

*The Economics of Land Use*



## Technical Report

# Economic Contributions of Enhanced Mobility from E-470

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E-470 Public Highway Authority

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# 1. EXECUTIVE SUMMARY

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## Introduction

### Background

More than 30 years after its creation, E-470 continues to serve the Denver region with transportation infrastructure and mobility options. Economic growth requires roads to transport people, goods, and service providers in an efficient and cost-effective way. The enhanced mobility that E-470 provides is an integral part of the sustained economic health of the Denver Metro Area.

In 2016, EPS examined the economic contributions of E-470 to the Denver Metropolitan Statistical Area (MSA) using travel demand modeling of the region as defined by the Denver Regional Council of Governments (DRCOG)<sup>1</sup>. That analysis focused on the geography of the Influence Area. The analysis blended economic modeling of those outputs by Traffic Analysis Zone (TAZ) aggregations with information from the Bureau of Economic Analysis (BEA), county assessors, the Colorado Department of Transportation (CDOT), and the US Department of Transportation (USDOT). In addition to a retrospective on the findings of a 1986 economic analysis completed before E-470 was built, EPS' major findings reflected the toll roads contributions to:

- Property valuation impacts
- Travel time savings
- Value of time and productivity gains
- Reduction in the economic costs associated with accidents

The purpose of this 2020 study is to both update and enhance the examination of E-470's contributions to regional economic activity and benefits. This study examines each of the major components analyzed previously in addition to:

- Member jurisdiction level impacts
- Value of commercial freight movement along the corridor

### Methodology

The economic value of transportation facilities is much greater than identifying construction impacts and operational and maintenance impacts. It is more than the direct, indirect, and induced effects of those activities. EPS' approach to characterizing the value of these facilities is one that reflects the services in time and space that it provides not only users, but residents and businesses of the region.

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<sup>1</sup> For the purposes of this study only, the terms "Denver region" and "DRCOG Planning Area" are synonymous. They include 11 counties: Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, and Weld.

In general, EPS' approach is guided by the intent to avoid mere presentation of traditional static economic impacts. It is also guided by the intent to avoid the chicken and egg argument often surrounding debates of land use causality (e.g., but for this roadway, would businesses X, Y, and Z have located here or even in the region?). It is also guided by the observation that such analysis that does seek to extract and explain causality often becomes rooted too deeply in tenuous assumptions and the necessity that its audience be well-versed in statistical analysis.

There is analysis in this study, however, that requires expertise in real estate analysis and economic and travel demand modeling, but all attempts have been made in designing this methodology to utilize key outputs and metrics of economic and travel demand modeling that reflect the very nature and benefit a transportation facility provides its users.

As such, the outputs are used to characterize the value to households, to business, and to the region in terms of time and money. As noted above, this analysis update and enhancement includes discussion of the contributions at different geographic levels within the Influence Area.<sup>2</sup>

Even as a tolled roadway, the value it creates often measurably exceeds the cost of the toll for each traveler. That is, without such roadways, not only would regional business and leisure travelers find that their journey takes considerably longer, but that surrounding roadway networks would be pushed beyond design capacity, yielding increased vehicular travel time, decreased regional productivity and output, and decreased quality of life. Moreover, surrounding jurisdictions would be pressed to find sources of public revenue to pay for ROW widening, increased capacity, and lane miles, as well as increased annual operations and maintenance costs. Beyond that, without efficient and well-maintained divided lane highways (such as toll roads), vehicle miles travelled would filter onto arterials, collectors, and local roads, where rates of fatality, accidents, and injuries are considerably higher. In summary, the approach to this project is guided by an understanding that the benefits of a roadway system are:

- Reduced vehicle hours travelled (VHT), which enhances quality of life
- Increased productivity and economic output
- Enhanced mobility facilitates higher intensity land uses, augmenting land use supportability
- Divided-lane highways are more efficient and safer

As such, the following questions were used as the guiding framework for this update:

- How has travel time savings been impacted in the last 4 years?
- What is the value of that time?
- How has the level of economic activity within the Influence Area changed?
- How have property valuations changed?
- How have the economic costs associated with accidents changed?
- What is the economic value of commercial goods movement along the 47-mile corridor?
- How do E-470's member jurisdictions benefit?

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<sup>2</sup> See **Figure 2**.

## Summary of Findings

These findings taken in aggregate yield an important conclusion about the provision of major transportation facilities in today's environment of transportation network funding. That is, as a single toll road, the value this facility creates for the region, for individuals and businesses far exceeds the price of toll transactions to the region. Whereas a roadway such as E-470's that is built or maintained without a tolling framework would not only require higher rates of regional taxation, subject to voter approvals, it would also not likely have been funded or built as quickly. As a result, the benefits quantified in this study of enhanced regional economic output would either not be realized to the same degree (because of lower funding available and slower project-to-project timing) or only be realized over a much longer period of time. Reflecting the series of questions established in the introduction above, the following are the major findings of this study.<sup>3</sup>

### **1. The mobility created by E-470 facilitates economic activity and population growth within its Influence Area.<sup>4</sup>**

In 2015, 528,000 jobs were located in the Influence Area representing 32 percent of the MSA's employment (see **Figure 8** on page 15). During the subsequent five years, the Influence Area captured 46 percent of regional employment growth (52,000 jobs), increasing the number of jobs locally to 580,000. As a result, direct economic activity increased from approximately \$53 billion to \$62 billion by 2020 (see **Table 6** on page 28).

### **2. E-470 facilitates land use development.**

In the last four years, total property valuations within the Influence Area (see **Figure 2** on page 6) have increased by nearly \$46 billion within the Influence Area (see **Table 18** on page 39). In 2015, there was \$63 billion in property valuation (see **Table 16** on page 38), and by 2019, property valuation had increased to \$109 billion, including the escalation of existing property as well as the development of new residential and non-residential land uses (see **Table 17** on page 39).

