing and location of the open houses/public meetings facilitate attendance by interested community members, including transit users.

The public meetings will provide BBC and the Rapid City Area MPO an opportunity to:

- Inform the public about the market research study and the Long Range Transportation Plan;
- Answer questions; and
- Collect additional public input relevant to study topics.

BBC and FHU will be responsible for:

- Drafting public announcements to be used in advertising the public meetings;
- Creating a short presentation about:
  - ➢ Purpose and need for the Market Research and LRTP studies;
  - ➢ Study approach;
  - ➢ Potentially, preliminary results of the surveys;
  - ➢ How to provide input;
- Updating the website copy to provide information about the public meetings;
- Recording any public testimony provided at the meetings; and
- Transcribing the public testimony and including it in the draft and final reports.

The Rapid City Area MPO will be responsible for locating and securing a venue for the meetings, advertising, providing audio/visual equipment (if possible), and assisting BBC with setup of the room.

6. Traffic Operations Analysis

Section 7 is not applicable to this study.

7. Travel Forecast

Section 8 is not applicable to this study.

8. Safety Issues

Section 9 is not applicable to this study.

9. Selection of Measures of Effectiveness (MOE)

The metrics and goals for the study will be to complete at least:

- Four-hundred surveys with resident in the study area;
- Two-hundred surveys with businesses in the study area;
- Two-hundred surveys with members of underserved populations;
- Three focus groups; and
- Interviews with 30 stakeholders (including those reached during the focus groups).

The number of completes for surveys are designed to meet the following statistical confidence intervals:

- For the resident survey, a confidence interval of 4.8 percent at the 95 percent confidence level;

- For the employer population surveys, a confidence interval of 6.9 percent at the 95 percent confidence level; and

- For the underserved population survey, statistically reliable results for the group overall, though there may be some bias in the results depending upon the degree to which certain underserved population segments are under- or over-represented in the sample.

10. FHWA Interstate Access Modification Policy Points

Section 11 is not applicable to this study.

11. Deviations/Justifications

The proposed project methodology involves no known deviations from research standards.

12. Conclusion

The Rapid City Area MPO and other federal, state, and local governments, as part of their long-range transportation planning process, seek to understand constituents' attitudes and issues regarding transportation in the Rapid City Area. The market research obtained through this effort will be used to determine the goals and objectives of the Rapid City Area Long Range Transportation Plan (LRTP).

BBC's methodology will satisfy the Rapid City Area MPO's need through:

- Performing extensive community engagement through stakeholder interviews, focus groups, a website, and open houses/public meetings;

- Collecting statistically reliable information about constituents' attitudes and issues regarding transportation through employer, resident and underserved population surveys;

- Using previous work conducted as part of the RapidTRIP 2035 (Long Range Transportation Plan for the Rapid City Area) and the Sioux Falls Long Range Transportation Plan Market Research Study as inputs when developing discussion guides and survey instruments and as benchmarks for a comparison of results; and

- Involving the SAT and Felsburg Holt & Ullevig in review of all discussion guides, survey instruments, presentations, and draft work product.

BBC also has the following contingencies in place to meet the public input and number of survey completions described in Section 6. Data Collection:

- BBC's telephone survey subcontractor will continue surveying until they have reached the minimum number of completed employer and resident surveys;

- BBC will continue to perform intercept surveys with transit riders and distribute surveys to underserved populations (largely through working with service providers and community organizations) until we have received the minimum number of completed surveys;

- If BBC is unable to schedule or meet with all stakeholders identified in Section 6. Data Collection, BBC will attempt to perform a stakeholder interview with them via telephone or during subsequent trips to Rapid City;

- BBC will create Internet surveys for each of the three survey efforts (employer, resident, and underserved population) and use these results, where appropriate, to bolster other information collected through interviews, focus groups, public meetings, and surveys.

14. Appendices

The following documents were relied upon to develop the study approach and complete the Methods & Assumptions document:

- Request for Proposals for Long Range Transportation Market Research Study and Survey (RFP);

- BBC's response to the RFP; and

- RapidTRIP 2035 – The Long Range Transportation Plan for the Rapid City Area.

These documents are attached as Appendices A, B, and C, respectively.

APPENDIX C.   PUBLIC OPEN HOUSE MEETING SUMMARIES

June 29, 2015

Public Open House Meeting #1 Summary

RAPIDTRIP 2040 – RAPID CITY AREA MPO LONG RANGE TRANSPORTATION PLAN
FHU Reference No. 14-259-01

Public Open House Meeting #1
June 17, 2015 from 4.00-6.00pm
1st Floor Community Room
City/School Administration Center
300 6th Street, Rapid City, SD 57701

A Public Open House was conducted to gather input about RapidTRIP 2040. The Open House presented the public a summary of the project process, the Preliminary Needs Plan, and a summary of Performance-Based Planning and the Goals and Objectives for the Long Range Transportation Plan.

The meeting was announced using various media streams including the project website, newspaper advertisements, and mass e-mailings. The newspaper advertisement used for announcement is attached. The open house meeting boards on display for the public have been attached along with the sign-in sheet of attendees.

The follow table summarizes comments received at the meeting. Many of the comments were directed at the Preliminary Needs Plan and changes resulting from these comments will be made to the listing resulting in the Final Needs Plan. The comments were recorded from written comment sheets (comments 1-18), comments received via e-mail or through the project website (rapidtrip2040.com) (comments 19-24), and verbal comment at the meeting (comments 24-47).

1	Emergency access off Haines Avenue needs to be improved. Roadway into area south of Auburn Hills. Ambulances have to go into Auburn Hills and have to turn south into a subdivision of Senior Center.
2	Need a bridge over Omaha from Park at 6th Street. Traffic on Omaha is too great for pedestrians in the system as it is to date.
3	Country Road housing is expanding. East Road has to be improved.
4	We have 3 lots open for development. We have a plan in place for this area to become an environmental area for seniors and the community in the Mall Ridge Auburn Hills area.
5	Move the rail lines out of Downtown Rapid City. It may take 20 years but ultimately must be done.
6	Annexation of the area north of Rapid City to 224th Street including Blackhawk should happen.
7	Prioritize performance measures regarding project delivery (set goals and make it happen, it is our future) and system preservation (Quality transportation is very

	important to maintain a quality community).
8	I feel the Sheridan Lake Road Extension thru to West Main Street would be valuable and have high use.
9	Anamosa completed to Elk Vale Road would be an economic generator for land sales and business.
10	Finishing Creek Drive from Highway 44 to Menards would assist in opening up this region east of Cambell Street.
11	Prioritize performance measures regarding economic vitality, multimodal mobility and accessibility, systems operation, and project delivery.
12	Spring Creek Road is a bicycle/vehicle accident waiting to happen. A bicycle path separate from the road surface would be ideal.
13	Remove R-82, R-83, and R-90 (widening of West Main Street from Mountain View Road to St Joseph Street and St Joseph Street from West Main Street to West Boulevard)
14	Add an extension of Jackson Boulevard from West Main Street to West Omaha Street. The Jackson Boulevard Extension Project is shown on several Rapid City long range planning maps including the recently completed Comprehensive Plan. This project is very important to get traffic from southwest Rapid City over to Omaha Street instead of headed east on West Main Street directly toward downtown Rapid City. The Jackson Boulevard Extension Project should be made a part of the upcoming reconstruction of West Omaha Street from 12th Street west to Sheffer Street.
15	Add refinements to West Main Street from Jackson Boulevard east to West Boulevard
16	I believe that a street with a sidewalk for pedestrians and bicyclists would be very helpful for the growing number of people in the area just south of Auburn Hills development. Rapid map shows Avalon Place as a possible location for this improvement.
17	Improve 5th Street/Haines Avenue or allow more medical facilities north of the interstate on Haines Avenue. A school would also be very helpful including more public transportation to help lower traffic congestion.
18	Sidewalk/bike path on both sides of Haines Avenue. I am not sure we are ready for bike lanes on Haines at this time. There have been many accidents from Shopko to Best Buy due to the lack of adequate walkways.
19	Skyline Drive is in need of road and rock wall maintenance. There is no shoulder for the safety of bicyclists and pedestrians. See letter for additional comments.
20	Need to realign Long View Road outside of the Runway Protection Zone. This project has been identified during the ongoing Airport Master Plan update and will be included as an airport related improvement to be funded through aviation funds.
21	R-42 is a proposed roadway alignment that would cross through protective surfaces at the airport. Efforts should be made to coordinate with the airport to assure an alignment outside of the protective surfaces or look at alternatives such as prioritizing R-64 connecting the airport to Radar Hill Road followed by enhancements to Radar Hill Road.
22	Of particular interest to me is planning with walk ability and mixed use options for services within 1mile of housing options. This concerns both approaches to transportation and planning. Let's build a vibrant community that is beautiful and walkable. Consider how we can interconnect services and generate less traffic and require fewer trips. Increase vibrancy and density at our core. Reconsider current city parking requirements. Keep clustering and maintain pockets of green space. Evolve. Consider some light rail... Model after classics and new urbanism.

23	I think that one of the keys to a modern transportation plan includes safely accommodating bicycles on city streets. Rapid City is way behind the rest of the county. A safe, convenient bicycle transportation grid will take cars off the roads, reduce congestion, reduce pollution, save energy, improve public health, and give the city a modern look. A new plan should also support bicycle/pedestrian trails from Rapid City to Sheridan and Pactola Lakes and the rails to trails project along highway 44 to the Badlands National Park.
24	The pedestrian crossing from the Civic Center across Omaha to downtown should be upgraded to include a pedestrian overpass. Having children and the elderly cross six lanes of busy traffic poses a safety risk and slows the traffic on Omaha.
25	Prioritize T-10, Long-distance service connection to Ellsworth Air Force Base or Rapid Valley Call Center
26	Prioritize T-13, New transit service between Rapid City and Box Elder/Ellsworth AFB
27	Prefers the idea of more off-street bicycle paths
28	Concerns about the safety of Mountain View and Main Street intersection
29	Sidewalks on SD 79, US 16, and SD 44 seem odd as pedestrian gaps, more likely used for bicycles
30	Spring Creek Road vehicle speeds a problem for bicyclists
31	T-18 has been implemented and did not work, consider removing from the listing
32	Additional transit service for the disabled community is needed including more coverage, more service hours and frequency, and additional service hours
33	Need additional transit service during special events
34	Consider utilizing the STAR system for measuring local sustainability
35	Consolidate R-5 and R-65, connections between I-90 and Elk Creek Road north west of Ellsworth Air Force Base
36	Review R-77 for naming inaccuracy
37	Question regarding the buildability of R-53 due to topography
38	Extend R-81 to Meade County line
39	Add Piedmont Valley Shared Use Path report findings
40	Extend B-39 to the west to intersect Elk Vale Road
41	Add bicycle facility along SH 79 to match P-24
42	Bridge gap between P-12 and P-13, this is the Mako Sico Rails to Trails Plan.
43	Recommended an update to the Transit Development Plan
44	Recommend an update to the Coordinated Public-Human Services Transportation Plan
45	Include cost sharing in the recommendation for T-14
46	Include cost sharing in the recommendation for T-13
47	Reference the Elk Creek Road Corridor Study for recommended improvements

RAPID CITY AREA METROPOLITAN PLANNING ORGANIZATION
NOTICE OF PUBLIC MEETING / OPEN HOUSE
FOR
RapidTRIP 2040 Long Range Transportation Plan Update

The Rapid City Area Metropolitan Planning Organization will hold an open house style public meeting for the RapidTRIP 2040 Long Range Transportation Plan Update.

Every five years, the Metropolitan Planning Organization (MPO) updates its Long Range Transportation Plan (LRTP). The purpose of this plan update is to encourage and promote a safe and efficient transportation system to serve future year transportation demands. Results of the LRTP process are intended to serve the overall mobility needs of the area, while also being cost effective and consistent with federal, state, and local goals and objectives. The study will entail the development of goals, strategies, and performance measures to identify planning and prioritization elements within the LRTP and fiscally constrain those future needs.

The open house will be informal, with one-on-one discussion available with MPO, FHWA, SDDOT, County, City, and consultant staff. The meeting will be held:

JUNE 17, 2015 from 4:00pm to 6:00pm

1st Floor Community Room
City/School Administration Center
300 6th Street, Rapid City, SD 57701

The project team will be available with displays to discuss issues, answer your questions, and take your ideas and opinions regarding the Preliminary Needs Plan and Performance Measures Framework at the meeting. The opportunity to present written comments will be provided. Written comments will be accepted until Monday, June 22, 2015.

Notice is further given to individuals with disabilities that this open house/public meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house/public meeting should submit a request to the MPO ADA Coordinator at (605) 394-4120. Please request the accommodations no later than two business days prior to the meeting in order to ensure accommodations are available.

All persons interested in Rapid City Area Metropolitan Planning Area's future transportation system are invited to attend the open house meeting to share their views and concerns. Those who cannot attend the meeting or desire further information regarding the study may visit the study's webpage at http://www.rapidtrip2040.com/ or contact Kip Harrington at (605) 394-4120 or by email at kip.harrington@rcgov.org.

RapidTRIP 2040

RAPID CITY AREA MPO

Long Range Transportation Plan Update

WELCOME

Please provide your views through discussions with advisory team members and written comment sheets, and keep up to date with the project throught RapidTRIP2040.com

RapidTRIP 2040
RAPID CITY AREA MPO
Long Range Transportation Plan Update

PROJECT DESCRIPTION

RapidTRIP 2040 will update the region's expected transportation project priorities to address the needs of all travel modes based on current and projected future conditions. The plan is updated every five years.

PUBLIC INVOLVEMENT

Public input into the plan began more than a year ago with the Market Research Study, a carefully documented series of outreach meetings, general public open houses, and formal survey. Today's meeting is the continuation of this public outreach, as we are seeking public input on the preliminary list of projects. Another public meeting will be held in July to present the draft recommendations of the plan.

STUDY AREA

The study area encompasses the Rapid City Area MPO boundaries, also known as the Metropolitan Planning Area. The area includes the cities of Box Elder, Piedmont, Rapid City, and Sommerset, and portions of Meade and Pennington Counties and encompasses a land area of 478 square miles.

Previous Studies	Project Initiation	Data Collection, Mapping & Data Development	Model Update	2040 Transportation Plan	Report

Previous Studies: Origin - Destination Study; Market Research Study and Survey; Area Transportation Plans

Project Initiation: Goals & Objectives; Methods and Assumptions Document; Public Involvement Strategy

Data Collection, Mapping & Data Development: Traffic Count Information; Roadway Inventory; Relevant Plans & Standards; Model Information

Model Update: 2013 Model Calibration & Validation; 2040 Model Development

2040 Transportation Plan: Roadway Needs; Bicycle/Pedestrian Needs; Transit Needs; Needs Plan; Project Ranking; Financial Analysis; Fiscally Constrained Plan

Report: Draft & Final Report

Website & Facebook

Public Involvement

KEY
SAT Meeting
Public Meeting

We Are Here

Travel Demand Model Update & Resulting Capacity Improvements

This study process has included an update to the RCAMPO travel demand model to establish future forecasts for Year 2040.

The following map shows roadway needs to remedy anticipated congestion in 2040.

Legend

- 2040 Roadway Capacity Improvements
- County Boundary
- Metropolitan Planning Area Boundary

0 NORTH 3 Miles
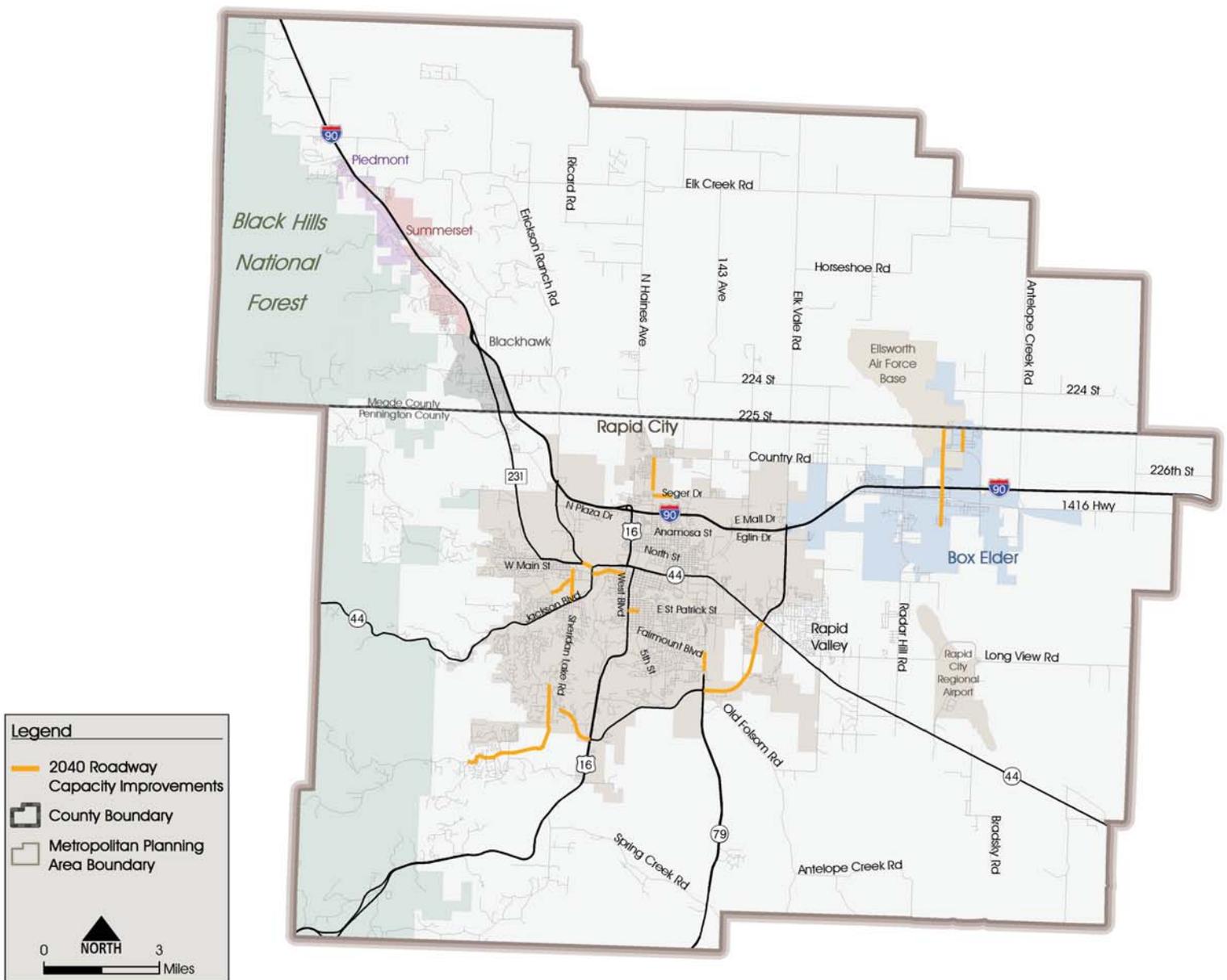
The Preliminary Needs Plan was developed using a variety of previous planning efforts, including:

PREVIOUS PLANNING EFFORTS

- South Dakota Strategic Highway Safety Plan (SHSP)

- 2010 SDDOT Decennial Interstate Corridor Study

- SDDOT Long Range Transportation Plan

- RapidTRIP 2035 - Rapid City Area MPO Long Range Transportation Plan

- Meade County Transportation Plan

- Pennington County Transportation Plan

- Coordinated Public Transit-Human Services Transportation Plan

- Box Elder Strategic Transportation Plan

- Plan Rapid City

- Rapid City Transit Development Plan

- Rapid City Area Bicycle and Pedestrian Master Plan

- Rapid City Arterial Street Safety Review and Recommendation

- 2040 Travel Demand Model

- Various Site Specific Studies

- Public Input

Legend

Roadway Needs

Project Number
● Intersection/Interchange
— Corridor Improvements
— New Roadway
— Capacity Improvements
⬚ County Boundary
⬚ Metropolitan Planning Area Boundary

NORTH
0   3 Miles

Black Hills National Forest

Piedmont
Summerset
Blackhawk
Ellsworth Air Force Base
Rapid City
Box Elder
Rapid Valley
Rapid City Regional Airport

Erickson Ranch Rd
Ricard Rd
N Haines Ave
143 Ave
Elk Vale Rd
Elk Creek Rd
Horseshoe Rd
Antelope Creek Rd
224 St
224 St
225 St
226th St
Country Rd
1416 Hwy
Long View Rd
Old Folsom Rd
Bradsky Rd
Spring Creek Rd
Antelope Creek Rd
Meade County / Pennington County
Seger Dr
E Mall Dr
Eglin Dr
Anamosa St
North St
W Main St
West Blvd
E St Patrick St
Fairmount Blvd
5th St
Sheridan Lake Rd
Jackson Blvd
N Plaza Dr
Radar Hill Rd

Inset Map Labels

N Plaza Dr
Rand Rd
Lien St
W Main St
32nd St
Sheridan Lake Rd
Mt View Rd
Skyline Dr
9th St
7th St
N 8th St
N 7th St
Haines Ave
Maple Ave
North St
Anamosa St
La Crosse St
Main St
St Joseph St
St Charles St
St Francis St
Indiana St
Oakland St
Fairmount Blvd
Meade St
E St Patrick St
Campbell St
Creek Dr
Centre St
Seger Dr
Mall Dr
E Disk Dr
143 Ave
West Blvd N
Deadwood Ave

RapidTRIP 2040

RAPID CITY AREA MPO

Long Range Transportation Plan Update

Preliminary Bicycle Needs Plan

Legend

Bicycle Needs

Project Number

Proposed Bike Lanes

Proposed Crossing

Proposed Off-Street Path

Proposed Shared Lanes

Proposed Signed Shoulder Bikeway

Existing Bicycle Network

Existing Bike Lanes

Existing Off-Street Path

Existing Shared Lanes

Existing Signed Shoulder Bikeway

County Boundary

Metropolitan Planning Area Boundary

NORTH

0   3
Miles

Black Hills National Forest

Piedmont

Summerset

Blackhawk

Erickson Ranch Rd

Ricard Rd

Elk Creek Rd

N Haines Ave

143 Ave

Horseshoe Rd

Elk Vale Rd

Antelope Creek Rd

Ellsworth Air Force Base

224 St

224 St

Meade County
Pennington County

225 St

Rapid City

226th St

Country Rd

1416 Hwy

Box Elder

Seger Dr

E Mall Dr

Anamosa St

Eglin Dr

North St

West Blvd

E St Patrick St

Fairmount Blvd

5th St

Rapid Valley

Jackson Blvd

Old Folsom Rd

Rapid City Regional Airport

Radar Hill Rd

Long View Rd

Bradsky Rd

Spring Creek Rd

Antelope Creek Rd

E Disk Dr

E Elgin St

Anamosa St

Elgin St

Maple Ave

La Crosse St

Haines Ave

N 7th St

North St

Main St

St Joseph St

Centre St

Creek Dr

Campbell St

St Charles St

St Francis St

E St Patrick St

Meade St

Indiana St

Oakland St

Fairmont Blvd

E Minnesota St

West Blvd

9th St

5th St

S Valley Dr

Twilight Dr

Jolly Ln

Piedmont

Black Hills National Forest

Summerset

Ricard Rd

Elk Creek Rd

Erickson Ranch Rd

N Haines Ave

143 Ave

Horseshoe Rd

Elk Vale Rd

Antelope Creek Rd

Blackhawk

224 St

Ellsworth Air Force Base

224 St

Meade County
Pennington County

225 St

Rapid City

5
9 2
3
4
226th St

Country Rd

10

14

231

18 Seger Dr

E Mall Dr

1416 Hwy

19

N Plaza Dr

90

23

Anamosa St

Eglin Dr

Box Elder

11

16

North St

W Main St

27

20

44

Jackson Blvd

West Blvd

1

7

13

8

Sheridan Lake Rd

E St Patrick St

8

Rapid Valley

Radar Hill Rd

Long View Rd

44

26

22

Fairmount Blvd

Rapid City Regional Airport

17

5th St

21

12

16

44

Old Folsom Rd

25

16

24

Bradsky Rd

15

Spring Creek Rd

79

Antelope Creek Rd

Legend

\# Project Number

— Pedestrian Gap

◻ County Boundary

◻ Metropolitan Planning Area Boundary

NORTH

0   3

Miles

EXISTING TRANSIT

LEGEND

- Borglum - W Main St
- Borglum - Jackson Blvd
- Stevens High School Deviation
- Coolidge - S - 5th St & Fairmont Blvd/Fairmont Blvd & 5th st
- Coolidge - N
- Jefferson - SE
- Jefferson - NE
- Lincoln - N
- Lincoln - S
- Roosevelt - NE
- Roosevelt - SE
- Washington - S
- Washington - N
- City View Trolly (Seasonal)
- Milo Barber Transportation Center

Preliminary Transit Needs Plan

	ID	PROJECT	DESCRIPTION
CAPITAL IMPROVEMENTS	T-1	MBTC bus bays modifications	Modify bus bays at MBTC to eliminate pull-in/back-out maneuver to improve safety and speed up operations
	T-2	MBTC canopies/shelters	Establish eastside and south side stops and canopies/shelters at MBTC for run through routes
CONTINUED SERVICE	T-3	Continue Existing Service	Existing fixed-route transit service continued through 2035
EXPANDED SERVICE	T-4	Extend service hours by 30 minutes	Extend fixed route to be 6:30 am-6:30 pm
	T-5	Expand Service to Maintain Service Levels	Expanded transit service to maintain current transit population/employment service levels
	T-6	Increase Frequency	Increase service frequency from 1 hour to 30 minutes
	T-7	Expand Service House	Extend service hours from 12 to 15 hours per day
	T-8	Add Sunday Service	Provide service on Sundays
NEW SERVICE	T-9	Downtown shuttle	Potential trial period from 11:00 am to 1:00 pm, Monday through Friday along main downtown corridors such as Min Street and St. Joe
	T-10	Long-distance service connection to Ellsworth Air Force Base of Rapid Valley Call Center	Implement long-distance service connection to Ellsworth Air Force Base or Rapid Valley Call Centers on a trial basis to provide connections to Rapid City
	T-11	Service to Western Dakota Tech	Add route or re-route existing route to serve Western Dakota Tech
	T-12	New service to Airport	Rapid City to Airport
	T-13	New Service to box Elder/Ellsworth AFB	Rapid City to Box Elder/Ellsworth AFB
	T-14	New Service to Somerset/Piedmont	Rapid City to Somerset/Piedmont
	T-15	New Services in Other Areas within the Rapid City Region	Provide transit service in Box Elder, Rapid Valley, Ellsworth Air Force Base, and other area outside of Rapid City
OPERATION IMPROVEMENTS	T-16	Add 1.5 FTE for maintenance	If pilot program to use City staff for light vehicle maintenance is successful, hire more staff
	T-17	Add 1.0 FTE for clearing	Add employee or contract out for cleaning
	T-18	Add 1.0 for customer service	Separate call-taker/dispatch functions from customer service functions
	T-19	Hire Mobility Manager	Hire a Mobility Manger for the region

PERFORMANCE-BASED

Performance-based planning is a strategic approach to transportation planning that analyzes data to determine how effectively transportation investments are working toward achieving the identified transportation goals. Moving Ahead for Progress in the 21st Century Act (MAP-21) is the current federal transportation funding and policy bill. It emphasizes performance-based planning, establishes performance measures and targets, and identifies seven national goals that states and MPOs are to work toward. Agencies seeking federal funds will demonstrate their progress toward achieving local goals and the national goals included in MAP-21.

Federal

Local

MAP -21

State

MPO
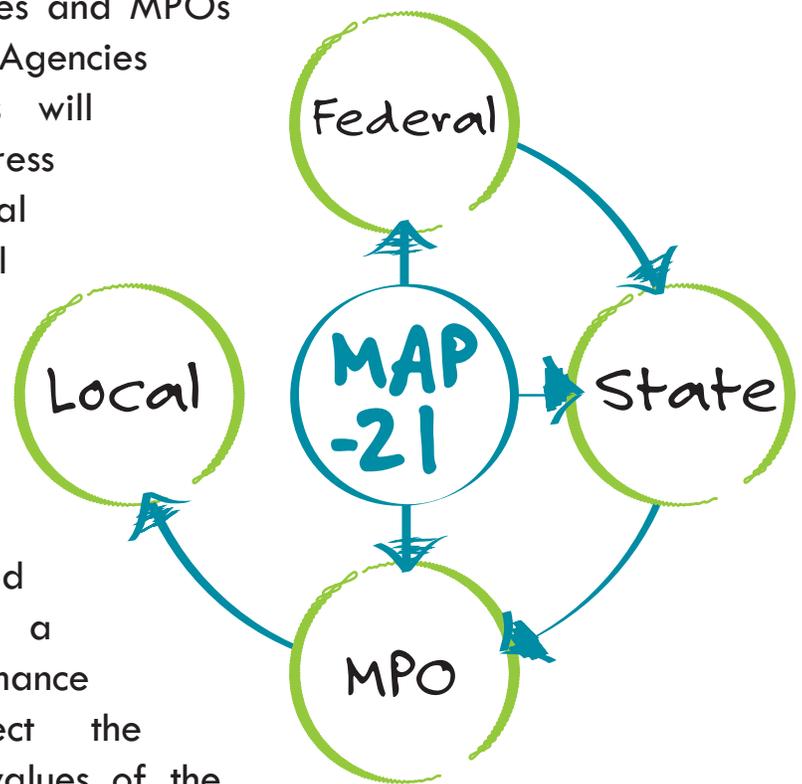
COMMUNITY VALUES

This performance-based framework includes a range of performance measures that reflect the expressed community values of the region, while honoring national and state standards. This planning process is designed to facilitate the prioritization of limited funding dollars to maintain and upgrade the transportation system. Performance-based planning affords a structure for this region to ensure that scarce resources are used effectively and equitably. The community values of transportation are woven into the goals, objectives, performance measures, and ultimately, evaluation criteria used to identify high priority transportation projects.

RCAMPO GOALS

The Rapid City Area MPO has detailed a set of goals intended to implement the vision and support the mobility and accessibility needs of the region. The goals are in alignment with the USDOT goals outlined in MAP-21. The following table defines each Rapid City Area MPO in coordination with the South Dakota DOT and US DOT goals.

RAPID CITY AREA MPO	SD DOT	US DOT
Safety	Promote transportation safety and security	Safety
System Preservation	Preserve and maintain transportation system	Infrastructure Condition
Multimodal Mobility and Accessibility	Provide mobility and transportation choices	Congestion Reduction
System Operations	Promote transportation efficiencies within and among all modes	System Reliability
Economic Vitality	Support access and connectivity to important facilities Support economic growth and tourism	Freight Movement and Economic Vitality
Environmental Sustainability	Preserve South Dakota's quality of life	Environmental Sustainability
Project Delivery		Reduced Project Delivery Delays

RapidTRIP 2040
RAPID CITY AREA MPO
Long Range Transportation Plan Update

Rapid City Area MPO Goals and Objectives

SAFETY
GOAL: A safe transportation system for motorized and non-motorized users.
Objective: Reduce fatal and injury crash rates for all modes.

SYSTEM PRESERVATION
GOAL: A well maintained transportation system.
Objective: Maintain the existing transportation system in a high quality and effective manner.
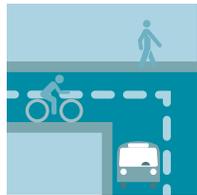
MULTIMODAL MOBILITY AND ACCESSIBILITY
GOAL: A multimodal transportation system that provides access for all.
Objective: Improve the availability and quality of transportation options.
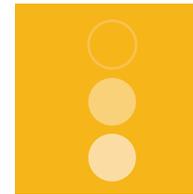
SYSTEM OPERATIONS
GOAL: An efficient and reliable transportation system.
Objective: Minimize travel times, travel costs, and congestion.

ECONOMIC VITALITY
GOAL: An accessible and integrated transportation system that supports economic vitality
Objective: Provide adequate transportation facilities to support economic development

ENVIRONMENTAL SUSTAINABILITY
GOAL: A transportation system that preserves the environmental, social, and cultural resources of the community
Objective: Minimize impact on the environment.

PROJECT DELIVERY
GOAL: Regional collaboration in transportation planning
Objective: Facilitate coordination between regional projects to reduce project delay

RapidTRIP 2040
RAPID CITY AREA MPO
Long Range Transportation Plan Update

NEXT STEPS

Environmental Review of 2040 Needs Plan

Finalize Year 2040 Needs Plan

Financial Analysis for Future Funding

Project Prioritization using Performance Measures

Develop 2040 Fiscally Constrained Plan

Public Open House – July 2015

Please hand in a comment sheet before you leave tonight or mail by Monday June 22nd

Thank you for your participation!

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Sign-In
PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

NAME	EMAIL
David Jennings	djennings@bhws.com
Keith Stoen	kbluehill@rap.midco.net
Eldene Henderson	elhend@aol.com
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Larry Larson	lglarson@hotmail.com
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Steve Doshier	wsdoshier@gmail.com
MICHAEL HOWARD	MICHAEL.HOWARD@RCGOV.ORG
Kent Penney	Kent.penney@kljeng.com
BRAD RENNICH	bradley.rennich@state.sd.us
Dean Henderson	deanhenderson@msn.com
Megan Myers	Megan.myers@heart.org
Mark Hoines	mark.hoines@dot.gov

RapidTRIP 2040

RAPID CITY AREA
MPO

Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

Are there any projects you believe should be added to or removed from the project list?

① EMERGENCY Off Haines ave need to be improved Roadway into area south of auburn Hills. Ambulances have to go into auburn Hills and have to turn south into - a subdivision of senior Center

What performance measures categories are most important to you?

② 'Bridge over amaha from Park to Downtown traffic is to great for the system as it is to date Pedestrians in the

③ Country road housing is expanding East road has to be improved.

General comments:

④ We have 3 lots open for development. We have a plan in place for this area to became a enviourmental area for Seniors and the Community in the Mall Ridge auburn Hills area.

Contact: Eldeen Henderson, Terrell adams Keith Sloun

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Comments
PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

Are there any projects you believe should be added to or removed from the project list?

1. Moving the rail lines out of downtown Rapid City needs to be implemented. It may take 20 years but ultimately must be done.

2. Annexation of the area north of RC to 224th including Black Hawk should happen.

What performance measures categories are most important to you?

1. Project Delivery — set goals & make it happen. It is our future.

2. System Preservation — quality transportation is very important to maintain a quality community

General comments:

I feel the Sheridan Lake Road extension thru to West Main Street would be valuable & have high use.

Anamosa completed to Elk Vale Rd would be a economic generator for land taxes & business.

Finishing Creek Drive from Hwy 44 to Menards would assist in opening up this region east of Cambell Str

You may hand in this sheet before you leave tonight or you can mail this sheet in by Monday June 22nd to:

Kip Harrington
City of Rapid City, Community Planning & Development Services
300 6th Street
Rapid City, SD 57701

RapidTRIP 2040
RAPID CITY AREA
MPO

Long Range Transportation Plan Update

Comments
PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

Are there any projects you believe should be added to or removed from the project list?

What performance measures categories are most important to you?

1. Economic Vitality
2. Modal Mobility And Accessibility
3. Systems Operations
4. Project Delivery

General comments:

Spring Creek Road is a Bicycle, Vehicle accident
waiting to happen. — A Bicycle path separate
from the road surface would be ideal

You may hand in this sheet before you leave tonight or you can mail this
sheet in by Monday June 22nd to:

Kip Harrington
City of Rapid City, Community Planning & Development Services
300 6th Street
Rapid City, SD 57701

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

Are there any projects you believe should be added to or removed from the project list?

Remove: R 82, R 83, R 90

Add: Extension of Jackson Blvd. from W. Main Street to West Omaha Street

Add: Refinements to W. Main St. from Jackson Blvd. east to W. Blvd.

What performance measures categories are most important to you?

I'm not sure of what this means?

General comments:

The Jackson Blvd. Extension Project is shown on several Rapid City long range planning maps including the recently completed Comprehensive Plan. This project is very important to get traffic from southwest RC over to Omaha Street instead of headed east on W. Main St. directly toward downtown RC. Downtown Rapid City doesn't need more through traffic, It needs less. The Jackson Blvd. Extension would allow improvements to existing W. Main St. from Jackson Blvd. east to W. Blvd. Improvements would make this roadway less of a racetrack and more a part of the Downtown Area of R.C. Speeds could be reduced along with enhanced safety and beautification along this entire stretch but especially along both sides of Halay Park. The Jackson Blvd. Extension Project should be made a part of the upcoming reconstruction of W. Omaha St. from 12th Street west to Sheffer. Street.

Steve Doshier

You may hand in this sheet before you leave tonight or you can mail this
sheet in by Monday June 22nd to:

Kip Harrington
City of Rapid City, Community Planning & Development Services
300 6th Street
Rapid City, SD 57701

RapidTRIP 2040

RAPID CITY AREA
MPO

Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JUNE 17, 2015

Are there any projects you believe should be added to or removed from the project list?

I believe that a street with sidewalk for pedestrians and bicyclist would be very helpful for the growing number of people in the area just south of Auburn Hills development. Rapid map shows Avalon Pl. as a possible location for this improvement.

What performance measures categories are most important to you?

Improve 5th street / Haines Ave or allow more medical facilities North of the Interstate on Haines Ave. A school would also be very helpful including more public transportation to help lower traffic congestion.

General comments:

Sidewalk / Bikepath on both sides of Haines Ave. I am not sure we are ready for bike lanes on Haines at this time. There have been many accidents from Shopko to Best buy due to the lack of adequate walkways!

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, June 22, 2015 10:45 AM
To:	Steven.Marfitano
Subject:	FW: Skyline Drive

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Lois Newingham [mailto:jolo@q.com]
Sent: Wednesday, June 17, 2015 6:51 AM
To: Harrington Kip
Subject: Skyline Drive

I hope that your committee has some influence over the state of the road through Skyline Drive. It is a shameful example of the city's failure to honor it's commitment to the taxpayers.

1. The road is disintegrating and the rock walls are falling into the canyon below. It is only a matter of time before a serious slide occurs with possible loss of life and lawsuits against the city.

2. There is no shoulder for the safety of dozens of bicyclists, walkers (old & young including children in strollers), dog walkers, runners in training, and many others who use the road because of the incomparable view and ease of access.

3. The federal government offered to designate it as a scenic byway. All the city had to do was complete an engineering report for less money than they spend on trivial studies for the benefit of special interest groups.

4. Skyline Drive could again be the jewel of the city as it was when the Civilian Conservation Core built it. It would bring tourists into the heart of the city rather than bypassing it as many do and provide an experience to be proud of for the common people of Rapid City.

5. Why was a house allowed to built right below the worst place on the road that was already sliding down the hill? Geologically it was a big mistake and is another possible source of a lawsuit against the city and the taxpayers.

   I cannot be there today for the meeting, but hope you will consider the points I raised. If this is not within the scope of your committee please forward it to the new mayor.

Thank you for your attention. Lois Newingham, 3410 Skyline Drive, Rapid City, SD

1

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, June 22, 2015 10:46 AM
To:	Steven.Marfitano
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: kent.penney@kljeng.com [mailto:no-reply@weebly.com]
Sent: Thursday, June 18, 2015 4:30 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Kent Penney

Email
kent.penney@kljeng.com

Comment
This comment is in reference to the LRTP Preliminary Roadway Needs Plan presented on June 17, 2015. Our firm, KLJ is contracted with the Rapid City Regional Airport to update the Airport Master Plan. In the LRTP a project number 42 is recommended for a road the airport directly north to Box Elder. The alignment of project 42 in the LRTP is such that it would cross through certain protective surfaces at the airport.