### **3. E-470 saves toll customers as well as MSA residents millions of hours of travel time per year.**

Drivers in the MSA (even those that do not use the toll roads) benefit from the enhanced mobility provided by E-470. In 2015, the region's drivers spent 14.8 million fewer hours in their vehicles than if E-470 had not been built. By 2020, that travel time savings had increased to 43.2 million hours. For households, that translates to approximately 1 hour of travel time savings per month in 2015 increasing to 2.5 hours by 2020 (see **Figure 13** on page 19).

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<sup>3</sup> An appendix provides more detailed results supporting the modeling and analysis used, as well as an appendix that provides detailed estimates of the commercial freight movement analysis by jurisdiction.

<sup>4</sup> The boundaries of the Influence Area are consistent with the previous analysis of E-470's regional economic contributions and consistent with the analyses completed periodically as a component of socioeconomic reviews for Traffic and Revenue studies.



**4. Travel time savings bring economic benefits not only to tollway users, but to all businesses and households in the region.**

Travel time savings are quantified through a benefit-cost analysis; that is, the benefits of a mobility enhancement such as E-470 compared to the costs of using it. In 2015, it was estimated that E-470 benefited the region a net of \$26 million after factoring total toll transaction fees of \$173 million and a gain of 14.8 million hours of travel time saved. By 2020, E-470 is estimated to benefit the region by a net of approximately \$355 million after factoring approximately \$249 million in toll transaction fees, and a gain of 37.5 million hours of travel time saved (see **Table 3** on page 20).<sup>5</sup>

**5. Offering reliable, faster, and a safer form of vehicular travel, E-470 facilitates trips that reduces the overall number of regional fatalities, accidents, and injuries.**

Fatalities, accidents, and injuries per million vehicle miles traveled (MVMT) are higher on undivided roads and highways. Modeling the regional roadway network with and without E-470 suggests that drivers would have traveled an additional 690,000 miles per day on arterials and collectors in 2015 and an additional 1.4 million miles per day in 2019 (see **Table 2** on page 18). In 2015, this would have resulted in an additional 205 incidents (vehicular damage, injuries, and fatalities) per day (see **Table 31** on page 43) and an additional 650 incidents per day (see **Table 32** on page 44) in 2020. In terms of economic costs avoided, E-470 saved drivers an estimated \$22.5 million and \$70.3 million in 2015 and 2020, respectively.

**6. E-470 facilitates regional mobility, productivity, and output beyond its immediate influence area and into the larger MSA.<sup>6</sup> As a result, an ever-expanding portion of GRP, employment, and population is attributable to this enhanced mobility.<sup>7</sup>**

E-470 has been a part of the regional transportation network for more than 30 years, but because its location at the periphery of the region around which residential and non-residential growth now appears more densely, E-470's influence on facilitating economic activity has only more recently become apparent.<sup>8</sup> In 2015, economic modeling suggests that 0.2 percent of the MSA's workforce and 0.7 percent of its population would not have been supportable. By 2020, it is estimated that this dependency increased to 1.3 percent of the workforce and 1.1 percent of population (see **Table 5** on page 24, as well as **Figure 14** and **Figure 15** on page 23).

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<sup>5</sup> Given the known and potential impacts of the COVID-19 pandemic and shelter-in-place mandate from the State of Colorado through a portion of March and the month of April, travel patterns have been substantially impacted, and, as a result, transactions will be affected in 2020. Given the notable year-over-year transaction increases between 2015 and 2019, however, EPS has assumed that toll transactions and toll revenues could be the same for 2020 as in 2019.

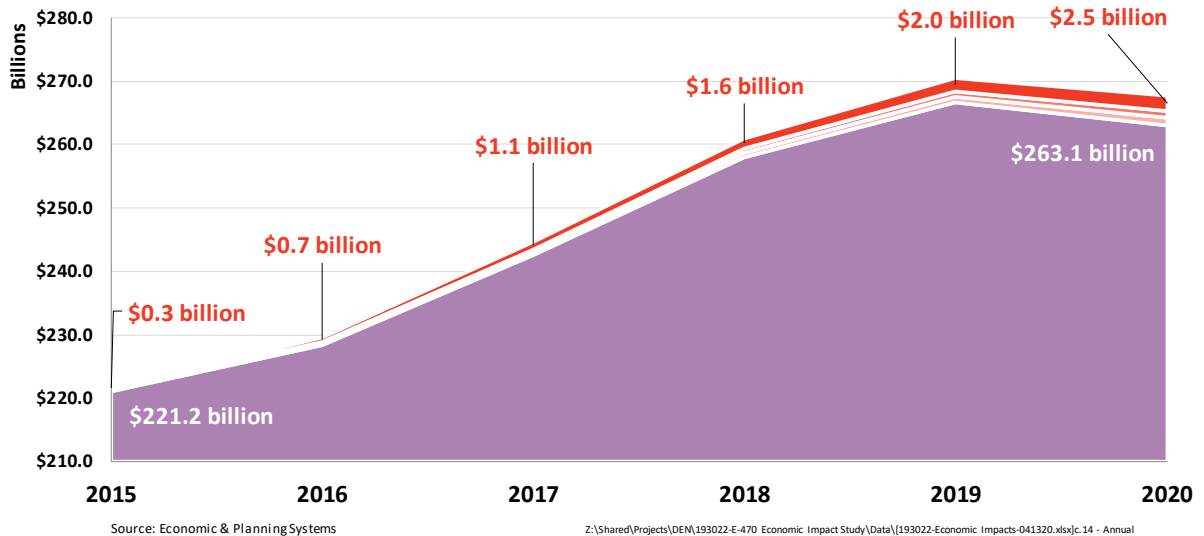
<sup>6</sup> Defined as the entirety of DRCOG's 11-county planning area.

<sup>7</sup> The intent of this study is to provide characterizations of regional economic impacts that reflect the service of enhanced mobility that E-470 provides rather than to engage in arguments of land use (and thus value) causality. That is, it is difficult and tenuous to confidently conclude that some degrees of (let alone all) land uses immediately surrounding E-470's tollway are located where they are entirely because of the tollway. Site development decisions are made considering a multitude of locational and economic factors. From this perspective, the intent of this part of the analysis is to quantify the magnitude of employment, population, and property value within the boundaries of the influence area but not claim that all of it is there because of E-470; rather, that E-470 is a facilitator but not the sole cause of this metric.

<sup>8</sup> Select link analysis was used to examine the magnitudes of locations of denser land use development patterns (and thus the magnitudes of employment and population) that would only be supportable with E-470, resulting in regional vehicle hours traveled that aligned with the base case scenario.

Illustrated in **Figure 1**, the MSA's economy (as measured by GRP) has grown at approximately 3.9 percent per year since 2015.<sup>9</sup> Without the mobility benefits provided by E-470, it is estimated that GRP would have grown by only 3.7 percent per year. In 2015, total GRP was approximately \$221.2 billion, and the E-470 impact accounted for \$252 million or 0.1 percent of GRP. In 2020, GRP is estimated to be \$263.1 billion and E-470's impact is estimated to have grown to \$2.5 billion or 0.9 percent of GRP.

**Figure 1 E-470-Dependent Socioeconomic Activity as Portion of GRP, 2015-20**



**7. E-470 facilitates the substantial movement of commercial goods along its corridor.**

For every truck that utilizes E-470 to bring goods to industry within the Influence Area, two trucks utilize E-470 to ship value-added goods to locations outside of the Influence Area (see **Table 41** on page 51). That is, annually, 300,000 commercial vehicles bring goods into the area along E-470 and 600,000 commercial vehicles depart from locations within the Influence Area carrying value-added goods. Another 113,000 commercial vehicles pass through (north- and south-bound) the area along the highway originating and terminating elsewhere.

**8. Goods-producing industries within the E-470 corridor contribute an estimated \$4.3 billion of net value-added to commercial goods leaving the Influence Area.**

The value of commercial freight entering the Influence Area along E-470 is carrying \$3.7 billion of goods, whereas it is estimated that the value of goods leaving the Influence Area along E-470 is \$8.0 billion annually, a net of \$4.3 billion of value-added commercial freight (see **Table 43** on page 53).

<sup>9</sup> For purposes of analysis, EPS assumed that overall GRP for the Denver MSA will decline by 1.0 percent in 2020 given the impacts of the COVID-19 pandemic, the closure of non-essential workplaces, and the shelter-in-place mandate by Colorado. This reduction in GRP compares to the overall 1.3 percent year-over-year decline in GRP that occurred in the 7-county MSA between 2008 and 2009.

## 2. TECHNICAL ANALYSIS

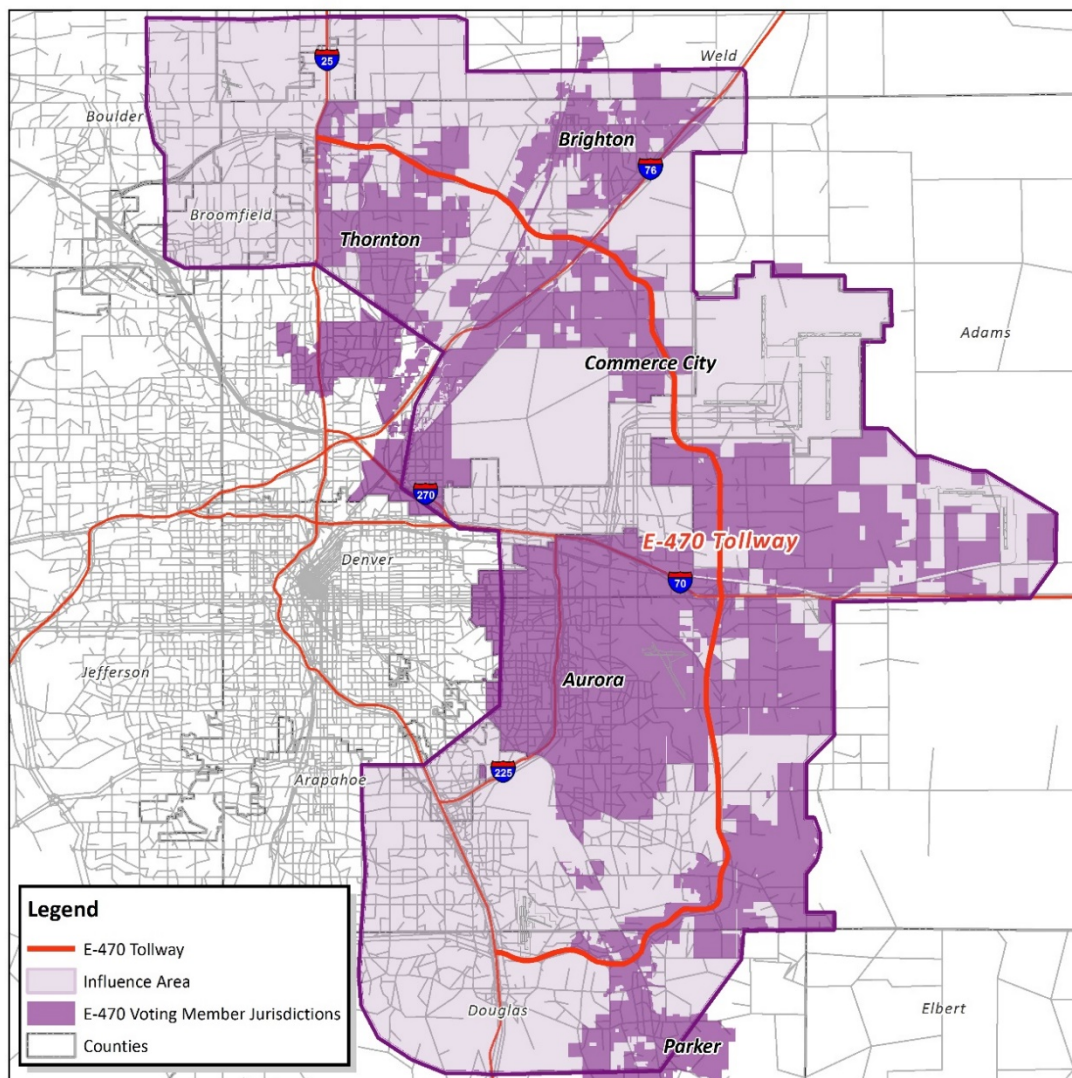
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This chapter describes the approach, objectives, metrics, and data sources used in the analysis. It provides detailed findings that respond directly to the study's guiding questions.