We would recommend that the MPO coordinate with the airport to assure an alignment of project 42

remains outside of these protective surfaces or look at alternatives such as prioritizing project 64 connecting the airport to Radar Hill Road followed by enhancements to Radar Hill Road.

Kent Penney, Airport Planner
KLJ
605.721.5553

From:	Kent Penney [kent.penney@kljeng.com]
Sent:	Thursday, June 18, 2015 8:25 AM
To:	Steven.Marfitano
Cc:	kip.harrington@rcgov.org; Rod Senn; Girtz Peter; Ben Mello; Toni Broom (toni.broom@rcgov.org)
Subject:	Airport Master Plan Preferred Alternative
Attachments:	airfield.jpg

Steven,

I appreciate getting a chance to visit yesterday at the Rapid City MPO LRTP open house. As I mentioned, we are working with the airport to complete an update to the Airport Master Plan. The Rapid City Airport Board reviewed alternatives in April and selected a preferred alternative. A public open house was conducted in May to disseminate the plan to the general public. Attached is a jpg of the preferred alternative that the Airport Board selected.

The most notable item from a road standpoint is the need to realign Long View road outside of the Runway Protection Zone (RPZ). This has determined to be necessary in the future in order to improve the Instrument Approach capabilities for Runway 14 at Rapid City. You will note that the green existing RPZ grows much larger into a Proposed RPZ which will be required for a Precision Instrument Approach. The realignment of Long View Road is only showing what is necessary to place the road outside the RPZ, other options are possible in order to meet any other surface transportation needs.

In addition to the attached, there is a copy of drafts of the Airport Master Plan chapters and presentations on the airport's website at http://www.rcgov.org/Airport/airport-master-plan.html On the website the May 2015 presentation and the Chapter 5 – Alternative each contain this preferred alternative information.

If you can forward an electronic copy of the LRTP Needs plan, I can provide you feedback with the CIP we are drafting for the airport. Contact me as you have any questions.

Kent

Kent Penney, AAE
Airport Planner
KLJ
605.721.5553 Office ext. 5437
605.939.5794 Mobile
855.288.8055 Fax
330 Knollwood Drive
Rapid City, SD 57701-6611
kent.penney@kljeng.com
kljeng.com

Rapid City Regional Airport Master Plan - Preferred Alternative

KLJ
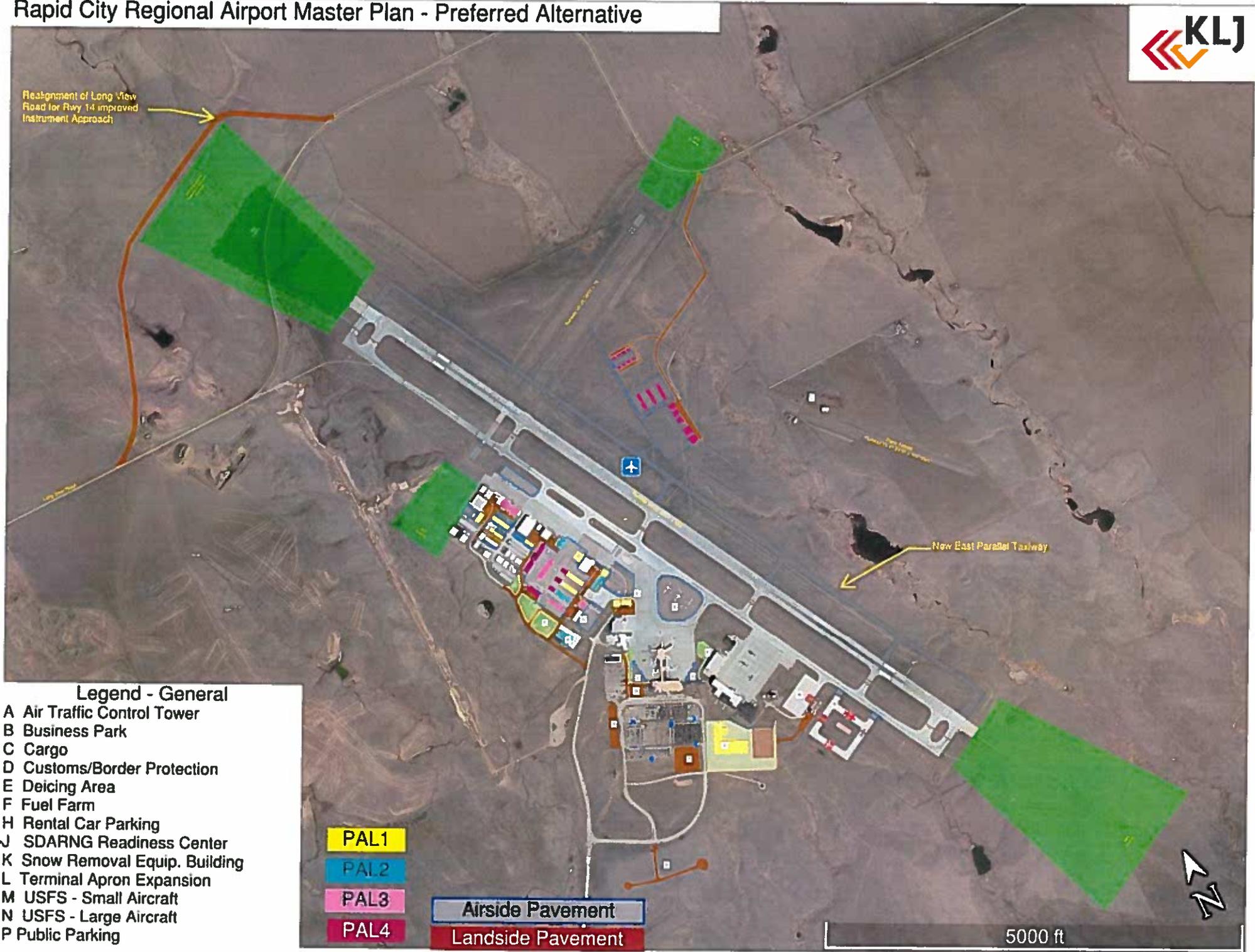
Realignment of Long View
Road for Rwy 14 improved
Instrument Approach

New East Parallel Taxiway

Legend - General

A Air Traffic Control Tower
B Business Park
C Cargo
D Customs/Border Protection
E Deicing Area
F Fuel Farm
H Rental Car Parking
J SDARNG Readiness Center
K Snow Removal Equip. Building
L Terminal Apron Expansion
M USFS - Small Aircraft
N USFS - Large Aircraft
P Public Parking

| PAL1 |
| PAL2 |
| PAL3 |
| PAL4 |

Airside Pavement
Landside Pavement

N

5000 ft

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Tuesday, June 23, 2015 7:36 AM
To:	Steven.Marfitano
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Eheikes@4front.biz [mailto:no-reply@weebly.com]
Sent: Monday, June 22, 2015 8:05 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your **Contact Form**.

Submitted Information:

Name
Eirik Heikes

Email
Eheikes@4front.biz

Comment
Of particular interest to me is planning with walk ability and mixed use options for services within 1 mile of housing options. This concerns both approaches to transportation and planning. Let's build a vibrant community that is beautiful and walkable. Consider how we can interconnect services and generate less traffic and require fewer trips. Increase vibrancy and density at our core. Reconsider current city parking requirements. Keep clustering and maintain pockets of green space.
Evolve. Consider some light rail... Model after classics and new urbanism.

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Tuesday, June 23, 2015 12:40 PM
To:	Steven.Marfitano
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: alandand@rap.midco.net [mailto:no-reply@weebly.com]
Sent: Tuesday, June 23, 2015 12:39 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Alan Anderson

Email
alandand@rap.midco.net

Comment
I think that one of the keys to a modern transportation plan includes safely accommodating bicycles on city streets. Rapid City is way behind the rest of the county. A safe, convenient bicycle transportation grid will take cars off the roads, reduce congestion, reduce pollution, save energy, improve public health, and give the city a modern look. A new plan should also support bicycle / pedestrian trails from Rapid City to Sheridan and Pactola Lakes and the rails to trails project along highway 44 to the Badlands National Park.

The pedestrian crossing from the Civic Center across Omaha to downtown should be upgraded to included a pedestrian overpass. Having children and the elderly cross six lanes of busy traffic poses a safety risk and slows the traffic on Omaha.

Thanks for your consideration.

July 21, 2015

Public Open House Meeting #2 Summary

RAPIDTRIP 2040 – RAPID CITY AREA MPO LONG RANGE TRANSPORTATION PLAN
FHU Reference No. 14-259-01

Public Open House Meeting #2
July 15, 2015 from 4.00-6.00pm
1st Floor Community Room
City/School Administration Center
300 6th Street, Rapid City, SD 57701

A Public Open House was conducted to gather input about RapidTRIP 2040. The Open House presented the public a summary of the project development process, the Needs Plan, financial analysis, the Draft Fiscally Constrained Plan, the environmental screening process, and the Performance-Based Planning performance metrics.

The meeting was announced using various media streams including the project website, newspaper advertisements, and mass e-mailings. The newspaper advertisement used for announcement is attached. The open house meeting boards on display for the public have been attached along with the sign-in sheet of attendees.

The follow table summarizes comments received at the meeting. Many of the comments were directed at the Draft Fiscally Constrained Plan and any changes resulting from these comments will be made to the listing resulting in the Final Fiscally Constrained Plan. The comments were recorded from written comment sheets (comments 1-12), comments received via e-mail or through the project website (rapidtrip2040.com) (comments 13-15), and verbal comment at the meeting (comments 16-18).

1	I would like to see the hours expanded as proposed (transit service)
2	I would like to see the routes expanded to the call center, Rushmore Crossing, and the food bank (transit service)
3	I really like the idea of the bus going out to Box Elder
4	Keep the plan dynamic and off the shelf-no dust
5	Consider mass transit to Ellsworth Air Force Base, Rapid Valley, and Hills Region
6	Consider pedestrian travel, prioritize the WORPs and order in sidewalks
7	Consider bus system and related senior needs, including access to the food bank and educational destinations
8	Air transit is not included and should be encouraged to develop. Could work hand in hand with rail as well
9	Study by intern work on WORPs to be used for part of the sidewalk installation plan
10	I would like to see the extended hours proposal included in the restrain budget (transit service)

11	I would like to see the proposed route additions, especially those to the food bank, Rushmore Crossings, the call centers in the Valley, and Box Elder (transit service)
12	The clients we serve at WAVI would greatly benefit from extended hours to provide safe travel to and from work activities. In addition, having transportation available to Box Elder would increase housing options for many families.
13	I'm interested in several items in this plan. Can we do the following? Mass Transit with the EAFB, Box Elder, Rapid Valley and Rapid City. Can we also reach out to as far away as Spearfish and perhaps even Wall. For Rapid Transit can we get a bus to the Food Bank, and can we address the senior transit needs. For Sidewalks the City needs to look at developing a plan for installing sidewalks. WORPs are very abundant. Can we put a plan together to address some of the sidewalk needs. Can we also look at prioritizing combined sidewalk and bike paths. The Airport is interested in connecting to a bike path plan, can they bring anything to the table? The bike path going to close by WDTI has a glitch with a property owner. Does that property have a WORP? The Denver Transit Authority is curious about how we are coming along. they would like to get to Cheyenne. Perhaps in the future a transfer point could be established. Good luck.
14	I attended the presentation on July 15th and I was grateful to have had a conversation with one of your representatives (Shea?) about the importance of mass transit. As a firefighter, I feel very strongly that an emphasis on mass transit would result in better traffic flows, faster responses to emergencies, less vehicle accidents, and less drunk driving. I appreciate all of the work that has gone into this, and I think it's imperative that Rapid City embrace a more integrated public transit system as it continues to grow.
15	I am messaging to put the traffic flow and on/off access on Sheridan Lake Road on your radar. I live on Dunsmore Road, and during the work/school drive time, it is very risky to attempt to get on Sheridan Lake Road from Dunsmore. I am certain that other "feeder" streets in the Countryside areas also experience the same dangers. Complicating the situation is the presence of 4 big yellow school buses in the same time window. Before a fatal accident occurs, I am asking you to take a look and to communicate with the county on this issue. Red Rock Meadows is a large population to rely on a single point of access in and out of the neighborhood. Complicating the situation is the number of vehicles from Countryside and beyond that area already headed to town on Sheridan Lake Road at 50 mph and do not have to stop to let the Dunsmore line-up into the traffic flow. People don't want to be late for work and/or school so they take chances. This is serious and warrants due consideration by the Office of Traffic Planning.
16	Comment was received from Michael Fosha, Assistant State Archaeologist, and following the meeting additional environmental resource maps were pursued to augment the environmental screening process.
17	The trail along Rapid Creek that goes under I-190 needs a connection up to Omaha Street
18	Ensure bike paths are wide enough

RAPID CITY AREA METROPOLITAN PLANNING ORGANIZATION
NOTICE OF PUBLIC MEETING / OPEN HOUSE
FOR
RapidTRIP 2040 Long Range Transportation Plan Update

The Rapid City Area Metropolitan Planning Organization will hold an open house style public meeting for the RapidTRIP 2040 Long Range Transportation Plan Update.

Every five years, the Metropolitan Planning Organization (MPO) updates its Long Range Transportation Plan (LRTP). The purpose of this plan update is to encourage and promote a safe and efficient transportation system to serve future year transportation demands. Results of the LRTP process are intended to serve the overall mobility needs of the area, while also being cost effective and consistent with federal, state, and local goals and objectives. The study will entail the development of goals, strategies, and performance measures to identify planning and prioritization elements within the LRTP and fiscally constrain those future needs.

The open house will be informal, with one-on-one discussion available with MPO, FHWA, SDDOT, County, City, and consultant staff. The meeting will be held:

JULY 15, 2015 from 4:00pm to 6:00pm

1st Floor Community Room
City/School Administration Center
300 6th Street, Rapid City, SD 57701

The project team will be available with displays to discuss issues, answer your questions, and take your ideas and opinions regarding the Fiscally Constrained Plan at the meeting.

Notice is further given to individuals with disabilities that this open house/public meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house/public meeting should submit a request to the Rapid City MPO ADA Coordinator at (605) 394-4120. Please request the accommodations no later than two business days prior to the meeting in order to ensure accommodations are available.

All persons interested in Rapid City Area Metropolitan Planning Area's future transportation system are invited to attend the open house meeting to share their views and concerns. Those who cannot attend the meeting or desire further information regarding the study may visit the study's webpage at http://www.rapidtrip2040.com/ or contact Kip Harrington at (605) 394-4120 or by email at kip.harrington@rcgov.org.

NAME	EMAIL
Bob Borgmeyer	borgsinaz @ AOL. com
Tel Saucerman	telsaucerman @ gmail. com
Michael Fosha	mike.fosha @ state.sd.us
Kathy Housley	kc.housley @ state.sd.us
Kati Seymour	Kati.Seymour @ Rounds.senate.gov
Leslie Borgmeyer	leslie borgmeyer @ oal..mc
Ritchie Nordstrom	Ritchie.Nordstrom @ rcgov.org
Mary Corbine	mary c @ wavi.org
Linda Shroll	lindas @ wavi.org
Daene Boomsma	daene @ boominc.net
Judy Atkinson	Fvanjao @ Yahoo.com
Cathy Jeffries	catherine.jeffries @ ihs.gov
Sharon Richette	sharon.richards @ ihs.gov
Ray Dvorak	
Keld F. Ditlev	Kditlev @ petelien.com
Robert Rowell	robertsrowell @ gmail.com
Victoria Wicks	VictoriaLinderWicks @ gmail.com
Benjamin Snow	bsnow @ rapiddevelopment.com
Doyle Estes	dyle @ estes law firm.lcm
Catherine Novotny	
Oliver White	oliver.white @ rcgov.org
Blaise Emerson	bemerson @ tie.net
Eldene Henderson	elhend @ aol.com
JODY PAGE	jody.page @ hdrinc.com

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Sign-In

PUBLIC MEETING/OPEN HOUSE | JULY 15, 2015

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PROJECT DESCRIPTION

RapidTRIP 2040 will update the region's expected transportation project priorities to address the needs of all travel modes based on current and projected future conditions. The plan is updated every five years.

PUBLIC INVOLVEMENT

Public input into the plan began more than a year ago with the Market Research Study, a carefully documented series of outreach meetings, general public open houses, and formal survey. Today's meeting is the continuation of the public outreach, as we are seeking public input on the draft fiscally constrained plan. The Draft Report will be available in early August through the project website (rapidtrip2040.com).

STUDY AREA

The study area encompasses the Rapid City Area MPO boundaries, also known as the Metropolitan Planning Area. The area includes the cities of Box Elder, Piedmont, Rapid City, and Summerset, and portions of Meade and Pennington Counties and encompasses a land area of 478 square miles.