### Analysis Geography

The primary geography used in this analysis, the E-470 Influence Area, is defined by the boundaries illustrated in **Figure 2**.<sup>10</sup> Subcomponents include socioeconomic data at the Traffic Analysis Zone (TAZ) level. These data are utilized in the travel demand modeling scenarios, as well as economic modeling to quantify economic activity and E-470's economic contributions.

**Figure 2 E-470 Influence Area and Voting Member Jurisdictions**



<sup>10</sup> The boundary is identical to the area of influence used in E-470's traffic and toll revenue forecasting processes for consistency, as it has been determined to represent the area in which land use developments and trip generators are most significant for E-470.

## **Travel Demand Modeling**

EPS' approach involved constructing network scenarios and a series of analyses using the Denver Regional Council of Governments' (DRCOG) travel demand model with the assistance of CDM Smith. The process of completing numerous travel demand model scenario "runs" yielded metrics necessary to estimate E-470's contributions to regional travel time savings, land use dependency, accident avoidance, and commercial freight movement.

Because travel demand modeling is one of the core functions of metropolitan planning organizations, such as DRCOG, this methodology leverages information, modeling techniques, and therefore, the necessary outputs (e.g., VHT, VMT) that are available to determine economic value of mobility benefits.

### **Baseline Scenario**

The baseline scenario utilized the roadway networks in DRCOG's model for 2020, as well as socioeconomic data identified in the regional Traffic Analysis Zone (TAZ) data. In identifying the baseline scenarios of roadway networks, it is not necessarily the scenarios themselves that are useful, but rather the differences between their outputs and the outputs of the modified roadway network scenarios and the modified socioeconomic data scenarios that are important. As such, outputs from the baseline scenario included VHT and VMT by roadway type and location.

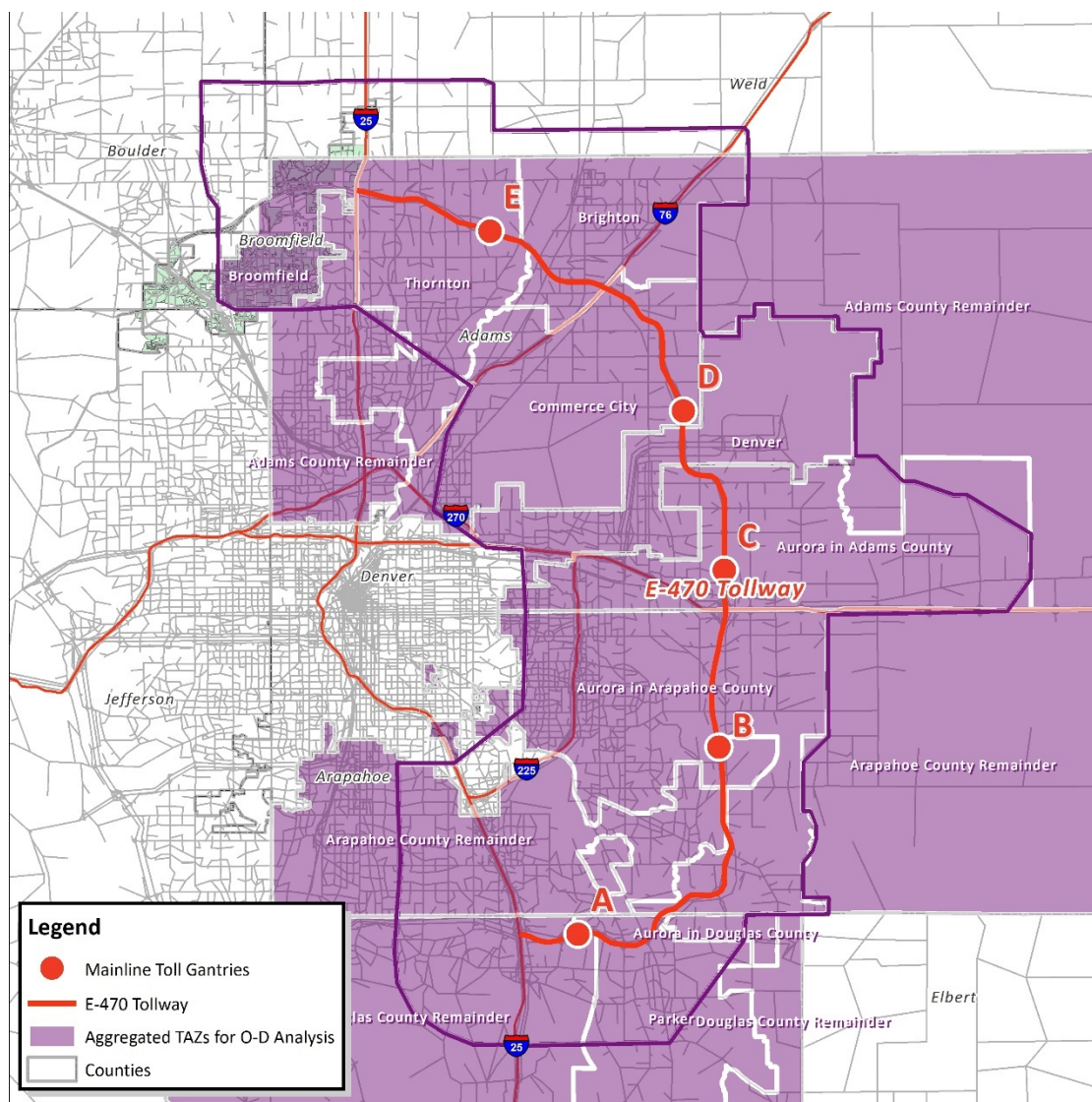
### **Modified Roadway Network Scenario**

The modified roadway network scenario for 2020 utilized existing socioeconomic TAZ data but re-ran the travel demand model with a roadway network that excluded E-470. Frontage and arterial roads in respective corridors were reconnected as proxies for alternative corridor facilities. Outputs of these scenarios also yielded respective VHT and VMT outputs by location and roadway type.