Previous Studies
- Origin - Destination Study
- Market Research Study and Survey
- Area Transportation Plans

Project Initiation
- Goals & Objectives
- Methods and Assumptions Document
- Public Involvement Strategy

Data Collection, Mapping & Data Development
- Traffic Count Information
- Roadway Inventory
- Relevant Plans & Standards
- Model Information

Model Update
- 2013 Model Calibration & Validation
- 2040 Model Development

2040 Transportation Plan
- Roadway Needs
- Bicycle/Pedestrian Needs
- Transit Needs
- Needs Plan
- Project Ranking
- Financial Analysis
- Fiscally Constrained Plan

Report
- Draft & Final Report

Website & Facebook

Public Involvement

KEY
- SAT Meeting
- Public Meeting

We Are Here

Legend

Roadway Needs

Project Number
● Intersection/Interchange
— Corridor Improvements
— New Roadway
— Capacity Improvements
⬚ County Boundary
⬚ Metropolitan Planning Area Boundary

NORTH
0   3
Miles

Black Hills National Forest

Piedmont
Summerset
Blackhawk
Meade County / Pennington County
Rapid City
Box Elder
Ellsworth Air Force Base
Rapid Valley

Ricara Rd
Elk Creek Rd
Erickson Ranch Rd
N Haines Ave
143 Ave
Horseshoe Rd
Elk Vale Rd
224 St
225 St
226th St
224 St
Antelope Creek Rd
Country Rd
1416 Hwy
Long View Rd
E Mall Dr
Seger Dr
Anamosa St
N Plaza Dr
W Main St
North St
E St Patrick St
Jackson Blvd
Herndon Lake Rd
Fairmount Blvd
5th St
West Blvd
Old Folsom Rd
Blacksky Rd
Spring Creek Rd
Antelope Creek Rd
Radar Hill Rd
231

Deadwood Ave N
Maple Ave
W Main St
Main St
75
70
84
83
85
15a
81
15b
87
88
89
80
84
82
4
14b
15c
14a
22
25
24c
24b
24a
46
47
21
31
34d
34c
34a
34b

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Black Hills National Forest

Piedmont

Summerset

Erickson Ranch Rd

Ricard Rd

Elk Creek Rd

Horseshoe Rd

N Haines Ave

143 Ave

Elk Vale Rd

Ellsworth Air Force Base

Antelope Creek Rd

224 St

Blackhawk

Meade County
Pennington County

224 St

225 St

Rapid City

226th St

Country Rd

Seger Dr

E Mall Dr

Eglin Dr

1416 Hwy

Box Elder

N Plaza Dr

Anamosa St

W Main St

North St

W Main St

West Blvd

Jackson Blvd

Sheridan Lake Rd

E St Patrick St

5th St

Fairmount Blvd

Rapid Valley

Radar Hill Rd

Long View Rd

Old Folsom Rd

Spring Creek Rd

Antelope Creek Rd

Bradsky Rd

Legend

Project Number
Pedestrian Gap
County Boundary
Metropolitan Planning Area Boundary

0   3
NORTH
Miles

RapidTRIP 2040
RAPID CITY AREA MPO
Long Range Transportation Plan Update

Bicycle Needs Plan

Legend

Bicycle Needs

#	Project Number
—	Proposed Bike Lanes
—	Proposed Crossing
—	Proposed Off-Street Path
—	Proposed Shared Lanes
—	Proposed Signed Shoulder Bikeway

Existing Bicycle Network

—	Existing Bike Lanes
—	Existing Off-Street Path
—	Existing Shared Lanes
—	Existing Signed Shoulder Bikeway
☐	County Boundary
☐	Metropolitan Planning Area Boundary

NORTH

0   3 Miles

EXISTING TRANSIT

LEGEND

━━	Borglum - W Main St
━━	Borglum - Jackson Blvd
┅┅	Stevens High School Deviation
━━	Coolidge - S - 5th St & Fairmont Blvd/Fairmont Blvd & 5th st
━━	Coolidge - N
━━	Jefferson - SE
━━	Jefferson - NE
━━	Lincoln - N
━━	Lincoln - S
━━	Roosevelt - NE
━━	Roosevelt - SE
━━	Washington - S
━━	Washington - N
┅┅	City View Trolly (Seasonal)
🚌	Milo Barber Transportation Center

ID	PROJECT	DESCRIPTION
T-1	MBTC bus bays modifications	Modify bus bays at MBTC to eliminate pull-in/back-out maneuver to improve safety and speed up operations
T-2	MBTC canopies/shelters	Establish eastside and south side stops and canopies/shelters at MBTC for run through routes
T-3	Continue Existing Service	Existing fixed-route transit service continued through 2035
T-4	Extend service hours	Extend fixed route to be 6:30 am to 10:00 pm
T-5	Expand Service to Maintain Service Levels	Expanded transit service to maintain current transit population/employment service levels
T-6	Increase Frequency	Increase service frequency from 1 hour to 30 minutes
T-7	Expand Service House	Extend service hours from 12 to 15 hours per day
T-8	Add Sunday Service	Provide service on Sundays
T-9	Downtown shuttle	Potential trial period from 11:00 am to 1:00 pm, Monday through Friday along main downtown corridors such as Min Street and St. Joe
T-10	Long-distance service connection to Ellsworth Air Force Base of Rapid Valley Call Center	Implement long-distance service connection to Ellsworth Air Force Base or Rapid Valley Call Centers on a trial basis to provide connections to Rapid City
T-11	Service to Western Dakota Tech	Add route or re-route existing route to serve Western Dakota Tech
T-12	New service to Airport	Rapid City to Airport
T-13	New Service to box Elder/Ellsworth AFB	Includes cost sharing strategies
T-14	New Service to Summerset/Piedmont	Includes cost sharing strategies
T-15	New Services in Other Areas within the Rapid City Region	Provide transit service in Box Elder, Rapid Valley, Ellsworth Air Force Base, and other area outside of Rapid City
T-16	Add 1.5 FTE for maintenance	If pilot program to use City staff for light vehicle maintenance is successful, hire more staff
T-17	Add 1.0 FTE for clearing	Add employee or contract out for cleaning
T-18	Hire Mobility Manager	Hire a Mobility Manger for the region

Financial Analysis and Funding Resources

Presented are the financial resources available for Rapid City MPO projects over the long range planning period (2016-2040). The resources listed in this chapter serve to fiscally constrain RapidTRIP 2040 in compliance with MAP-21 requirements.

AVAILABLE RESOURCES

The funds reasonably expected to be available through 2040 are summarized below (in millions of nominal dollars). Total funding for regional capital expansion projects for the long range planning period is estimated to be $145 million; total funding for regionally significant maintenance projects is expected to be $674 million.

Resource Type	2016-2020 ($Million)	2021-2025 ($Million)	2026-2030 ($Million)	2031-2035 ($Million)	2036-2040 ($Million)	Total ($Million)	Total Percent
Capital Improvements and Expansion	$29.1	$29.1	$29.1	$29.1	$29.1	$145.5	17%
Regionally Significant Maintenance and Preservation	$134.8	$134.8	$134.8	$134.8	$134.8	$674.0	77%
Transit - Capital	$2.6	$2.6	$2.6	$2.6	$2.6	$13.0	1%
Transit - Operating	$8.3	$8.3	$8.3	$8.3	$8.3	$41.5	5%
Total	**$174.8**	**$174.8**	**$174.8**	**$174.8**	**$174.8**	**$874.0**	**100%**

Source: Rapid City Area MPO and BBC Research & Consulting.

PUBLIC TRANSIT

The Rapid Transit System (RTS) is funded through federal, state, and local government sources as well as program revenue. Given the relatively low proportion of funding allocated for capital projects, the long range forecasts assume existing transit services will continue without substantial expansion or reduction, as seen on the following table.

Program/Source	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Operations						
Federal Funds	$4,395,000	$4,395,000	$4,395,000	$4,395,000	$4,395,000	$21,975,000
State Funds	$140,000	$140,000	$140,000	$140,000	$140,000	$700,000
Local Funds	$3,765,000	$3,765,000	$3,765,000	$3,765,000	$3,765,000	$18,825,000
Total	$8,300,000	$8,300,000	$8,300,000	$8,300,000	$8,300,000	$41,500,000
Capital						
Federal Funds	$2,155,000	$2,155,000	$2,155,000	$2,155,000	$2,155,000	$10,775,000
State Funds	$0	$0	$0	$0	$0	$0
Local Funds	$435,000	$435,000	$435,000	$435,000	$435,000	$2,175,000
Total	**$2,590,000**	**$2,590,000**	**$2,590,000**	**$2,590,000**	**$2,590,000**	**$12,950,000**

Source: Rapid City Area MPO and BBC Research & Consulting.

CAPITAL IMPROVEMENTS AND EXPANSION

Funding projections for capacity expansion through 2040 are displayed below. Amounts are shown in year of expenditure dollars in five-year increments. The resources identified include funding for both roadway and non-motorized (bicycle and pedestrian) capacity improvements.

Program/Source	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Programs Receiving Federal and/or State Funding (SDDOT)						
Interstate Maintenance	$5,385,000	$5,385,000	$5,385,000	$5,385,000	$5,385,000	$26,925,000
State Highway	$3,570,000	$3,570,000	$3,570,000	$3,570,000	$3,570,000	$17,850,000
Bridge Projects	$165,000	$165,000	$165,000	$165,000	$165,000	$825,000
Local Bridge Replacement	$0	$0	$0	$0	$0	$0
Roadway Safety	$3,495,000	$3,495,000	$3,495,000	$3,495,000	$3,495,000	$17,475,000
Railroad Crossings	$0	$0	$0	$0	$0	$0
Pavement Preservation	$0	$0	$0	$0	$0	$0
Programs Receiving Federal and/or State Funding (MPO)						
STP Exchange						
Rapid City	$6,960,000	$6,960,000	$6,960,000	$6,960,000	$6,960,000	$34,800,000
Box Elder	$540,000	$540,000	$540,000	$540,000	$540,000	$2,700,000
Meade County	$4,095,000	$4,095,000	$4,095,000	$4,095,000	$4,095,000	$20,475,000
Pennington County	$4,890,000	$4,890,000	$4,890,000	$4,890,000	$4,890,000	$24,450,000
Transportation Alternatives	$0	$0	$0	$0	$0	$0
Locally Funded, Regionally Significant Projects						
Rapid City Regional Airport Improvements Program	$0	$0	$0	$0	$0	$0
Rapid City Capital Improvements Program	$0	$0	$0	$0	$0	$0
Meade County Road and Bridge Fund	$0	$0	$0	$0	$0	$0
Box Elder Capital Improvements Program	$0	$0	$0	$0	$0	$0
Pennington County Road and Bridge Fund	$0	$0	$0	$0	$0	$0
TOTAL	**$29,100,000**	**$29,100,000**	**$29,100,000**	**$29,100,000**	**$29,100,000**	**$145,500,000**

Source: Rapid City Area MPO and BBC Research & Consulting.

RAPID CITY

High Priority

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
1	R-34a	Roadway	Intersection / Interchange	St Joseph St & 1st St	Install lane use markings	2016-2020	$ 7,900	$ 7,900	
2	R-34b	Roadway	Intersection / Interchange	St Joseph St & 2nd St	Install lane use markings	2016-2020	$ 7,900	$ 7,900	
3	R-34c	Roadway	Intersection / Interchange	St Joseph St & 3rd St	Install lane use markings	2016-2020	$ 7,900	$ 7,900	
4	R-34d	Roadway	Intersection / Interchange	St Joseph St & 4th St	Removal of on-street parking between 4th & 5th Streets, install traffic signal if warranted, and install lane use markings	2016-2020	$ 436,000	$ 436,000	
5	R-75	Roadway	Widening	Canyon Lake Dr	Widen to 4 lane minor arterial from Sheridan Lake Rd to Soo San Dr	2016-2020	$ 1,976,000	$ 1,976,000	
	B-5	Bicycle	Bike Lanes	Canyon Lake Dr	from Sheridan Lake Rd to Soo San Dr	2016-2020	$ 76,700	$ 76,700	
6	R-82	Roadway	Widening	Mall Dr	Widen to 4 lanes from Haines Ave to Maple Ave	2016-2020	$ 1,926,000	$ 1,926,000	
7	R-86	Roadway	Widening	Sheridan Lake Rd	Widen to 4 lane principal arterial from Corral Dr to Clarkson Rd	2021-2025	$ 12,123,000	$ 3,273,000	Pennington County
8	R-81	Roadway	Widening	W Main St	Widen to 6 lane principal arterial from SD 44 (Jackson Blvd) to Mountain View Rd	2021-2025	$ 943,000	$ 943,000	
9	P-1	Pedestrian	Sidewalk	5th St	from South St to Clark St (west side)	2021-2025	$ 42,000	$ 42,000	
10	P-6	Pedestrian	Sidewalk	Cambell St	from 280' n/o E St Charles St to E St Patrick St (east side)	2021-2025	$ 151,000	$ 151,000	
11	P-8	Pedestrian	Sidewalk	Cambell St	from Rocker Dr to 560' s/o Saint James St (east side)	2021-2025	$ 218,000	$ 218,000	
12	P-18	Pedestrian	Sidewalk	N La Crosse St	from Seger Dr to E Mall Dr (both sides)	2021-2025	$ 319,000	$ 319,000	
13	P-20	Pedestrian	Sidewalk	SD 44 (Omaha St)	from West Blvd to US 16 (Mt Rushmore Rd) (north side)	2021-2025	$ 168,000	$ 168,000	
14	P-22	Pedestrian	Sidewalk	5th St	from 57' s/o 3rd St to 95' n/o Elk St (west side)	2021-2025	$ 126,000	$ 126,000	
15	B-33	Bicycle	Off-Street Path	5th St	from Cleveland St to Texas St	2021-2025	$ 503,000	$ 503,000	
16	B-73	Bicycle	Off-Street Path	San Francisco St	from La Crosse St to Cherry Ave	2021-2025	$ 168,000	$ 168,000	
17	B-76	Bicycle	Off-Street Path	SD 44	from Mickelson Dr to St Patrick St	2021-2025	$ 428,000	$ 428,000	
18	B-78	Bicycle	Off-Street Path	SD 44 / E St Patrick St	from existing side path to Twilight Dr	2021-2025	$ 659,000	$ 659,000	
19	B-87	Bicycle	Shared Lanes	5th St	from Columbus St to SD 44 (Omaha St)	2021-2025	$ 18,000	$ 18,000	
20	R-10	Roadway	Corridor Improvements	Reservoir Rd	from Twilight Dr to Meadow Ridge Dr	2026-2030	$ 2,112,000	$ 190,000	Pennington County
21	R-14a	Roadway	Corridor Improvements	Haines Ave	Implement raised median (Knollwood Dr to Lindbergh Ave)	2026-2030	$ 57,600	$ 57,600	
22	R-14b	Roadway	Intersection / Interchange	Haines Ave & Wright St	Install signal at Wright St if warranted	2026-2030	$ 480,000	$ 480,000	
23	R-14c	Roadway	New Roadway	Wood Ave	Extend Wood Ave from Wright St to Knollwood Dr.	2026-2030	$ 1,300,000	$ 1,300,000	
24	R-76	Roadway	Widening	Catron Blvd	Widen to 3 lane principal arterial from US 16 to Nugget Gulch Rd	2026-2030	$ 3,849,000	$ 3,849,000	
	B-6	Bicycle	Bike Lanes	US 16B (Catron Blvd) / Catron Blvd	from 5th St to Sheridan Lake Rd	2026-2030	$ 428,000	$ 171,000	SDDOT
25	B-42	Bicycle	Off-Street Path	Concourse Dr	from US 16B (Elk Vale Rd) to Twilight Dr	2026-2030	$ 116,000	$ 98,600	Pennington County
26	B-94	Bicycle	Shared Lanes	Bunker Dr	from Sagewood St to Disk Dr / I-90	2026-2030	$ 33,700	$ 19,200	Pennington County
27	B-131	Bicycle	Shared Lanes	Sagewood St / Northridge Dr	from Bunker Dr to Haines Ave	2026-2030	$ 4,300	$ 4,300	
28	R-4	Roadway	Corridor Improvements	Haines Ave	Raised median from I-90 to Disk Dr	2031-2035	$ 525,000	$ 525,000	
29	R-80	Roadway	Widening	Haines Ave	Widen to 4 lane principal arterial from Country Rd to n/o Sitting Bull St where 4-lane cross section ends	2031-2035	$ 3,488,000	$ 3,488,000	
	P-14	Pedestrian	Sidewalk	Haines Ave	from City Limits to Mall Dr (east side)	2031-2035	$ 1,118,000	$ 1,118,000	
30	B-144	Bicycle	Signed Shoulder Bikeway	Country Rd	from Haines Ave to N Elk Vale Rd	2031-2035	$ 42,900	$ 10,700	Pennington County
31	R-64	Roadway	New Roadway	New road w/o Airport	Construct new 2 lane collector from Airport Rd to Radar Hill Rd	2036-2040	$ 2,930,000	$ 645,000	Pennington County
32	R-74	Roadway	Widening	Cambell St	Widen to 6 lanes from Minnesota St to Fairmont Blvd	2036-2040	$ 2,358,000	$ 2,358,000	
	B-95	Bicycle	Shared Lanes	Cambell St Service Road	from Fairmont Blvd to Richland Dr (street just north of Minnesota St)	2036-2040	$ 2,900	$ 2,900	
33	R-89	Roadway	Widening	St Patrick St	Widen to 4 lanes from US 16 (Mt Rushmore Rd) to 5th St	2036-2040	$ 1,140,000	$ 1,140,000	
34	R-54	Roadway	New Roadway	Degeest Dr	Extend new collector from the end of Degeest Dr north across railroad tracks and connect to I-90 Service Road	2036-2040	$ 903,000	$ 451,500	Pennington County

High Priority Total							$ 41,192,800	$ 27,363,200	
Roadway Projects							$ 36,570,300	$ 23,061,800	84.28%
Safety Focused							$ 2,822,300	$ 2,822,300	
Capacity Focused							$ 27,803,000	$ 18,953,000	
Pedestrian Projects							$ 2,142,000	$ 2,142,000	7.83%
Bicycle Projects							$ 2,480,500	$ 2,159,400	7.89%