### **Origin-Destination Analyses**

This study utilizes select link analysis to identify the spatial distributions (by TAZ) of trip origins and destinations through pre-selected points along the E-470 corridor, which are identified as E-470's five mainline toll gantries. This supplemental analysis of origin-destination (O-D) data was completed to collect trip generation characteristics, VHT, and VMT by aggregated TAZs that conformed to components of E-470's member jurisdiction boundaries. **Figure 3** illustrates the toll gantries used for the select link analyses, as well as the individual jurisdictional components of the member jurisdictions. In addition to VHT and VMT by roadway classification, metrics included characteristics of both passenger car (i.e., non-commercial vehicle) and commercial vehicle trips passing through, entering, and terminating within the Influence Area, as well as those originating within the Influence Area and terminating outside.

**Figure 3 E-470 Influence Area Toll Gantries and Aggregated TAZs for O-D Analysis**



## Analysis Metrics

### Travel Time Savings

There are two relevant metrics used in the travel demand modeling and analysis of travel time savings. Vehicle hours traveled (VHT) and vehicle miles traveled (VMT) are two common metrics that quantify elements of time and distance of vehicular travel that can be individually transformed into metrics of economic value, such as value of time and the economic costs of accidents.

#### **Vehicle Hours and Miles Traveled**

VHT specifically identifies the number of average hours per day in a vehicle (an average of commercial and private) by roadway classification (i.e., freeways, principal arterials, minor arterials, collectors, frontage roads, and HOV lanes). VMT specifically identifies the average number of miles traveled per day in a vehicle by roadway classification.

In this analysis, it was necessary to create a set of comparative VHT and VMT statistics for 2020 with DRCOG's underlying data to be measured against the VHT and VMT statistics generated through the 2016 analysis process. As noted previously (in the discussion of Travel Demand Modeling on page 7), the first set of scenarios produced VHT and VMT statistics at the county level for the roadway network as it exists. The second set of scenarios produced VHT and VMT (see also page 7) by county for the roadway network as it might have looked without E-470.

#### **Value of Time**

The U.S. Department of Transportation (USDOT) recommends that analysts use hourly value of travel time developed with annual person-miles of travel (PMT) data from the 2001 National Household Travel Survey for such analyses.<sup>11</sup> Factors are provided for local and intercity travel, as well as broken down by personal, business, or all purposes. For this analysis, EPS has used the recommended hourly value of travel time for all purposes of local trips. The factor itself is a measure of the value of time travelers place on each hour spent in all surface modes of transportation, including vehicle and mass transit except high-speed rail.

### Economic Activity

#### **Basic Metrics**

The basic regional metrics identified in this analysis include employment and earnings, population, and GRP. Employment includes the number of full- and part-time jobs, measured in terms of wage and salary position, not including sole proprietor employment. Earnings are the wages and salaries of full- and part-time workers including salaried and contract labor and benefits paid by the employer.

#### **Standard Economic Impacts**

In terms of quantifiable economic contributions, the metrics described above were run through IMPLAN input-output modeling software.<sup>12</sup> IMPLAN is structured to account for trade flows and industry profiles within the defined economic unit — in this case, the 7-County Denver

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<sup>11</sup> see <http://nhts.ornl.gov/>

<sup>12</sup> Minnesota IMPLAN Group, Inc. (MIG), Hudson, WI, [www.implan.com](http://www.implan.com)



MSA.<sup>13</sup> The analysis provides an estimate of the multiplier effects, or the “ripple effect”, of an “impact” or “demand” from industries within the area economy. Three main components to the characterization of economic impacts are as follows:

- Direct Impacts are the economic activities carried out by a specific industry, such as the labor it employs; wages; property and sales taxes paid; and the goods, services, and real estate it purchases or leases in its operations.
- Indirect Impacts derive primarily from business-to-business activities, such as the lease and purchase of equipment, legal, financial, and administrative services in the process of conducting direct activities. These impacts will quantify the extent of that integration in terms of jobs, contribution to gross regional product (GRP), and wages.
- Induced Impacts are the ripple effects of the direct and indirect impacts on the larger economy. They include the local expenditures made by households of the direct and indirect industry jobs. These effects are the increases in employment and expenditure created by successive rounds of local spending and hiring, as individuals or firms associated with the industry buy goods and services in the local economy.

### **Travel Time-Based Economic Impacts**

The economic impact analysis identifies several measures of economic activity, including output (i.e., total sales or spending), earnings (salaries plus employer-paid benefits including proprietor income), employment (jobs), and value-added (equivalent to GDP). State, local and federal fiscal impacts are also estimated, including payments such as property and sales taxes associated with the economic activity resulting from E-470’s impacts.

### **Influence Area Economic Activity Metrics**

The analysis of activity within the Influence Area includes metrics of economic activity as identified above for the region, as well as property valuation statistics. For comparison, each metric identified for the Influence Area is compared to the MSA — portion of employment, population, GRP, and property valuation as a percent of the MSA.

### **Economic Cost of Avoided Accidents**

This metric quantifies the economic value of traffic incidents, such as accidents, property damage, injuries, and fatalities that are avoided each year because of the safer form of travel offered by E-470. According to research at federal and state levels, incidents of accidents, property damage, and fatality are lower on divided roadways such as highways, freeways, and expressways, than they are on collectors, arterials, and local roads.