Other Projects

#	ID	Mode	Category	Facility/Name	Description	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	R-6	Roadway	Corridor Improvements	Homestead St	Upgrade to 2 lane collector from Valley Dr to Reservoir Rd	$ 2,040,000	$ 2,040,000	
	R-7	Roadway	Corridor Improvements	Long View Rd	Realignment of existing roadway through airport grounds around new RPZ	$ 2,759,000	$ 2,759,000	Airport
	R-15a	Roadway	Corridor Improvements	W Main St	Implement raised median (Sheridan Lake Rd to Mountain View R) and construct bike lanes	$ 8,883,000	$ 8,883,000	
	R-15b	Roadway	Intersection / Interchange	W Main St & Dakota Dr	Install traffic signal at Dakota Dr intersection if warranted	$ 857,000	$ 857,000	
	R-24a	Roadway	Intersection / Interchange	La Crosse St & Monroe St	Install traffic signal for Monroe St intersection if warranted and relocate utility pole on SW corner of Monroe St intersection	$ 481,000	$ 481,000	
	R-24b	Roadway	Intersection / Interchange	La Crosse St & RR Crossing	Automatic crossing gates at the railroad crossing	$ 721,000	$ 721,000	
	R-24c	Roadway	Intersection / Interchange	La Crosse St & Sam's Club Access	Convert old Sam's Club access into right-in/right-out	$ 276,000	$ 276,000	
	R-25	Roadway	Intersection / Interchange	N La Crosse St & Walmart Access	Convert Walmart access into right-in/right-out	$ 42,000	$ 42,000	
	R-43	Roadway	New Roadway	Anamosa St Extension	Construct new 4 lane minor arterial from US 16B (Elk Vale Rd) to Creek Dr	$ 6,117,000	$ 6,117,000	
	R-44	Roadway	New Roadway	E Anamosa Extension	Construct new 2 lane principal arterial from Radar Hill Rd to US 16B (Elk Vale Rd)	$ 9,513,000	$ 2,378,200	Box Elder Pennington County
	R-46	Roadway	New Roadway	Cambell St Extension	Construct new 2 lane minor arterial from Anamosa St Extension to North St	$ 1,246,000	$ 1,246,000	
	R-47	Roadway	New Roadway	Century Rd	Construct new 2 lane minor arterial from Anamosa St Extension to North St	$ 772,000	$ 772,000	
	R-53	Roadway	New Roadway	Country Rd Extension	Construct new 2 lane minor arterial from existing Country Rd to Deadwood Ave	$ 6,752,000	$ 3,511,000	Pennington County
	R-57	Roadway	New Roadway	La Crosse St Extension	Construct new 2 lane minor arterial from Country Rd to Seger Dr	$ 2,541,000	$ 788,000	Pennington County
	R-61	Roadway	New Roadway	Minnesota St Extension	Construct new 2 lane minor arterial from US 16B (Elk Vale Rd) to Cambell St	$ 2,716,000	$ 1,358,000	Pennington County
	R-62	Roadway	New Roadway	Minnesota St Extension	Construct new 2 lane minor arterial from Jolly Ln to e/o US 16B (Elk Vale Rd)	$ 1,844,000	$ 1,844,000	
	R-63	Roadway	New Roadway	Minnesota St Extension	Construct new 2 lane minor arterial from Reservoir Rd to Jolly Ln	$ 2,740,000	$ 877,000	Pennington County
	R-67	Roadway	New Roadway	Reservoir St Extension	Construct new 2 lane principal arterial from Anamosa St Ext to Meadow Ridge Dr	$ 1,323,000	$ 1,323,000	
	R-68	Roadway	New Roadway	Sammis Trail	Construct new 2 lane principal arterial from Old Folsom Rd / Lamb Rd to US 16	$ 16,695,000	$ 2,170,000	Pennington County
	R-70	Roadway	New Roadway	Sheridan Lake Rd Extension	Construct new 4 lane minor arterial from SD 445 (Deadwood Ave) to Main St	$ 24,724,000	$ 24,724,000	
	R-85	Roadway	Widening	Sheridan Lake Rd	Widen to 3 lane minor arterial from Main St to Canyon Lake Rd	$ 285,000	$ 285,000	
	R-87	Roadway	Widening	Sheridan Lake Rd	Upgrade to 5-lane cross section from W Main St to SD 44 (Jackson Blvd)	$ 3,896,000	$ 3,896,000	
	R-88	Roadway	Widening	Sheridan Lake Rd	Widen to 3 lane minor arterial from Judy Ave to Rapid Creek	$ 142,000	$ 142,000	
	P-7	Pedestrian	Sidewalk	Cambell St	from Centre St to Rocker Dr (both side)	$ 387,000	$ 387,000	
	P-10	Pedestrian	Sidewalk	Country Rd	from City Limits to 3 mile limit (both sides)	$ 5,613,000	$ 730,000	Box Elder Pennington County
	B-1	Bicycle	Bike Lanes	Anamosa St	from Valley Dr to US 16B (Elk Vale Rd)	$ 206,000	$ 206,000	
	B-2	Bicycle	Bike Lanes	Anamosa St	from US 16B (Elk Vale Rd) to Reservoir Rd	$ 208,000	$ 208,000	
	B-3	Bicycle	Bike Lanes	Anamosa St	from E North St to Mickelson Dr	$ 117,000	$ 117,000	
	B-4	Bicycle	Bike Lanes	Anamosa St	from Mickelson Dr to Valley Dr	$ 117,000	$ 117,000	
	B-7	Bicycle	Bike Lanes	City Springs Rd / N 44th St	from Galena Dr to W Chicago St	$ 136,000	$ 136,000	
	B-8	Bicycle	Bike Lanes	Copperfield Dr	from E Anamosa St to existing street	$ 198,000	$ 198,000	
	B-9	Bicycle	Bike Lanes	Fairmont Blvd	from Creek Dr to S Valley Dr	$ 152,000	$ 50,000	Pennington County
	B-10	Bicycle	Bike Lanes	Harmony Heights Lane	from Plaza Blvd to Anamosa St	$ 564,000	$ 564,000	
	B-11	Bicycle	Bike Lanes	US 16 Service Road	from Skyline / Tower Rd to Catron Blvd	$ 400,000	$ 400,000	
	B-12	Bicycle	Bike Lanes	W Main St	from Soo San Rd to West Blvd	$ 380,000	$ 380,000	
	B-13	Bicycle	Bike Lanes	W Main St	from 44th St to Soo San Dr	$ 154,000	$ 154,000	
	B-14	Bicycle	Bike Lanes	Maple Ave	from Mall Dr to Disk Dr	$ 95,000	$ 95,000	
	B-15	Bicycle	Bike Lanes	Mickelson Dr	from E Anamosa St to SD 44	$ 103,000	$ 103,000	
	B-16	Bicycle	Bike Lanes	Minnesota St	from Cambell St to Jolly Ln	$ 550,000	$ 434,250	Pennington County
	B-17	Bicycle	Bike Lanes	North St	from West Blvd N to N 1st St	$ 184,000	$ 184,000	
	B-18	Bicycle	Bike Lanes	N Plaza Dr / Plaza Blvd	from SD 445 (Deadwood Ave) to Harmony Heights Ln	$ 218,000	$ 218,000	
	B-20	Bicycle	Bike Lanes	W Chicago St	from N 44th St to SD 231 (Sturgis Rd)	$ 137,000	$ 137,000	
	B-21	Bicycle	Bike Lanes	Soo San St	from W Main St to Brookside Rd	$ 32,400	$ 32,400	
	B-22	Bicycle	Bike Lanes	St Joseph St	from W Main St to West Blvd	$ 32,300	$ 32,300	
	B-23	Bicycle	Bike Lanes	St Patrick St	from 5th St to Elm Ave	$ 148,000	$ 148,000	
	B-24	Bicycle	Bike Lanes	Steele Ave	from Brennan Ave to railroad	$ 56,600	$ 56,600	
	B-27	Bicycle	Bike Lanes	US 16B (Elk Vale Rd)	from Mall Dr to SD 44	$ 338,000	$ 34,000	SDDOT
	B-28	Bicycle	Bike Lanes	Valley Dr	from Anamosa St to Fairmont St	$ 378,000	$ 174,000	Pennington County
	B-29	Bicycle	Bike Lanes	West Blvd NW	from Anamosa St to Boegel St	$ 53,000	$ 53,000	
	B-30	Bicycle	Crossing	Sheridan Lake Rd	Grade-separated trail crossing of trail along Rapid Creek	$ 87,500	$ 87,500	
	B-32	Bicycle	Off-Street Path	5th St	from Minnesota St to US 16B (Catron Blvd)	$ 572,000	$ 572,000	
	B-34	Bicycle	Off-Street Path	Anamosa St	from Century Rd to E North St	$ 168,000	$ 168,000	
	B-35	Bicycle	Off-Street Path	Anamosa St	from Silver St to Haines Ave	$ 381,000	$ 381,000	
	B-36	Bicycle	Off-Street Path	Argyle St	from SD 44 (Jackson Blvd) to W Flormann St	$ 116,000	$ 116,000	
	B-37	Bicycle	Off-Street Path	SD 79 (Cambell St) / Cambell St	from Richland Dr (street just north of Minnesota St) to US 16B (Elk Vale Rd)	$ 318,000	$ 318,000	SDDOT
	B-38	Bicycle	Off-Street Path	Cambell St	from E Oakland St to Fairmont Blvd	$ 104,000	$ 104,000	
	B-39	Bicycle	Off-Street Path	Cheyenne Blvd	from US 16B (Elk Vale Rd) to Spruce Dr	$ 3,011,000	$ 301,000	Box Elder Pennington County
	B-43	Bicycle	Off-Street Path	Connection to Rapid City path system	near County Hwy 1416 (from West Gate to Rapid City)	$ 191,000	$ 76,250	Box Elder
	B-45	Bicycle	Off-Street Path	SD 445 (Deadwood Ave)	from N Plaza Dr to SD 231 (Omaha St)	$ 1,646,000	$ 1,646,000	
	B-46	Bicycle	Off-Street Path	Disk Dr	from Haines Ave to N La Crosse St	$ 653,000	$ 653,000	
	B-47	Bicycle	Off-Street Path	E Minnesota St	from Parkview Dr to Odde Dr	$ 254,000	$ 254,000	

#	ID	Mode	Category	Facility/Name	Description	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	B-48	Bicycle	Off-Street Path	Minnesota St	from Minnesota St Park to Cambell St	$ 144,000	$ 144,000	
	B-49	Bicycle	Off-Street Path	E North St	from Mall Dr to Anamosa St	$ 509,000	$ 509,000	
	B-52	Bicycle	Off-Street Path	Elm Ave	from E Oakland St to Field View Dr	$ 769,000	$ 769,000	
	B-53	Bicycle	Off-Street Path	Elm Ave	from E St Patrick St to Meade St	$ 144,000	$ 144,000	
	B-54	Bicycle	Off-Street Path	Elm Ave	from Field View Dr to US 16B (Catron Blvd)	$ 324,000	$ 324,000	
	B-55	Bicycle	Off-Street Path	I-190 / Drainageway	from West Blvd N to Silver St	$ 57,800	$ 57,800	
	B-56	Bicycle	Off-Street Path	Leonard "Swanny" Swanson Memorial Pathway Extension	from St Patrick St to E St Charles St	$ 185,000	$ 185,000	
	B-57	Bicycle	Off-Street Path	Leonard "Swanny" Swanson Memorial Pathway Extension	south of Fairmont Blvd to Minnesota St	$ 399,000	$ 399,000	
	B-58	Bicycle	Off-Street Path	Leonard "Swanny" Swanson Memorial Pathway Extension	from Minnesota St to US 16	$ 3,236,000	$ 1,036,000	Pennington County
	B-59	Bicycle	Off-Street Path	Leonard "Swanny" Swanson Memorial Pathway Extension	from E St Patrick St to Fairmont Blvd	$ 797,000	$ 797,000	
	B-62	Bicycle	Off-Street Path	Mall Dr	from Haines Ave to N Elk Vale Rd	$ 2,150,000	$ 2,150,000	
	B-63	Bicycle	Off-Street Path	N Plaza Dr	from SD 231 (Sturgis Rd) to SD 445 (Deadwood Ave)	$ 451,000	$ 451,000	
	B-65	Bicycle	Off-Street Path	Parkview Dr	from Parkview Park to 5th St	$ 318,000	$ 318,000	
	B-68	Bicycle	Off-Street Path	Rapid Creek	from Leonard "Swanny" Swanson Memorial Pathway Extension to Cambell St	$ 1,173,000	$ 1,173,000	
	B-69	Bicycle	Off-Street Path	Rapid Creek / Wally Byam	from Valley Dr to Jolly Ln	$ 2,063,000	$ 1,671,000	Pennington County
	B-70	Bicycle	Off-Street Path	Rapid St / 3rd St	from 5th St to SD 44 (Omaha St)	$ 158,000	$ 158,000	
	B-72	Bicycle	Off-Street Path	S Valley Dr	from E Fairmont St to E Minnesota St	$ 304,000	$ 79,000	Pennington County
	B-74	Bicycle	Off-Street Path	SD 231 (Sturgis Rd) / Universal Dr	from Merritt Rd to Lien St	$ 1,556,000	$ 467,000	Pennington County
	B-79	Bicycle	Off-Street Path	SD 44 (Jackson Blvd)	from Cleghorn Canyon Rd to Cliffside Park	$ 335,000	$ 335,000	
	B-80	Bicycle	Off-Street Path	SD 44 (Jackson Blvd)	from Cliffside Park to existing trail	$ 433,000	$ 433,000	
	B-81	Bicycle	Off-Street Path	Stumer Rd	from Enchantment Rd to 5th St	$ 358,000	$ 358,000	
	B-84	Bicycle	Off-Street Path	US 16 (Mt Rushmore Rd)	from SD 44 (Omaha St) to Main St	$ 361,000	$ 361,000	
	B-85	Bicycle	Off-Street Path	West Blvd	from Leonard "Swanny" Swanson Memorial Pathway to St Joseph St	$ 202,000	$ 202,000	
	B-86	Bicycle	Shared Lanes	44th St	from W Chicago St to Raider Rd	$ 41,600	$ 41,600	
	B-88	Bicycle	Shared Lanes	9th St	from Quincy St to Flormann St	$ 7,600	$ 7,600	
	B-89	Bicycle	Shared Lanes	Allen Ave	from Anamosa St to North St	$ 4,000	$ 4,000	
	B-90	Bicycle	Shared Lanes	Alta Vista Dr / Anaconda Rd	from east of City View Dr to E Fairmont Blvd	$ 12,700	$ 12,700	
	B-91	Bicycle	Shared Lanes	Anamosa St	from Commerce Rd to Silver St	$ 44,600	$ 44,600	
	B-92	Bicycle	Shared Lanes	Apolda St (Rapid St)	from US 16 (Mt Rushmore Rd) to 6th St	$ 1,400	$ 1,400	
	B-93	Bicycle	Shared Lanes	Black Hills Blvd	from E Stumer Rd to US 16B (Catron Blvd)	$ 5,100	$ 5,100	
	B-96	Bicycle	Shared Lanes	Cathedral Dr / Fairmont Blvd	from US 16 (Mt Rushmore Rd) to Creek Dr	$ 92,100	$ 92,100	
	B-97	Bicycle	Shared Lanes	City Springs Rd Extension / St Martins Dr	from SD 231 (Sturgis Rd) to Galena Dr	$ 61,600	$ 61,600	
	B-98	Bicycle	Shared Lanes	Commerce Rd / Lien St	from railRd to Rand Rd	$ 33,000	$ 33,000	
	B-99	Bicycle	Shared Lanes	Copperfield Dr	from end of existing street to SD 44	$ 4,800	$ 4,800	
	B-101	Bicycle	Shared Lanes	Creek Dr	from E Saint Patrick St to Fairmont Blvd	$ 39,600	$ 39,600	
	B-102	Bicycle	Shared Lanes	Degeest Dr	from Homestead St to Twilight Dr	$ 25,500	$ 3,100	Pennington County
	B-104	Bicycle	Shared Lanes	E Centennial St / Locust St	from Parkview Dr to E Fairmont Blvd	$ 32,200	$ 32,200	
	B-105	Bicycle	Shared Lanes	E Fairlane Dr	from Maple to Robbinsdale Park	$ 1,900	$ 1,900	
	B-106	Bicycle	Shared Lanes	E Kansas City St	from East Blvd to SD School of Mines & Tech	$ 23,500	$ 23,500	
	B-107	Bicycle	Shared Lanes	E New York St / N Maple Ave / E Philadelphia St	from East Blvd to Cambell St	$ 39,200	$ 39,200	
	B-108	Bicycle	Shared Lanes	E Oakland St	from Hawthorne Ave to Cambell St	$ 6,700	$ 6,700	
	B-109	Bicycle	Shared Lanes	East Blvd	from E Quincy St to Signal Dr	$ 17,700	$ 17,700	
	B-110	Bicycle	Shared Lanes	Flormann St / Meade St	from West Blvd to 5th St	$ 49,700	$ 49,700	
	B-111	Bicycle	Shared Lanes	Franklin Ave / Belleview Dr / E St Andrews St	from West Blvd to 5th St	$ 21,600	$ 21,600	
	B-112	Bicycle	Shared Lanes	Hawthorne Ave	from E Meade St to E Oakland St	$ 2,700	$ 2,700	
	B-113	Bicycle	Shared Lanes	Hillsview Dr / W St Patrick St / Red Dale Dr	Canyon Lake Rd loop	$ 18,000	$ 18,000	
	B-114	Bicycle	Shared Lanes	Jolly Ln	from SD 44 to Daly Circuit	$ 35,300	$ 35,300	
	B-115	Bicycle	Shared Lanes	Meade St / E Indiana St	from 5th St to Hawthorne Ave	$ 9,300	$ 9,300	
	B-116	Bicycle	Shared Lanes	Milwaukee St	from Crestwood Dr to E New York St	$ 39,200	$ 39,200	
	B-117	Bicycle	Shared Lanes	Minuteman Dr / Lindbergh Ave	from Haines Ave to Anamosa St	$ 4,600	$ 4,600	
	B-118	Bicycle	Shared Lanes	Moon Meadows Dr	from Dunsmore Rd to US 16	$ 89,000	$ 8,900	Pennington County
	B-119	Bicycle	Shared Lanes	N 40th St	from Fish & Game site to SD 231 (W Chicago St)	$ 9,800	$ 9,800	
	B-120	Bicycle	Shared Lanes	N Maple Ave	from Disk Dr to Anamosa St	$ 22,300	$ 22,300	
	B-121	Bicycle	Shared Lanes	N Spruce St	from Meadowlark Rd to E Philadelphia St	$ 3,900	$ 3,900	
	B-122	Bicycle	Shared Lanes	Nordby Ln	from W Saint Louis St to W Main St	$ 1,400	$ 1,400	
	B-123	Bicycle	Shared Lanes	Oak Ave	from E Indiana St to Colorado St	$ 4,800	$ 4,800	
	B-124	Bicycle	Shared Lanes	Parkview Dr	from E Centennial St to E Minnesota St	$ 1,100	$ 1,100	
	B-125	Bicycle	Shared Lanes	Prairie Ave	from St Patrick St to E Indiana St	$ 2,700	$ 2,700	
	B-126a	Bicycle	Shared Lanes	Quincy St	from 5th St to East Blvd	$ 47,100	$ 47,100	
	B-126b	Bicycle	Shared Lanes	Quincy St	from US 16 (Mt Rushmore Rd) to West St	$ 47,100	$ 47,100	
	B-127	Bicycle	Shared Lanes	Raider Rd	from 44th St to Hillsview Dr	$ 21,600	$ 21,600	
	B-128	Bicycle	Shared Lanes	Red Cloud St	from Northridge Dr to Mall Dr	$ 24,600	$ 24,600	
	B-130	Bicycle	Shared Lanes	S Canyon Rd	from Berry Blvd to N 44th St	$ 15,700	$ 11,600	Pennington County
	B-132	Bicycle	Shared Lanes	S Canyon Rd	from City Springs Rd to S Canyon Rd	$ 2,800	$ 2,800	
	B-133	Bicycle	Shared Lanes	San Marco Blvd	from S Canyon Rd to W Chicago St	$ 2,400	$ 2,400	
	B-134	Bicycle	Shared Lanes	W Chicago St	from San Marco Blvd to S Canyon	$ 2,700	$ 2,700	
	B-135	Bicycle	Shared Lanes	Silver St / Philadelphia St	from West Blvd to Boegel St	$ 4,800	$ 4,800	
	B-136	Bicycle	Shared Lanes	Soo San Rd	from Brookside Dr to SD 44 (Jackson Blvd)	$ 7,700	$ 7,700	
	B-137	Bicycle	Shared Lanes	Triple Crown Dr	from US 16B (Elk Vale Rd) to US 16B (Catron Blvd)	$ 20,800	$ 20,800	
	B-138	Bicycle	Shared Lanes	Van Buren St	from Allen Ave to Milwaukee St	$ 7,600	$ 7,600	
	B-139	Bicycle	Shared Lanes	W Flormann St	from Argyle St to W North Ave	$ 4,900	$ 4,900	
	B-140	Bicycle	Shared Lanes	West St	from Soo San Rd to Mary Hill Park	$ 900	$ 900	
	B-141	Bicycle	Shared Lanes	West Blvd	from St Joseph St to Flormann St	$ 9,100	$ 9,100	
	B-142	Bicycle	Signed Shoulder Bikeway	Airport Rd	from the Airport to SD 44	$ 15,800	$ 15,800	
	B-145	Bicycle	Signed Shoulder Bikeway	N Elk Vale Rd	from Country Rd to E Mall Dr	$ 17,500	$ 17,500	
Other Projects Total						$ 133,313,900	$ 90,993,000	

Fiscally Constrained Plan

PENNINGTON COUNTY

High Priority

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
1	R-86	Roadway	Widening	Sheridan Lake Rd	Widen to 4 lane principal arterial from Corral Dr to Clarkson Rd	2021-2025	$ 12,123,000	$ 8,850,000	Rapid City
	B-152	Roadway	Signed Shoulder Bikeway	Sheridan Lake Rd	from Wildwood Dr to Muirfield Dr	2021-2025	$ 12,000	$ 12,000	
2	R-10	Roadway	Corridor Improvements	Reservoir Rd	from Twilight Dr to Meadow Ridge Dr	2026-2030	$ 2,112,000	$ 1,922,000	Rapid City
3	R-16	Roadway	Intersection / Interchange	154th Ave & 233rd St	154th Ave & 233rd St	2026-2030	$ 302,000	$ 302,000	
4	R-17	Roadway	Intersection / Interchange	Boulder Hill Rd & Silver Mountain Rd	Boulder Hill Rd & Silver Mountain Rd	2026-2030	$ 188,000	$ 188,000	
5	R-18	Roadway	Intersection / Interchange	Concourse Dr & Twilight Dr	Concourse Dr & Twilight Dr	2026-2030	$ 10,000	$ 10,000	
6	R-27	Roadway	Intersection / Interchange	South Rockerville Rd & Neck Yoke Rd	South Rockerville Rd & Neck Yoke Rd	2026-2030	$ 39,800	$ 39,800	
7	R-32	Roadway	Intersection / Interchange	Sheridan Lake Rd & Dunsmore Rd	Dunsmore Rd & Sheridan Lake Rd	2026-2030	$ 248,000	$ 248,000	
8	P-9a	Pedestrian	Sidewalk	Douglas Middle School	Complete link along 225th St	2026-2030	$ 9,400	$ 9,400	
9	B-42	Bicycle	Off-Street Path	Concourse Dr	from US 16B (Elk Vale Rd) to Twilight Dr	2026-2030	$ 116,000	$ 17,400	Rapid City
10	B-44	Bicycle	Off-Street Path	County Hwy 1416	from Westgate Rd to Ellsworth Rd	2026-2030	$ 143,000	$ 36,000	Box Elder
11	B-71	Bicycle	Off-Street Path	Rapid Valley Drainage	from Twilight Dr to Covington St	2026-2030	$ 327,000	$ 327,000	
12	B-77	Bicycle	Off-Street Path	SD 44	from Twilight to Long View	2026-2030	$ 541,000	$ 541,000	
13	B-94	Bicycle	Shared Lanes	Bunker Dr	from Sagewood St to Disk Dr / I-90	2026-2030	$ 33,700	$ 14,500	Rapid City
14	B-100	Bicycle	Shared Lanes	Covington St	from Twilight Dr to SD 44	2026-2030	$ 34,900	$ 34,900	
15	B-102	Bicycle	Shared Lanes	Degeest Dr	from Homestead St to Twilight Dr	2026-2030	$ 25,500	$ 22,400	Rapid City
16	B-130	Bicycle	Shared Lanes	S Canyon Rd	from Berry Blvd to N 44th St	2026-2030	$ 15,700	$ 4,100	Rapid City
17	R-9	Roadway	Corridor Improvements	Plateau Ln	from Twilight Dr to Williams St	2031-2035	$ 2,112,000	$ 2,112,000	
18	B-144	Bicycle	Signed Shoulder Bikeway	Country Rd	from Haines Ave to N Elk Vale Rd	2031-2035	$ 42,900	$ 32,200	Rapid City
19	R-54	Roadway	New Roadway	Degeest Dr	Extend new collector from the end of Degeest Dr north across railroad tracks and connect to I-90 Service Road	2036-2040	$ 903,000	$ 451,500	Rapid City
20	R-57	Roadway	New Roadway	La Crosse St Extension	Construct new 2 lane minor arterial from Country Rd to Seger Dr	2036-2040	$ 2,541,000	$ 1,753,000	Rapid City
21	R-64	Roadway	New Roadway	New road w/o Airport	Construct new 2 lane collector from Airport Rd to Radar Hill Rd	2036-2040	$ 2,930,000	$ 2,285,000	Rapid City
High Priority Total							$ 24,809,900	$ 19,212,200	
Roadway Projects							$ 20,578,800	$ 18,161,300	94.53%
Safety Focused									
Capacity Focused							$ 12,123,000	$ 8,850,000	
Pedestrian Projects							$ 9,400	$ 9,400	0.05%
Bicycle Projects							$ 1,291,700	$ 1,041,500	5.42%

Other Projects

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	R-1	Roadway	Corridor Improvements	154th Ave	from Long View Rd to SD 44		$ 8,987,000	$ 8,987,000	
	R-8	Roadway	Corridor Improvements	Long View Rd	from Rapid City Regional Airport to 154th Ave		$ 8,018,000	$ 8,018,000	
	R-11	Roadway	Corridor Improvements	Deadwood Ave	from Calamity Rd to Meade County Line		$ 1,206,000	$ 1,206,000	
	R-13	Roadway	Corridor Improvements	Valley Dr / E 27th St	Upgrade to 2 lane collector with intersection improvements from s/o Fairmont Blvd to US 16B (Elk Vale Rd) / SE Connector		$ 1,637,000	$ 1,637,000	
	R-40	Roadway	New Roadway	5th St Extension	Construct new 4 lane principal arterial from US 16B (Catron Blvd) to Sammis Trail		$ 12,113,000	$ 12,113,000	
	R-41	Roadway	New Roadway	5th St Extension	Construct new 4 lane principal arterial from Lamb Rd to Spring Creek Rd		$ 12,629,000	$ 12,629,000	
	R-42	Roadway	New Roadway	Liberty Rd Extension	Construct new 2 lane minor arterial from I-90 to SD 44		$ 17,913,000	$ 15,763,000	Box Elder
	R-44	Roadway	New Roadway	E Anamosa Extension	Construct new 2 lane principal arterial from Radar Hill Rd to US 16B (Elk Vale Rd)		$ 9,513,000	$ 3,995,500	Rapid City Box Elder
	R-45	Roadway	New Roadway	Anderson Rd Extension	Construct new 2 lane minor arterial from Anamosa St Extension to Long View Rd		$ 5,033,000	$ 5,033,000	
	R-48	Roadway	New Roadway	Cheyenne Blvd	Extend new arterial from existing Cheyenne Blvd east to Radar Hill Rd		$ 12,742,000	$ 637,000	Box Elder
	R-49	Roadway	New Roadway	Cheyenne Blvd	Construct new arterial from Ellsworth Rd to 151 Ave		$ 16,352,000	$ 10,465,000	Box Elder
	R-50	Roadway	New Roadway	Cheyenne Blvd & Ellsworth Rd	Construct new arterial from Radar Hill Rd to a new Ellsworth arterial extension south from existing neighborhood		$ 6,477,000	$ 2,396,000	Box Elder
	R-52	Roadway	New Roadway	Cimarron Dr	Construct new arterial from West Gate Rd east to Cimarron Dr intersection with Ellsworth Rd		$ 17,945,000	$ 4,486,000	Box Elder
	R-53	Roadway	New Roadway	Country Rd Extension	Construct new 2 lane minor arterial from existing Country Rd to Deadwood Ave		$ 6,752,000	$ 3,241,000	Rapid City
	R-61	Roadway	New Roadway	Minnesota St Extension	Construct new 2 lane minor arterial from US 16B (Elk Vale Rd) to Cambell St		$ 2,716,000	$ 1,358,000	Rapid City
	R-63	Roadway	New Roadway	Minnesota St Extension	Construct new 2 lane minor arterial from Reservoir Rd to Jolly Ln		$ 2,740,000	$ 1,863,000	Rapid City
	R-65	Roadway	New Roadway	Northern Lights Blvd	Extend new collector from Northern Lights Blvd east to the future extension of West Gate Rd		$ 7,114,000	$ 2,276,000	Box Elder
	R-68	Roadway	New Roadway	Sammis Trail	Construct new 2 lane principal arterial from Old Folsom Rd / Lamb Rd to US 16		$ 16,695,000	$ 14,525,000	Rapid City
	R-71	Roadway	New Roadway	Spring Creek Rd Extension	Construct new 2 lane principal arterial from SD 44 to SD 79		$ 33,075,000	$ 33,075,000	
	R-72	Roadway	New Roadway	Twilight Dr Extension	Construct new 4 lane minor arterial from Radar Hill Rd to Reservoir Rd		$ 5,429,000	$ 5,429,000	
	R-73	Roadway	New Roadway	West Gate Rd	Construct new arterial from the West Gate / County Hwy 1416 intersection south to the future Cheyenne Blvd extension		$ 7,645,000	$ 6,116,000	Box Elder
	R-79	Roadway	Widening	Ellsworth Rd	Widen existing roadway from County Hwy 1416 north to 225th to provide curb and gutter and a left turn lane according to the arterial typical section standard		$ 5,628,000	$ 3,039,000	Box Elder
	P-10	Pedestrian	Sidewalk	Country Rd	from City Limits to 3 mile limit (both sides)		$ 5,613,000	$ 4,434,000	Rapid City Box Elder
	P-19	Pedestrian	Sidewalk	Nemo Rd	from 3 mile limit to City Limits (both sides)		$ 9,714,000	$ 9,714,000	
	P-21	Pedestrian	Sidewalk	Reservoir Rd	from Ave A to Lamb Rd (both sides)		$ 7,226,000	$ 7,226,000	
	P-25	Pedestrian	Sidewalk	Sheridan Lake Rd	from City Limits to 3 mile limits (both sides)		$ 9,680,000	$ 9,680,000	
	B-9	Bicycle	Bike Lanes	Fairmont Blvd	from Creek Dr to S Valley Dr		$ 152,000	$ 102,000	Rapid City
	B-16	Bicycle	Bike Lanes	Minnesota St	from Cambell St to Jolly Ln		$ 550,000	$ 115,750	Rapid City
	B-28	Bicycle	Bike Lanes	Valley Dr	from Anamosa St to Fairmont St		$ 378,000	$ 204,000	Rapid City
	B-39	Bicycle	Off-Street Path	Cheyenne Blvd	from US 16B (Elk Vale Rd) to Spruce Dr		$ 3,011,000	$ 693,000	Rapid City Box Elder
	B-40	Bicycle	Off-Street Path	Cimarron alignment	from Ellsworth Rd to Liberty Blvd		$ 123,000	$ 40,600	Box Elder
	B-41	Bicycle	Off-Street Path	Cimarron alignment	from Liberty Blvd to new shared use path		$ 54,200	$ 54,200	
	B-50	Bicycle	Off-Street Path	Ellsworth Rd	from Liberty Blvd to County Hwy 1416		$ 265,000	$ 61,000	Box Elder
	B-51	Bicycle	Off-Street Path	Ellsworth Rd	from Liberty Blvd to 225th St		$ 42,500	$ 31,900	Box Elder
	B-58	Bicycle	Off-Street Path	Leonard "Swanny" Swanson Memorial Pathway Extension	from Minnesota St to US 16		$ 3,236,000	$ 2,200,000	Rapid City
	B-61	Bicycle	Off-Street Path	Liberty Blvd	On east and north sides from County Hwy 1416 and Tower Rd		$ 238,000	$ 119,000	Box Elder
	B-64	Bicycle	Off-Street Path	New Shared Use Path	from Prairie Rd to County Hwy 1416		$ 170,000	$ 131,000	Box Elder
	B-67	Bicycle	Off-Street Path	Radar Hill Rd	from County Hwy 1416 to 229th St		$ 24,400	$ 9,500	Box Elder
	B-69	Bicycle	Off-Street Path	Rapid Creek / Wally Byam	from Valley Dr to Jolly Ln		$ 2,063,000	$ 392,000	Rapid City
	B-72	Bicycle	Off-Street Path	S Valley Dr	from E Fairmont St to E Minnesota St		$ 304,000	$ 225,000	Rapid City
	B-74	Bicycle	Off-Street Path	SD 231 (Sturgis Rd) / Universal Dr	from Merritt Rd to Lien St		$ 1,556,000	$ 1,089,000	Rapid City
	B-75	Bicycle	Off-Street Path	SD 44	from Long View Rd to MPO boundary		$ 5,276,000	$ 5,276,000	
	B-103	Bicycle	Shared Lanes	Dunsmore Rd	from Sheridan Lake Rd to Moon Meadows Dr		$ 5,500	$ 5,500	
	B-118	Bicycle	Shared Lanes	Moon Meadows Dr	from Dunsmore Rd to US 16		$ 89,000	$ 80,100	Rapid City
	B-129	Bicycle	Shared Lanes	Reservoir Rd / Longview Rd	from Twilight Dr to SD 44		$ 58,000	$ 58,000	
	B-143	Bicycle	Signed Shoulder Bikeway	Country Rd	from Elk Vale Rd to Airport Rd		$ 23,200	$ 15,300	Box Elder
	B-146	Bicycle	Signed Shoulder Bikeway	Neck Yoke Rd	from US 16 to Rockerville Rd		$ 56,000	$ 56,000	
	B-147	Bicycle	Signed Shoulder Bikeway	Nemo Rd	from Berry Blvd to MPO boundary		$ 53,800	$ 53,800	
	B-148	Bicycle	Signed Shoulder Bikeway	Old Folsom Rd	from Leonard "Swanny" Swanson Mem Path to MPO boundary		$ 48,100	$ 48,100	
	B-149	Bicycle	Signed Shoulder Bikeway	Radar Hill Rd	from 229th St to SD 44		$ 27,400	$ 27,400	
	B-150	Bicycle	Signed Shoulder Bikeway	Rockerville Rd	from US 16 to MPO boundary		$ 9,100	$ 9,100	
	B-151	Bicycle	Signed Shoulder Bikeway	Sheridan Lake Rd	from Stonecrest Dr to MPO boundary		$ 46,100	$ 46,100	
	B-153	Bicycle	Signed Shoulder Bikeway	Spring Creek Rd	from Neck Yoke Rd to MPO boundary		$ 41,300	$ 41,300	
Other Projects Total							$ 268,492,600	$ 200,526,150	

MEADE COUNTY

High Priority

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
1	R-3	Roadway	Corridor Improvements	Elk Creek Rd	Realignment e/o I-90	2021-2025	$ 4,109,000	$ 4,109,000	
2	R-5	Roadway	Corridor Improvements	High Meadows Rd Improvements	To existing roadway, RAP surface	2021-2025	$ 295,000	$ 295,000	
3	R-56	Roadway	New Roadway	High Meadows Area Secondary Access Route	Option 3 - 3.2 mile extension of High Meadows Rd to Rolling Hills Rd along USFS Trail 777's alignment.	2026-2030	$ 1,124,000	$ 1,124,000	
4	R-60	Roadway	New Roadway	Mill Rd Extension	Construct new 2 lane minor arterial from Nike Rd to Haines Ave	2026-2030	$ 3,887,000	$ 3,887,000	
5	R-69	Roadway	New Roadway	Secondary Summerset Access	Option A - New connection from Castlewood Dr to High Meadows	2026-2030	$ 104,000	$ 104,000	
6	P-5	Pedestrian	Sidewalk	Tower Rd	Along west side from 224th St to 225th St	2026-2030	$ 74,300	$ 24,500	Box Elder
7	R-59	Roadway	New Roadway	Mill Rd Extension	Construct new 2 lane minor arterial from Haines Ave to Deadwood Ave	2036-2040	$ 5,630,000	$ 5,630,000	
High Priority Total							$ 15,223,300	$ 15,173,500	
Roadway Projects							$ 15,149,000	$ 15,149,000	99.84%
Safety Focused									
Capacity Focused							$ -	$ -	
Pedestrian Projects							$ 74,300	$ 24,500	0.16%
Bicycle Projects							$ -	$ -	0.00%

Other Projects

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	R-2	Roadway	Corridor Improvements	150th Ave	Asphalt paving as minor arterial from the county line north		$ 1,526,000	$ 1,526,000	
	B-66	Bicycle	Off-Street Path	Piedmont Valley Shared Use Path	Along I-90		$ 8,228,000	$ 8,228,000	
	B-83	Bicycle	Off-Street Path	Tower Rd	Along east side from 224th St to 225th St		$ 145,000	$ 95,700	Box Elder
Other Projects Total							$ 9,899,000	$ 9,849,700	

BOX ELDER

High Priority

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
1	R-55	Roadway	New Roadway	Freude Lane	Construct new collector from Freude Lane west to Creekside Dr to connect existing neighborhoods and to provide a second point of access.	2026-2030	$ 1,062,000	$ 1,062,000	
2	R-26	Roadway	Intersection / Interchange	Liberty Blvd & Ellsworth Rd	Replace existing all-way stop traffic control with signalized control when warranted	2031-2035	$ 372,000	$ 372,000	
3	R-90	Roadway	Widening	Tower Rd	Widen existing roadway to provide curb and gutter and left turn lane according to the collector typical section standard	2036-2040	$ 743,000	$ 743,000	
	B-82	Bicycle	Off-Street Path	Tower Rd	from Liberty Blvd to Patriot Dr	2036-2040	$ 24,400	$ 24,400	
	P-9b	Pedestrian	Sidewalk	Douglas Middle School	Complete link along Tower Dr	2036-2040	$ 5,700	$ 5,700	
High Priority Total							$ 2,207,100	$ 2,207,100	
Roadway Projects							$ 2,177,000	$ 2,177,000	98.64%
Safety Focused							$ 372,000	$ 372,000	
Capacity Focused							$ 743,000	$ 743,000	
Pedestrian Projects							$ 5,700	$ 5,700	0.26%
Bicycle Projects							$ 24,400	$ 24,400	1.11%

Other Projects

#	ID	Mode	Category	Facility/Name	Description	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	R-38	Roadway	New Roadway	150th Ave	Construct new arterial extension from 225th to Liberty Blvd	$ 2,017,000	$ 2,017,000	
	R-39	Roadway	New Roadway	150th Ave	Construct new collector from Liberty Blvd to Cimarron Dr	$ 2,655,000	$ 2,655,000	
	R-42	Roadway	New Roadway	Liberty Rd Extension	Construct new 2 lane minor arterial from I-90 to SD 44	$ 17,913,000	$ 2,150,000	Pennington County
	R-44	Roadway	New Roadway	E Anamosa Extension	Construct new 2 lane principal arterial from Radar Hill Rd to US 16B (Elk Vale Rd)	$ 9,513,000	$ 3,139,300	Rapid City Pennington County
	R-48	Roadway	New Roadway	Cheyenne Blvd	Extend new arterial from existing Cheyenne Blvd east to Radar Hill Rd	$ 12,742,000	$ 12,105,000	Pennington County
	R-49	Roadway	New Roadway	Cheyenne Blvd	Construct new arterial from Ellsworth Rd to 151 Ave	$ 16,352,000	$ 5,887,000	Pennington County
	R-50	Roadway	New Roadway	Cheyenne Blvd & Ellsworth Rd	Construct new arterial from Radar Hill Rd to a new Ellsworth arterial extension south from existing neighborhood	$ 6,477,000	$ 4,081,000	Pennington County
	R-51	Roadway	New Roadway	Cimarron Dr	Extend new arterial from Ellsworth Rd to Liberty Blvd	$ 4,672,000	$ 4,672,000	
	R-52	Roadway	New Roadway	Cimarron Dr	Construct new arterial from West Gate Rd east to Cimarron Dr intersection with Ellsworth Rd	$ 17,945,000	$ 13,459,000	Pennington County
	R-58	Roadway	New Roadway	Mall Dr	Extend new arterial from Elk Vale Rd to Service Road	$ 2,655,000	$ 2,655,000	
	R-65	Roadway	New Roadway	Northern Lights Blvd	Extend new collector from Northern Lights Blvd east to the future extension of West Gate Rd	$ 7,114,000	$ 4,838,000	Pennington County
	R-66	Roadway	New Roadway	Prairie Rd	Construct new local road to allow access location on Liberty Blvd	$ 287,000	$ 287,000	
	R-73	Roadway	New Roadway	West Gate Rd	Construct new arterial from the West Gate / County Hwy 1416 intersection south to the future Cheyenne Blvd extension	$ 7,645,000	$ 1,529,000	Pennington County
	R-78	Roadway	Widening	Ellsworth Rd	Widen existing roadway from existing neighborhood to County Hwy 1416 to provide curb and gutter and left turn lane according to the arterial typical section	$ 881,000	$ 881,000	
	R-79	Roadway	Widening	Ellsworth Rd	Widen existing roadway from County Hwy 1416 north to 225th to provide curb and gutter and a left turn lane according to the arterial typical section standard	$ 5,628,000	$ 2,589,000	Pennington County
	P-2	Pedestrian	Sidewalk	225th St	Along north side from Radial Ln to 150 Pl	$ 25,500	$ 25,500	
	P-3	Pedestrian	Sidewalk	Villa Dr / Briggs St	from Ellsworth Rd to Briggs & Patriot	$ 25,500	$ 25,500	
	P-4	Pedestrian	Sidewalk	Liberty Blvd	West and south sides from Ellsworth to County Hwy 1416	$ 159,000	$ 159,000	
	P-5	Pedestrian	Sidewalk	Tower Rd	Along west side from 224th St to 225th St	$ 74,300	$ 49,800	Meade County
	P-10	Pedestrian	Sidewalk	Country Rd	from City Limits to 3 mile limit (both sides)	$ 5,613,000	$ 449,000	Rapid City Pennington County
	P-23	Pedestrian	Sidewalk	S Ellsworth Rd	from County Hwy 1416 to neighborhood	$ 32,900	$ 32,900	
	B-31	Bicycle	Off-Street Path	225th St	on south side from 150 Pl to existing connection	$ 55,200	$ 55,200	
	B-39	Bicycle	Off-Street Path	Cheyenne Blvd	from US 16B (Elk Vale Rd) to Spruce Dr	$ 3,011,000	$ 2,017,000	Rapid City Pennington County
	B-40	Bicycle	Off-Street Path	Cimarron alignment	from Ellsworth Rd to Liberty Blvd	$ 123,000	$ 82,400	Pennington County
	B-43	Bicycle	Off-Street Path	Connection to Rapid City path system	near County Hwy 1416 (from West Gate to Rapid City)	$ 191,000	$ 114,750	Rapid City
	B-44	Bicycle	Off-Street Path	County Hwy 1416	from Westgate Rd to Ellsworth Rd	$ 143,000	$ 107,000	Pennington County
	B-50	Bicycle	Off-Street Path	Ellsworth Rd	from Liberty Blvd to County Hwy 1416	$ 265,000	$ 204,000	Pennington County
	B-51	Bicycle	Off-Street Path	Ellsworth Rd	from Liberty Blvd to 225th St	$ 42,500	$ 10,600	Pennington County
	B-60	Bicycle	Off-Street Path	Liberty Blvd	Along north side from Tower Rd to Ellsworth Rd	$ 74,300	$ 74,300	
	B-61	Bicycle	Off-Street Path	Liberty Blvd	On east and north sides between County Hwy 1416 and Tower Rd	$ 238,000	$ 119,000	Pennington County
	B-64	Bicycle	Off-Street Path	New Shared Use Path	from Prairie Rd to County Hwy 1416	$ 170,000	$ 39,000	Pennington County
	B-67	Bicycle	Off-Street Path	Radar Hill Rd	from County Hwy 1416 to 229th St	$ 24,400	$ 14,900	Pennington County
	B-83	Bicycle	Off-Street Path	Tower Rd	Along east side from 224th St to 225th St	$ 145,000	$ 49,300	Meade County
	B-143	Bicycle	Signed Shoulder Bikeway	Country Rd	from Elk Vale Rd to Airport Rd	$ 23,200	$ 7,900	Pennington County
Other Projects Total						$ 124,931,800	$ 66,581,350	