The analysis uses annual VMT outputs by roadway type, such as freeways, expressways, principal arterials, minor arterials, and collectors. Traffic incident data from CDOT were used to estimate the number of traffic incidents occurring under each network scenario. Statistical values associated with each incident type from the USDOT were then used to estimate the total difference in costs associated with incidents under the different network scenarios.

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<sup>13</sup> The Denver MSA is defined as the collection of the 7 counties in the DRCOG modeling area: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson counties. This differs from the traditional 7-county definition of the Denver MSA, which includes Boulder County. IMPLAN, however, does not include Boulder County in its source files as a component of the Denver MSA.

## Data Sources

The following data sources were used directly in the analytical process described in this chapter. Data supporting this analysis are:

- U.S. Census Longitudinal Employer-Household Dynamics: This data source enables users to collect and analyze block data on employment magnitudes by industry. The data source is, however, more commonly used to document and analyze in- and out-flow of workers and residents from a select region, i.e., in- and out-commuting patterns. In this analysis, block-level data were used to identify and verify magnitudes of employment at sub-municipal levels (see **Figure 17** and **Figure 18** on page 26 and 27).
- Bureau of Labor Statistics (BLS): The BLS is a part of the U.S. Department of Labor and the principal agency responsible for measuring labor market activity in the economy.<sup>14</sup> Its Quarterly Census of Employment and Wages (QCEW) program publishes a quarterly count of employment and wages reported at the county, MSA, state and national levels by industry.<sup>15</sup> The QCEW data in this study have been used to calibrate job levels by county throughout the MSA.
- Bureau of Economic Analysis (BEA): The BEA is an agency of the Department of Commerce, and along with the Census Bureau it is part of the Department's Economics and Statistics Administration. The BEA produces economic accounts such as national, regional, and local gross domestic and regional product and employment statistics.<sup>16</sup> BEA data were collected to analyze Gross Regional Product (GRP) data for the U.S. and Denver MSA.<sup>17</sup>
- County Assessor Parcel Data: Parcel data was used to determine property values within the E-470 Influence Area. Data was acquired from Denver, Douglas, Arapahoe, Adams, and Broomfield county assessors, all of which represented the year 2019. Depending on the original data, property types were assimilated to uniform classifications, such as residential and commercial, whereas input data had numerous disaggregation of property type (see **Table 7** on page 28).
- Colorado Department of Transportation: Primary data used in this analysis came from CDOT's 2012 Accidents and Rates Book.<sup>18</sup> That report describes the number of incidents and rates of traffic crashes, such as property damage, injuries, and fatalities for the calendar year 2012. CDOT's data sources include computerized traffic volume data from CDOT's Division of Transportation Development, and computerized crash data gathered and maintained by the Traffic Records Unit of the Safety and Traffic Engineering Branch (see **Table 8** on page 29).
- U.S. Department of Transportation: The USDOT provides guidance to analysts conducting cost-benefit analyses that relate to roadway improvements and usage. Data from USDOT informed the statistical value of property damage, injuries, and fatalities used in the analysis of E-470's safety impacts, as well as the analysis of E-470's time travel savings (see **Table 9** on page 29).

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<sup>14</sup> See <https://www.bls.gov/bls/infhome.htm>

<sup>15</sup> See <https://www.bls.gov/cew/>

<sup>16</sup> See <https://www.bea.gov/about/mission.htm>

<sup>17</sup> Data were collected for the 7- and 11-county areas.

<sup>18</sup> EPS investigated whether CDOT had published more recent data but identified that the compilation of 2012 statistics is still the most recent comprehensive reporting of necessary granularity of data.



- 2016 E-470 Economic Impact Study: To provide this report with depth and perspective, EPS utilized the previous report and supporting data (compiled where appropriate) to present a historical context to the change in E-470's regional economic contributions.
- IMPLAN regional accounts: Regional accounts data used in this study represent the value of final demand (output) by industry for every industry at the 2-digit North American Industry Classification System (NAICS) level. These data, referred to as input-output data, are derived from the BEA's "make" and "use" tables at the national levels, which quantify the value of output "made" by different industries and "used" by different industries to produce their respective output. Overall, input-output modeling is valuable to understand the degree to which "impacts" such as specific industries, developments, or even policies ripple through a regional economy.
- E-470 toll user records: Historic records on License Plate Toll (LPT) customers and Express Toll Account customers were obtained by year for 2016 through 2019 by zip code. Analysis of these data served to identify magnitudes of usage by geography throughout the MSA and used in conjunction with the travel demand modeling analysis process to identify origins and destinations of vehicles passing through specified locations along E-470.
- Vehicle Inventory and Use Survey:<sup>19</sup> The VIUS from 2002 is the most recent dataset providing physical and operational characteristics of the nation's truck population. The VIUS data extracted for this study is for Colorado. The sample covered private and commercial trucks registered (or licensed) in the United States as of July 1, 2002. The survey excluded vehicles owned by federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to January 1, 2002. Data were analyzed as to the average empty and loaded weight of 2+ axle commercial vehicles in Colorado, as well as the percent to which the sample were loaded (see **Table 39** on page 49).
- Freight Analysis Framework:<sup>20</sup> The Freight Analysis Framework (FAF) data are produced with a variety of underlying data sources through a partnership between BTS and FHWA. FAF data quantify freight movement among states and major metropolitan areas by all modes of transportation. The FAF data on which this economic impact analysis is grounded provides estimates for tonnage and value by regions of origin and destination, commodity type, and mode. For this analysis, freight movement data in and out of the Denver-Aurora Combined Statistical Area were extracted (see **Table 40** on page 50).

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<sup>19</sup> <https://rosap.ntl.bts.gov/view/dot/42632>

<sup>20</sup> <https://faf.ornl.gov/fafweb/Default.aspx>

### 3. FINDINGS

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This chapter provides greater detail of the study's findings, data, analysis, and methodologies.