SDDOT

High Priority

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
1	R-19	Roadway	Intersection / Interchange	I-90 Exit 46 (Elk Creek Rd)	Interchange improvements	2016-2020	$ 17,254,000	$ 17,254,000	
2	R-22	Roadway	Intersection / Interchange	I-90 Exit 59 (N Lacrosse St)	Diverging diamond interchange	2016-2020	$ 14,762,000	$ 14,762,000	
3	R-83	Roadway	Widening	SD 44 (Omaha St)	Widen to 6 lane principal arterial from Mountain View Rd to 12th St	2021-2025	$ 3,464,000	$ 3,464,000	
4	R-84	Roadway	Widening	SD 231 (Omaha St)	Widen to 6 lane principal arterial from Mountain View Rd to SD 445 (Deadwood Ave)	2021-2025	$ 1,347,000	$ 1,347,000	
5	R-21	Roadway	Intersection / Interchange	I-90 Exit 55 (SD 445 (Deadwood Ave))	Interchange improvements	2026-2030	$ 3,255,000	$ 3,255,000	
6	R-35	Roadway	Intersection / Interchange	I-90 Exit 48 (Stage Stop Rd)	Interchange improvements	2026-2030	$ 17,254,000	$ 17,254,000	
7	R-36	Roadway	Intersection Improvements	US 16 & US 16B (Catron Blvd) Intersection	Intersection Improvements	2031-2035	$ 17,254,000	$ 17,254,000	
High Priority Total							$ 74,590,000	$ 74,590,000	

Other Projects

#	ID	Mode	Category	Facility/Name	Description	Staging	Total Cost (2016$)	Jurisdiction Cost (2016$)	Cost Sharing
	R-12	Roadway	Corridor Improvements	US 16 NB	NB, rumble strips and safety edge with resurfacing project along entire segment, wildlife fencing and signs along curve, and accel/decel lanes for paved median cuts between and including Busted 5 Ct and Sitting Bull Rd. (Neck Yoke to Busted 5 Ct)		$ 1,547,000	$ 1,547,000	
	R-20	Roadway	Intersection / Interchange	I-90 Exit 63 (County Hwy 1416)	Interchange improvements or replacement of I-90 Exit 63 (County Hwy 1416) per the recommendations of the Interchange Options Study		$ 31,855,000	$ 31,855,000	
	R-23	Roadway	Intersection / Interchange	New I-90 Exit e/o Exit 67 (Liberty Blvd) for Transload development	New interchange plus local access on I-90 when development warrants		$ 17,254,000	$ 17,254,000	
	R-28	Roadway	Intersection / Interchange	SD 231 (Sturgis Rd) & Universal Dr	SD 231 (Sturgis Rd) & Universal Dr Intersection		$ 248,000	$ 248,000	
	R-29	Roadway	Intersection / Interchange	SD 231 (Sturgis Rd) & Merritt Rd	SD 231 (Sturgis Rd) & Merritt Rd Intersection		$ 799,000	$ 799,000	
	R-30	Roadway	Intersection / Interchange	SD 44 & Covington St	SD 44 & Covington St Intersection		$ 248,000	$ 248,000	
	R-31	Roadway	Intersection / Interchange	SD 44 (Jackson Blvd) & Cleghorn Canyon Rd)	Intersection warning sign and advisory speed plaque for westbound approach, and removal of sight obstructions at SD 44 (Jackson Blvd) and Cleghorn Canyon Rd		$ 8,800	$ 8,800	
	R-33	Roadway	Intersection / Interchange	US 16 & Silver Mountain Rd	US 16 & Silver Mountain Rd Intersection		$ 29,800	$ 29,800	
	R-37	Roadway	Intersection / Interchange	US 16B & Cheyenne Blvd Intersection	Intersection improvements/adjustments once Cheyenne is built out to the east		$ 306,000	$ 306,000	
	R-77	Roadway	Widening	US 16B (Elk Vale Rd)	Widen to 6 lanes from SD 44 to SD 79		$ 13,015,000	$ 13,015,000	
	P-11	Pedestrian	Sidewalk	SD 445 (Deadwood Ave)	from N Plaza Dr to SD 231 (W Chicago St) (both sides)		$ 2,891,000	$ 2,891,000	
	P-12	Pedestrian	Sidewalk	SD 44	from City Limits to Jolly Lane (both sides)		$ 874,000	$ 874,000	
	P-13	Pedestrian	Sidewalk	SD 44 (Omaha St) / SD 44	from La Crosse St to City Limits (both sides)		$ 4,218,000	$ 4,218,000	
	P-15	Pedestrian	Sidewalk	US 16	from City Limits to 3 mile limit (both sides)		$ 8,252,000	$ 8,252,000	
	P-16	Pedestrian	Sidewalk	SD 44	from Jolly Lane to 3 mile limit (both sides)		$ 12,520,000	$ 12,520,000	
	P-17	Pedestrian	Sidewalk	SD 44	from Dark Canyon Pl to City Limits (both sides)		$ 2,571,000	$ 2,571,000	
	P-24	Pedestrian	Sidewalk	SD 79	from City Limits to 3 mile limits (both sides)		$ 7,932,000	$ 7,932,000	
	P-26	Pedestrian	Sidewalk	SD 44	from City Limits to 3 mile limits (both sides)		$ 6,168,000	$ 6,168,000	
	P-27	Pedestrian	Sidewalk	SD 44 (Omaha St)	from Mountain View Rd to Oshkosh St (both sides)		$ 857,000	$ 857,000	
	P-28	Pedestrian	Sidewalk	SD 44 (Omaha St)	from Oshkosh St to Founders Park Dr (north side)		$ 353,000	$ 353,000	
	B-6	Bicycle	Bike Lanes	US 16B (Catron Blvd) / Catron Blvd	from 5th St to Sheridan Lake Rd	2026-2030	$ 428,000	$ 257,000	Rapid City
	B-19	Bicycle	Bike Lanes	SD 231 (W Chicago St)	from Sheffer St to SD 445 (Deadwood Ave)		$ 34,700	$ 34,700	
	B-25	Bicycle	Bike Lanes	US 16 (Mt Rushmore Rd)	from North St to SD 44 (Omaha St)		$ 91,000	$ 91,000	
	B-26	Bicycle	Bike Lanes	US 16B (Elk Vale Rd / Catron Blvd)	from SD 44 to 5th St		$ 440,000	$ 440,000	
	B-27	Bicycle	Bike Lanes	US 16B (Elk Vale Rd)	from Mall Dr to SD 44		$ 338,000	$ 304,000	Rapid City
	B-154	Bicycle	Signed Shoulder Bikeway	SD 79	from US 16B (Elk Vale Rd/Catron Blvd) to 3 mile limits		$ 53,300	$ 53,300	
Other Projects Total							$ 113,331,600	$ 113,126,600	

The environmental resources screened for this Long Range Transportation Plan were selected based on the characteristics of the study area. The resources considered are generally consistent with NEPA, its implementing regulations, and FHWA guidelines. The screening focused on red flag environmental resources with separate regulatory drivers, such as the Endangered Species Act (ESA) or Clean Water Act (CWA), or are typically resources of concern for the general public.

- Environmental Justice – Minority and Low-Income Persons Floodway/Floodzone

- Hazardous Materials

- Historic Property/Districts

- National Forest

- Parks and Recreation Resources

- Prairie Dogs

- Railroads

- Utilities

- Water Quality

- Wetlands

- 6(f) Property

RapidTRIP 2040

RAPID CITY AREA MPO

Long Range Transportation Plan Update

Performance Measures

Performance-based planning is a strategic approach to transportation planning that analyzes data to determine how effectively transportation investments are working toward achieving the identified transportation goals. The following RCAMPO Goals and Objectives each have performance measures identified and quantified along with desired future trends to begin the performance-based planning monitoring process.

SYSTEM PRESERVATION

GOAL: A well maintained transportation system.
Objective: Maintain the existing transportation system in a high quality and effective manner.

Performance Measure 1

Percent roadway pavement in good condition

Desired Trend

Baseline Data

Percent of Roadways in Good Condition
66% - Rapid City Roads
70% - SDDOT Roads

Data Source: Rapid City Pavement Condition Index Database; 2015 SDDOT Needs Book and South Dakota Statewide Long Range Transportation Plan

Performance Measure 2

Percent roadway pavement in poor condition

Desired Trend

Baseline Data

Percent of Roadways in Poor Condition
8% - Rapid City Roads
18% - SDDOT Roads

Data Source: 2015 Rapid City Pavement Condition Index Database; 2015 SDDOT Needs Book and South Dakota Statewide Long Range Transportation Plan

MULTI MODAL MOBILITY AND ACCESSIBILITY

GOAL: A multimodal transportation system that provides access for all.
Objective: Improve the availability and quality of transportation options.

Performance Measure 1

Change in annual transit ridership

Desired Trend

Baseline Data

Rapid Ride Transit Ridership

302,930 — 2009
339,784 — 2010
394,810 — 2011
416,812 — 2012
388,171 — 2013

Data Source: National Transit Database (NTD) – Rapid Ride Annual Unlinked Trips

Performance Measure 2

Percent change in mode split

Desired Trend

Baseline Data

TAXI/MOTORCYCLE/OTHER MODE 0.8%
BICYCLED 0.7%
WALKED 2.9%
PUBLIC TRANSPORTATION 0.7%
WORKED AT HOME 3.1%
CARPOOLED 9.8%
DROVE ALONE 81.9%

Data Source: American Community Survey 5-Year Estimates - Rapid City Data - Table S0801

Performance Measure 3

Number of miles of bicycle and pedestrian facilities

Desired Trend

Baseline Data

2010 MILES OF BIKEWAYS (51 MILES)

= 1 Mile

Data Source: 2010 Rapid City Bicycle and Pedestrian Master Plan

SYSTEM OPERATIONS

GOAL: An efficient and reliable transportation system.
Objective: Minimize travel times, travel costs, and congestion.

Performance Measure 1

Vehicle delay per capita

Desired Trend

Baseline Data

2013 Daily Vehicle Delay/Capita
0.39 minutes

Data Source: 2013 RCAMPO Travel Demand Model
2013 Population – 162,292
2013 Daily Vehicle Hours of Delay – 1,062

Performance Measure 2

Vehicle miles travelled (VMT) per capita

Desired Trend

Baseline Data

2013 Daily VMT/Capita
14.7 miles

Data Source: 2013 RCAMPO Travel Demand Model
2013 Daily Vehicle Miles of Travel – 2,388,669
2013 Population – 162,292

SAFETY

GOAL: A safe transportation system for motorized and non-motorized users.
Objective: Reduce fatal and injury crash rates for all modes.

Performance Measure 1

Change in severe crashes per 100 million vehicle miles travelled (VMT)

Desired Trend

Baseline Data

Severe Crashes Per 100 Million VMT (RCAMPO)

(bar chart, years 2010–2014)

Data Source: SDDOT Crash Database, 2010-2014

Performance Measure 2

Change in all crashes per 100 million vehicle miles travelled (VMT)

Desired Trend

Baseline Data

All Crashes Per 100 Million VMT (RCAMPO)

(bar chart, years 2010–2014)

Data Source: SDDOT Crash Database, 2010-2014

ECONOMIC VITALITY

GOAL: An accessible and integrated transportation system that supports economic vitality.
Objective: Provide adequate transportation facilities to support economic development.

Performance Measure 1

Housing and transportation costs

Desired Trend

Baseline Data

2013 Housing + Transportation Costs
27%
53%
47%
26%

Data Source: H + T Affordability Index (2009-2013 American Community Survey 5-year Estimates), Subarea - Rapid City Area MPO - www.htaindex.org

ENVIRONMENTAL SUSTAINABILITY

GOAL: A transportation system that preserves the environmental, social, and cultural resources of the community.
Objective: Minimize impact on the environment.

Performance Measure 1

Vehicle miles travelled (VMT) per capita

Desired Trend

Baseline Data

2013 Daily VMT/Capita
14.7 miles

Data Source: 2013 RCAMPO Travel Demand Model
2013 Daily Vehicle Miles of Travel – 2,388,669
2013 Population – 162,292

PROJECT DELIVERY

GOAL: Regional collaboration in transportation planning.
Objective: Facilitate coordination between regional projects to reduce project delay.

Performance Measure 1

Number of project delays in previous planning period due to deficient agency coordination

Desired Trend

Baseline Data

No data is currently available for this performance measure. The MPO has committed to start collecting this data and will have baseline data no later than 2017.

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JULY 15, 2015

What is your reaction to the draft fiscally constrained plan presented at this public open house?

I am very impressed with the research &
also with the presentation ✝

Are there specific projects which you believe should be added or removed from the draft fiscally constrained plan?

I didn't see anything, personally, that I
would move up or down ✝

General comments:

Thank you & God bless ✝

You may hand in this sheet before you leave tonight or you can mail this sheet in by Monday July 20th to:

Kip Harrington
City of Rapid City, Community Planning & Development Services
300 6th Street
Rapid City, SD 57701

RapidTRIP 2040

RAPID CITY AREA MPO

Long Range Transportation Plan Update

WAVI Corbine

Mary

Comments

PUBLIC MEETING/OPEN HOUSE | JULY 15, 2015

What is your reaction to the draft fiscally constrained plan presented at this public open house?

Are there specific projects which you believe should be <u>added</u> or removed from the draft fiscally constrained plan?

General comments:

- I would like to see the hours expanded as proposed
- I would like to see the routes expanded to the
    - call centers, Rushmore Crossing The food Bank etc.
- I really like the idea of the bus going out to Box Elder!

You may hand in this sheet before you leave tonight or you can mail this sheet in by Monday July 20th to:

Kip Harrington
City of Rapid City, Community Planning & Development Services
300 6th Street
Rapid City, SD 57701

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JULY 15, 2015

What is your reaction to the draft fiscally constrained plan presented at this public open house?

Nice Start
Keep it dynamic and off the shelf - no dust

Are there specific projects which you believe should be added or removed from the draft fiscally constrained plan?

At least   areas to be considered
Mass Transit to Rapid, EAFB, Rapid Valley plus Hills Region
Pedestrian Travel, Prioritize the WORPs and order in
side walks
Bus System - Senior Needs has a list, Bus to Food Bank,

General comments: Education has Public transit needs to include
field trips

General Comments - Air transit is not here but should
be encourged to develop, Could work hand in hand
with ~~rail that~~ rail as well

Study by intern work on WORPs to de used for part of
the sidewalk installation plan

RapidTRIP 2040
RAPID CITY AREA
MPO
Long Range Transportation Plan Update

Comments

PUBLIC MEETING/OPEN HOUSE | JULY 15, 2015

What is your reaction to the draft fiscally constrained plan presented at this public open house?

Are there specific projects which you believe should be added or removed from the draft fiscally constrained plan?

General comments:

1. I would like to see the extended hours proposal included in the restraint budget.

2. I would like to see the proposed route additions; especially those to the Food Bank Rushmore Crossings, & the call centers in the Valley, & Box Elder.

xxx The clients we serve at WAVI, would greatly benefit from extended hours to provide safe travel to & from work & activities. In addition having transportation available to Box Elder

would increase housing options for many families

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, July 20, 2015 7:48 AM
To:	Steven.Marfitano; Lyle.DeVries; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Public comments from the meeting.

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Ritchie.Nordstrom@rcgov.org [mailto:no-reply@weebly.com]
Sent: Sunday, July 19, 2015 9:47 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Ritchie Nordstrom

Email
Ritchie.Nordstrom@rcgov.org

Comment
I'm interested in several items in this plan. Can we do the following? Mass Transit with the EAFB, Box Elder, Rapid Valley and Rapid City. Can we also reach out to as far away as Spearfish and perhaps even Wall. For Rapid Transit can we get a bus to the Food Bank, and can we address the senior transit needs. For Sidewalks the City needs to look at developing a plan for installing sidewalks. WORPs are very abundant. Can we put a plan together to address some of the sidewalk needs. Can we also look at prioritizing combined sidewalk and bike paths. The Airport is interested in connecting to a bike path plan, can they bring anything to the table? The bike path going to close by WDTI has a

glitch with a property owner. Does that property have a WORP? The Denver Transit Authority is curious about how we are coming along. they would like to get to Cheyenne. Perhaps in the future a transfer point could be established. Good luck.

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Tuesday, July 21, 2015 10:54 AM
To:	Steven.Marfitano; Lyle.DeVries; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: oliver.white@rcgov.org [mailto:no-reply@weebly.com]
Sent: Tuesday, July 21, 2015 10:52 AM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Oliver White

Email
oliver.white@rcgov.org

Comment
Hello,

I attended the presentation on July 15th and I was grateful to have had a conversation with one of your representatives (Shea?) about the importance of mass transit. As a firefighter, I feel very strongly that an emphasis on mass transit would result in better traffic flows, faster responses to emergencies, less vehicle accidents, and less drunk driving. I appreciate all of the work that has gone into this, and I think it's imperative that Rapid City embrace a more integrated public transit system as

it continues to grow.

Best regards,
Oliver White
Public Information Officer
RCFD

Tuesday, July 21, 2015

TO: Kip Harrington

From: Karon Schaack

As you can see from the attached, I unsuccessfully attempted to use the RC gov't email system to contact you.

My original message was sent Thurs, July 18. Subsequently, I rec'd 3 "warning messages" telling me the RC gov't server "did not accept ..."

My concern ab. access from Dunsmore Road on to Sheredan Lake Road is great enough that I want to use the US Mail to put it before you. The content of my original message is highlighted in the attached.

Red Rock Meadows is a large population to rely on a single point of access in and out of the neighborhood. Complicating the situation is the number of vehicles from Countryside and beyond that are already headed to town on Sheredan Lake Road @ 50 mph and do not (over)

have to stop to let the Dunsmore line-up into the traffic flow. People don't want to be late for work and/or school so they take chances.

This is serious and warrants due consideration by the Office of Traffic Planning.

Thank you for your time and attention

Karen Schaack
6927 Dunsmore Road

Gmail
by Google

Karon Schaack <karon.schaack@gmail.com>

Delivery Status Notification (Failure)
1 message

Mail Delivery Subsystem <mailer-daemon@googlemail.com>   Sun, Jul 19, 2015 at 1:58 PM
To: karon.schaack@gmail.com

Delivery to the following recipient failed permanently:

    kip.harrington@regov.org

Technical details of permanent failure:
DNS Error: Address resolution of regov.org. failed: DNS server returned general failure

—— Original message ——

DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed;
    d=gmail.com; s=20120113;
    h=message-id:mime-version:from:to:cc:subject:importance:date
    :content-type;
    bh=u4HY36ztgpFNWkTrN5eKTFG8IVy3VZT6S7J3IJf1OKI=;
    b=WE5XatHHGGUSiciZWTwmZs1hw3UhgTd7M99d+X/wYMIJPvBmHST8HouzTBYegzO91M
    psxIqu5pZPOlf7tdAoGOskaNkfA80/iNMnXyA6qrTnuIcRswVbjNURBeqi3fiqVfLK35
    pwbUA6AzjiiONcPN2AFJerX2AoZZOUSt0bkoYCV1xEKKnKtE8iVL8T2/bghxZKWD+w1B
    H/wZkY+dfu+p8i2f4uUoYlvhYOIlxUuAVPWgwjZZwk9alGkjEYuFcMD7mM4tYXGvrYRm
    wkyYPK6WtlbW94x7JvOHJXYfyKsWbRUT4T6ow+aSHt7WI4OU4B3KIuYP5SVLmZzqDwXk
    Mw5g==
X-Received: by 10.50.61.241 with SMTP id t17mr5736712igr.34.1437064466097;
    Thu, 16 Jul 2015 09:34:26 -0700 (PDT)
Return-Path: <karon.schaack@gmail.com>
Received: from karonspc2014 (host-41-217-107-208.midco.net. [208.107.217.41])
    by smtp.gmail.com with ESMTPSA id o140sm5316213ioe.27.2015.07.16.09.34.24
    (version=TLSv1 cipher=ECDHE-RSA-AES128-SHA bits=128/128);
    Thu, 16 Jul 2015 09:34:25 -0700 (PDT)
Message-ID: <55a7dd11.92a56b0a.4ed5c.fffffaa6@mx.google.com>
MIME-Version: 1.0
From: <karon.schaack@gmail.com>
To: "=?utf-8?Q?kip.harrington@regov.org?=" <kip.harrington@regov.org>
CC: "=?utf-8?Q?jcdc@midco.net?=" <jcdc@midco.net>,
    "=?utf-8?Q?karon.schaack@gmail.com?=" <karon.schaack@gmail.com>
Subject: =?utf-8?Q?traffic_planning?=
Importance: Normal
Date: Thu, 16 Jul 2015 16:27:23 +0000
Content-Type: multipart/alternative;
    boundary="_F604637B-4B12-4033-BFA7-1F00946519D1_"

Hello, Mr. Harrington: I heard your interview on SDPB. I am messaging to put the traffic flow and on/off access on Sheridan Lake Road on your radar. I live on Dunsmore Road, and during the work/school drive time, it is very risky to attempt to get on Sheridan Lake Road from Dunsmore. I am certain that other "feeder" streets in the Countryside areas also experience the same dangers. complicating the situation is the presence of 4 big yellow school buses in the same time window. before a fatal accident occurs, I am asking you to take a look and to communicate with the county on this issue. thank you. Karon L. Schaack, 6927 Dunsmore Road

APPENDIX D.   PUBLIC COMMENT TO DRAFT PLAN

FELSBURG
HOLT &
ULLEVIG

connecting and enhancing communities

August 28, 2015

Draft Long Range Transportation Plan Comments Summary

RAPIDTRIP 2040 – RAPID CITY AREA MPO LONG RANGE TRANSPORTATION PLAN
FHU Reference No. 14-259-01

A public comment period was utilized to gather input regarding the draft version of RapidTRIP 2040. The comment period was active between August 3, 2015 and August 17, 2015.

The follow table summarizes comments received via the project website and through e-mail correspondence. These comments have been reviewed by the Study Advisory Team and revisions have been made to the Plan as indicated.

#	Comment	Actions Taken
1	Monday 7 am as we don't have internet at the ranch, I am using public/ library so I will send a series of emails. We appreciate your patience. 1) the broader issue is the apparent lack of a single regional document and plans which includes Rapid, Pennington, and Meade County; as you know Selador's 4697 acres is located in all three jurisdictions Perhaps the consultants have such a document; please send them copies of our four emails. 2) for example, the Sheridan Lake Road from Dunsmore Road to Norseman Lane. Right now the Rapid plan shows the realignment stopping more than a mile from Norseman. Who has the jurisdiction of the rest of Sheridan Lake Road: Rapid City or Pennington County? For example the sharp curve in Sheridan could be eliminated by following the 1.25 mile section line, most of it on the southern side of Selador's section 30, or even through our section from east to west. 3) as Vicki certainly knows, there is a lot of history, and sensitivity, about Shooting Star Road, e.g. the RCJ article mentioning Wildwood. While it is understandable that some in Wildwood resist the extension of Shooting Star to wildwood and then on to Sheridan Lake Road, one should also remember that Shooting Star/Poppy Lane already contain city water and sewer and both Rapid City and Selador prevailed at the SD Supreme Court to have this entire section line declared open and thus available for public use. Staff a couple of years identified this area as part of a Special Study Area but, to my knowledge, no staff work was done. 4) again in terms of your charter, if you look at the gas pipelines in the greater area of Selador's Holmes Ranch north of Interstate 90 there is an extensive set of arterial pipelines. In contrast in the Sheridan Lake Road area there are very tiny, vein like lines which flow all over the place. Again, it would probably be possible to have a large gas pipeline from Sheridan Lake Road west to Shooting Star and then through the two miles of our section 20 and section 30. 5) Selador voluntarily annexed some acreage into Rapid City to facilitate the construction of the Red Rocks Reservoir; we declined to voluntary annex into Rapid along Deadwood Avenue about 12 years ago. Does this have any bearing on which government is responsible for the present, essentially	No change

	unimproved state of Deadwood Avenue from the HOG dealership to the Meade County line. Again Meade has made extensive improvements to Enchanted, Deadwood, and Haines while the portions in Pennington/Rapid City have lagged behind. end of first email bob borgmeyer	
2	Monday 9am Selador Ranches owned the 4,697 acres since 1958 and we have only sold one acre and that was for the Red Rocks Water Reservoir. Now my family is the sole owner of Selador; we do not have any intrafamily dysfunction. We are one jurisdiction unlike Rapid, Pennington, Meade....We believe that both Selador and Rapid City (and Pennington and Meade) have an opportunity to do some great things,,,,fair enough to the Borgmeyer family and wonderful for the greater Rapid City area. My 50th high school reunion is this year which gives me the following perspectives, for what they are worth: 1) in 1965 Rapid City was slightly smaller than Sioux Falls(we both had only one high school) and Billings was abouit the same size as Rapid. 2) in 2015 Sioux Falls is a multiple of Rapid City and Billings is much larger than Rapid; and neither of them have the Black Hills and Mount Rushmore. 3) when I talk or meet with builders, realtors, engineers from outside South Dakota, it is frequently a Ben Snow type "economic discussion", i.e. tell them about Rapid City and the Black Hills, as they know nothing about us. In contrast, most of them have had some experience or contact with Sioux Falls or Billings. 4) the result here in Rapid comes from many decades of decisions by multiple mayors, staff, council, landowners...no single perpetrator to "blame" (assuming that greater Rapid City should be more similar to Billings and Sioux Falls) 5) then candidate Allender was quoted in the RCJ as being disappointed by the growth of Rapid City 6) many of the macro numbers are disturbing, e.g. Rapid City is the area which has the largest percentage of wages going to rent, per the article in the Washington Post ten days ago. My father frequently said that a person who could live in the Black Hills of South Dakota and make a decent living was a fortunate person....paying more than fifty percent of ones wages for rent doesn't strike me as a "happy" situation. Again, my purpose is not to "rail against" this or that but simply to suggest that playing "small ball", over decades, keeps Rapid relatively smaller than our competitors, and vulnerable to poaching by smaller townships. bob borgmeyer	No change
3	I am completely at a loss to understand why Deadwood Avenue from Interstate 90 to the Meade County line remains in its present state. Even the dangerous curve has not been realigned and some government (Pennington or Rapid?) has been reduced to putting up large signs to warn the bikers. Again, Meade by means of an easement from Selador eliminated its deadly curve. I know that there have been episodic discussions between Rapid City and the landowners there. Again is this a Rapid City or Pennington county issue? also, is it Planning or Public Works? The RCJ had an article two weeks ago in which Buffalo Chip "called out" Rapid City by threatening to entice commercial elements from the Rapid City area to Buffalo Chip and the Sturgis area. I would take this possibility seriously. Essentially a company town has a lot of advantages over a more traditional jurisdiction, let alone the vulnerability which we have all allowed to exist on Deadwood Avenue. Rapid City is not without competition, whether it is a "new boy" on the block like Somerset or Buffalo Chip, or Billings and Sioux Falls. The present state of	No change

	Deadwood Avenue from a road and planning perspective needs a serious "jump start"; please let me know what Selador can do? thank you bob borgmeyer	
4	From my cell phone. .please forgive Executive summary .....need a mechanism to overlay this regional transportation with Comprehensive and FLUP s Re . wheel tax. .who spends this $? I have not copied Shea or Steven at FHU I am available to dialogue or meet with any one. A Deadwood Haines in Meade Penn Rapid from north to south 1 multiple open section lines between Haines and Erickson ranch road 2..major road from Haines through box elder Creek valley to Deadwood Ave 3. Arterial between deadwood and hog back to the east exits 55 and 52 are 3 miles apart. .good access for any consideration of Plan M for Metro plex for civic center with the 80 to 100 acre footprint. B shooting star is 50 percent shorter than sheridan Dunsmore to Clarkson is 1.2 miles. .shorter safer if section line road used thanks for your patience and understanding and time bob borgmeyer Selador Ranches inc	No change
5	We need bike lanes/wide outside lanes for alt. transportation from Mt. View to W. Main along Jackson to continue to the existing bike lanes on Jackson/Hwy. 44. In addition to those we need bike lanes/wide outside lanes for alt. transportation from the Sturgis Road/W. Main junction into downtown.	Added to Needs Plan, Included in Fiscally Constrained Plan
6	Please make wide bike lanes	No change
7	Consider a lane diet on Sheridan lake road. Multiple locations of left turning vehicles requires sudden lane changes. Lane diets have been proven to reduce crashes. The left over space can be striped for bike lanes.	No change
8	Bike friendly lanes through "the gap" for bike commuters.	Included in Needs Plan
9	Please continue the "wide outside lanes" that are along Canyon Lake Drive, Jackson Boulevard and Mountain View!!! The stretch of Jackson from Mt View, continuing North to the intersection with West Main is an excellent choice for re-striping to remove some parking and gain a more complete bike route using "wide outside lanes". This will link up nicely to proved bicycle routes along West Main from the Guard Camp to downtown as future road work allows! Thank you for the improved bike routes, and we all look forward to key connections growing.	Added to Needs Plan, Included in Fiscally Constrained Plan
10	The City of Rapid City needs to consider installing sidewalks on Apolda Street between Sixth and Mt. Rushmore Road. With the bus depot being on that street, pedestrians walking to their destination have no choice but to walk in the middle of the street. This is not safe for anyone.	Added to Needs Plan, Included in Fiscally Constrained Plan

Steven.Marfitano

My apologies, as I meant to forward these earlier. Please make sure these are included in the final report. Thanks!

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

Monday 7 am as we don't have internet at the ranch, I am using public/ library so I will send a series of emails. We appreciate your patience.

1) the broader issue is the apparent lack of a singe regional document and plans which includes Rapid, Pennington, and Meade County; as you know Selador's 4697 acres is located in all three jurisdictions   Perhaps the consultants have such a document; please send them copies of our four emails.

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-----Original Message-----
From: Harrington Kip <Kip.Harrington@rcgov.org>
To: Bob Borgmeyer <borgsinaz@aol.com>; Fisher Vicki <Vicki.Fisher@rcgov.org>
Sent: Fri, Jul 24, 2015 8:45 am
Subject: RE: Transportation/Dunsmore

Our consultant is currently producing the Draft Report, so comments are needed ASAP to be included.

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Bob Borgmeyer [mailto:borgsinaz@aol.com]
Sent: Friday, July 24, 2015 8:44 AM
To: Fisher Vicki; Harrington Kip
Subject: Transportation/Dunsmore

Good morning
when is the latest i can make comments on the transportation plan?
Someone is interest ed in part of section 20
what is the current status of Dunsmore and poppy lane (the rapid city n not Afghanistan one)
Thanks bob borgmeyer

Sent from AOL Mobile Mail

Steven.Marfitano

From: Harrington Kip [Kip.Harrington@rcgov.org]
Sent: Monday, August 10, 2015 3:40 PM
To: Steven.Marfitano
Subject: FW: Transportation Third of Four emails   Executive Summary

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Bob Borgmeyer [mailto:borgsinaz@aol.com]
Sent: Monday, July 27, 2015 9:24 AM
To: Harrington Kip; Fisher Vicki
Subject: RE: Transportation Third of Four emails Executive Summary

Monday 9am
Selador Ranches owned the 4,697 acres since 1958 and we have only sold one acre and that was for the Red Rocks Water Reservoir.
Now my family is the sole owner of Selador; we do not have any intrafamily dysfunction. We are one jurisdiction unlike Rapid, Pennington, Meade....
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4)   the result here in Rapid comes from many decades of decisions by multiple mayors, staff, council, landowners...no single perpetrator to "blame" (assuming that greater Rapid City should be more similar to Billings and Sioux Falls)
5) then candidate Allender was quoted in the RCJ as being disappointed by the growth of Rapid City
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Again, my purpose is not to "rail against" this or that but simply to suggest that playing "small ball", over decades, keeps Rapid relatively smaller than our competitors, and vulnerable to poaching by smaller townships.
bob borgmeyer

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, August 10, 2015 3:40 PM
To:	Steven.Marfitano
Subject:	FW: Transportation/ second email on Deadwood Avenue

Kip Harrington
Planner III
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City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Bob Borgmeyer [mailto:borgsinaz@aol.com]
Sent: Monday, July 27, 2015 8:04 AM
To: Harrington Kip; Fisher Vicki
Subject: RE: Transportation/ second email on Deadwood Avenue

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Rapid City is not without competition, whether it is a "new boy" on the block like Somerset or Buffalo Chip, or Billings and Sioux Falls.

The present state of Deadwood Avenue from a road and planning perspective needs a serious "jump start"; please let me know what Selador can do?

thank you   bob borgmeyer

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To: Bob Borgmeyer <borgsinaz@aol.com>; Fisher Vicki <Vicki.Fisher@rcgov.org>
Sent: Fri, Jul 24, 2015 8:45 am
Subject: RE: Transportation/Dunsmore

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Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, August 10, 2015 3:40 PM
To:	Steven.Marfitano
Subject:	FW: METROPOLITAN: Transportation 4 of 4 email s

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Bob Borgmeyer [mailto:borgsinaz@aol.com]
Sent: Monday, July 27, 2015 11:41 AM
To: Harrington Kip; Fisher Vicki
Subject: METROPOLITAN: Transportation 4 of 4 email s

From my cell phone. .please forgive
Executive summary
.....need a mechanism to overlay this regional transportation with Comprehensive and FLUP s
Re . wheel tax. .who spends this $?
I have not copied Shea or Steven at FHU
I am available to dialogue or meet with any one

A Deadwood Haines in Meade Penn Rapid from north to south
1 multiple open section lines between Haines and Erickson ranch road
2..major road from Haines through box elder Creek valley to Deadwood Ave
3. Arterial between deadwood and hog back to the east

exits 55 and 52 are 3 miles apart. .good access for any consideration of Plan M for Metro plex for civic center with the 80 to 100 acre footprint.

B shooting star is 50 percent shorter than sheridan
  Dunsmore to Clarkson is 1.2 miles. .shorter safer if section line road used
thanks for your patience and understanding and time
bob borgmeyer Selador Ranches inc

Sent from AOL Mobile Mail

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Planner III

Long Range Planning

Community Planning & Development Services

City of Rapid City

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From: Bob Borgmeyer [mailto:borgsinaz@aol.com]
Sent: Friday, July 24, 2015 8:44 AM
To: Fisher Vicki; Harrington Kip
Subject: Transportation/Dunsmore

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Someone is interest ed in part of section 20

what is the current status of Dunsmore and poppy lane (the rapid city n not Afghanistan one)

Thanks bob borgmeyer

Sent from AOL Mobile Mail

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Thanks bob borgmeyer

Sent from AOL Mobile Mail

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, August 10, 2015 7:38 AM
To:	Steven.Marfitano; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Chris@themainstreetmarket.com [mailto:no-reply@weebly.com]
Sent: Friday, August 07, 2015 5:55 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Chris Seeley

Email
Chris@themainstreetmarket.com

Comment
We need bike lanes/wide outside lanes for alt. transportation from Mt. View to W. Main along Jackson to continue to the existing bike lanes on Jackson/Hwy. 44. In addition to those we need bike lanes/wide outside lanes for alt. transportation from the Sturgis Road/W. Main junction into downtown.

Steven.Marfitano

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Sent:	Monday, August 10, 2015 7:38 AM
To:	Steven.Marfitano; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Junglekid5@juno.com [mailto:no-reply@weebly.com]
Sent: Friday, August 07, 2015 6:10 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Curt Larson

Email
Junglekid5@juno.com

Comment
Please make wide bike lanes

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Monday, August 10, 2015 7:38 AM
To:	Steven.Marfitano; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: Jrehorst@rap.midco.net [mailto:no-reply@weebly.com]
Sent: Saturday, August 08, 2015 6:06 AM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
John Rehorst

Email
Jrehorst@rap.midco.net

Comment
Consider a lane diet on Sheridan lake road. Multiple locations of left turning vehicles requires sudden lane changes. Lane diets have been proven to reduce crashes. The left over space can be striped for bike lanes.

1

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Friday, August 07, 2015 1:57 PM
To:	Steven.Marfitano; Lyle.DeVries; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
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Rapid City SD 57701
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kip.harrington@rcgov.org

From: pro7gr@gmail.com [mailto:no-reply@weebly.com]
Sent: Friday, August 07, 2015 1:56 PM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Peter Franz

Email
pro7gr@gmail.com

Comment
Bike friendly lanes through "the gap" for bike commuters.

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Friday, August 07, 2015 10:10 AM
To:	Steven.Marfitano; Lyle.DeVries; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Comments on the Draft LRTP.

Kip Harrington
Planner III
Long Range Planning
Community Planning & Development Services
City of Rapid City
300 6th Street
Rapid City SD 57701
605-394-4120 fax: 605-394-6636
kip.harrington@rcgov.org

From: acmebicycles@rushmore.com [mailto:no-reply@weebly.com]
Sent: Friday, August 07, 2015 10:09 AM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Tim Rangitsch

Email
acmebicycles@rushmore.com

Comment
Please continue the "wide outside lanes" that are along Canyon Lake Drive, Jackson Boulevard and Mountain View!!!

The stretch of Jackson from Mt View, continuing North to the intersection with West Main is an excellent choice for re-striping to remove some parking and gain a more complete bike route using "wide outside lanes".

This will link up nicely to proved bicycle routes along West Main from the Guard Camp to downtown as future road work allows!

Thank you for the improved bike routes, and we all look forward to key connections growing.

Steven.Marfitano

From:	Harrington Kip [Kip.Harrington@rcgov.org]
Sent:	Tuesday, August 11, 2015 9:34 AM
To:	Steven.Marfitano; Shea.Suski
Subject:	FW: New Form Entry: Contact Form

Kip Harrington
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Community Planning & Development Services
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From: katie5271@gmail.com [mailto:no-reply@weebly.com]
Sent: Tuesday, August 11, 2015 9:33 AM
To: Harrington Kip
Subject: New Form Entry: Contact Form

You've just received a new submission to your Contact Form.

Submitted Information:

Name
Katie Parker

Email
katie5271@gmail.com

Comment
The City of Rapid City needs to consider installing sidewalks on Apolda Street between Sixth and Mt.
Rushmore Road. With the bus depot being on that street, pedestrians walking to their destination
have no choice but to walk in the middle of the street. This is not safe for anyone.