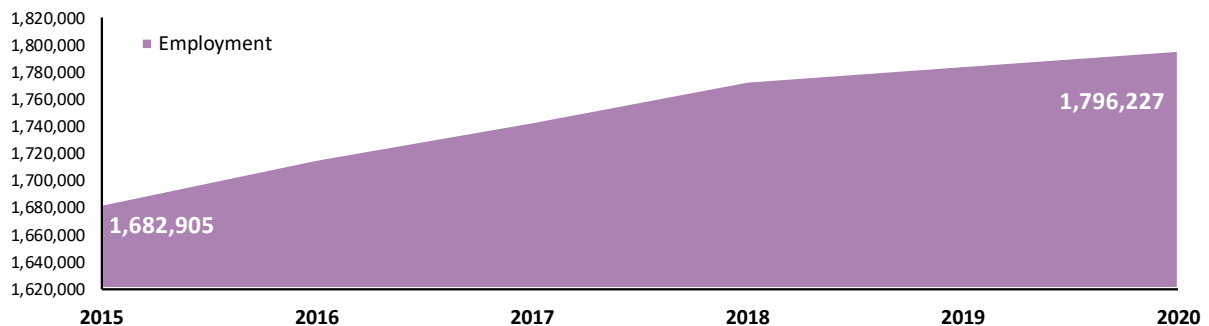
#### Regional Context

This section of the report is included to provide context for the analysis and estimates of E-470's impact on the regional economy and its population. It establishes observed employment and population counts in the DRCOG modeling area, as well as GRP against which estimates of employment, population, and GRP without E-470 are compared later in the chapter.

#### Employment and Population

**Figure 4** illustrates employment growth between 2015 and 2020, the starting and ending point of this analysis. Using socioeconomic data tied to TAZs within the DRCOG planning area, DRCOG estimates employment of approximately 1.7 million in 2015 increasing to 1.8 million by 2020, which translates to average year-over-year growth of 1.3 percent. Changes during intervening years have been extrapolated using Bureau of Economic Analysis (BEA) data.

**Figure 4 Denver MSA Job Growth, 2015-20**

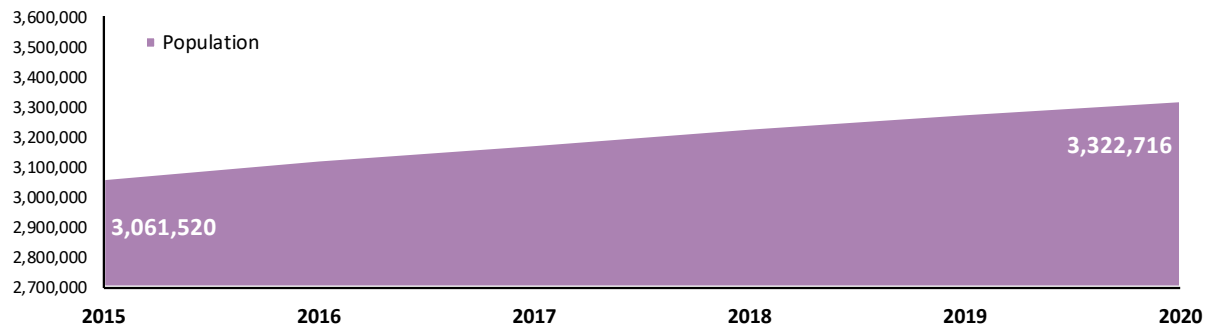


Source: DRCOG; Economic & Planning Systems

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**Figure 5** illustrates population growth between 2015 and 2020. Again, using socioeconomic data tied to TAZs within the DRCOG planning area, DRCOG estimates total population in the 7-county MSA was approximately 3.1 million in 2015 increasing to more than 3.3 million by 2020. This growth translates to a 1.7 percent year-over-year rate of growth. BEA (and U.S. Census) data used to extrapolate changes for the intervening years.

**Figure 5 Denver MSA Population Growth, 2015-20**



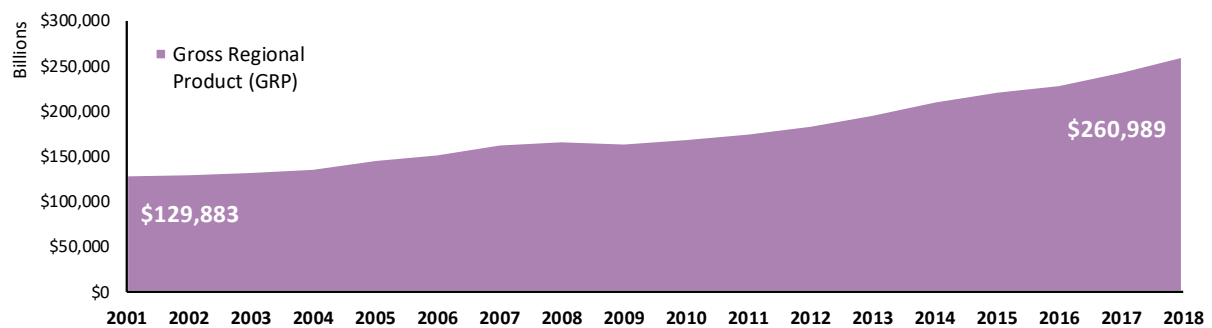
Source: DRCOG; Economic & Planning Systems

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## Gross Regional Product and Productivity

Over the past decade and a half, gross regional product (GRP) in the MSA has expanded at an average of 4.0 percent per year, as illustrated in **Figure 6**. Growth in GRP is frequently characterized by two major components: employment and productivity. As documented in **Table 15** on page 38, employment growth over the same period average 1.8 percent per year, implying that productivity increases have occurred at an average of approximately 2.2 percent per year. As shown, GRP in the 11-County MSA doubled from \$130 million to \$261 million in 2018.

**Figure 6 Gross Regional Product for 11-County Denver MSA, 2001-18**

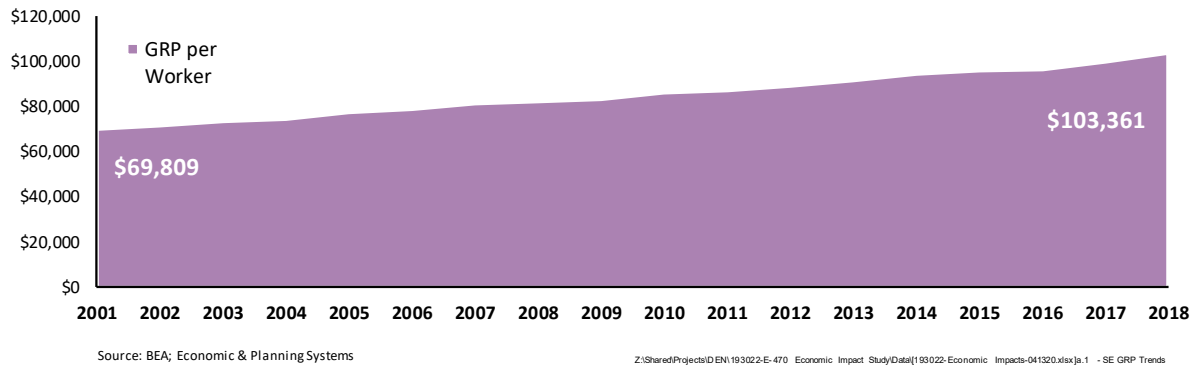


Source: BEA; Economic & Planning Systems

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**Figure 7** illustrates a proxy metric for productivity; that is, total GRP divided by total employment. In this way, productivity growth is estimated to have increased from approximately \$69,800 per worker in 2001 to slightly more than \$103,300 per worker in 2018. This information has been utilized to estimate GRP within the E-470 Influence Area, as well as the portion of the MSA's GRP that is dependent on the travel time savings afforded only by the presence of E-470 (see discussion of **Table 5** on page 24).

**Figure 7 GRP per Worker (Productivity) for Denver MSA, 2001-18**



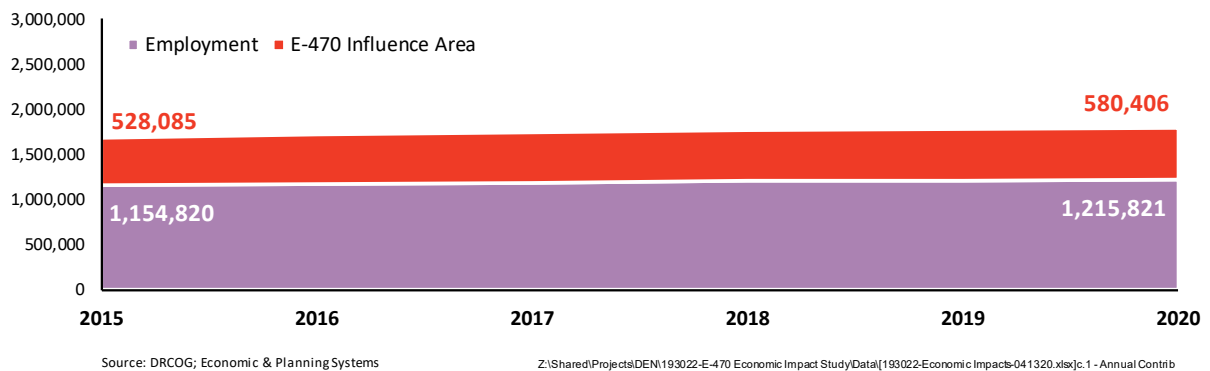
## Influence Area Context

This section provides employment, population, and GRP trends within the Influence Area.

### Employment and Population

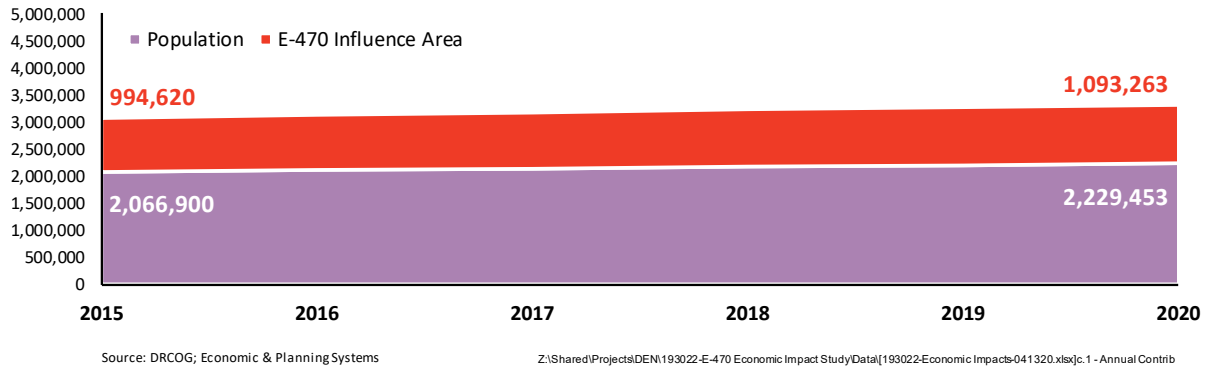
**Figure 8** illustrates Influence Area employment growth between 2015 and 2020. Using socioeconomic data tied to TAZs, it is estimated that employment in the area grew from 528,100 in 2015 to 580,400 by 2020, which translates to average year-over-year growth of 1.9 percent, compared to an average 1.0 percent year-over-year growth in the areas outside the Influence Area. Employment in the Influence Area currently (2020) accounts for 32 percent of the 7-County MSA jobs.

**Figure 8 Influence Area Job Growth, 2015-20**



**Figure 9** illustrates Influence Area population growth between 2015 and 2020. Using socioeconomic data tied to TAZs, it is estimated that population in the area grew from 994,600 in 2015 to 1.1 million by 2020, translating to average year-over-year growth of 1.9 percent, compared to an average 1.5 percent year-over-year growth in the areas outside the Influence Area. Population in the Influence Area currently (2020) accounts for 33 percent of the 7-County MSA jobs.

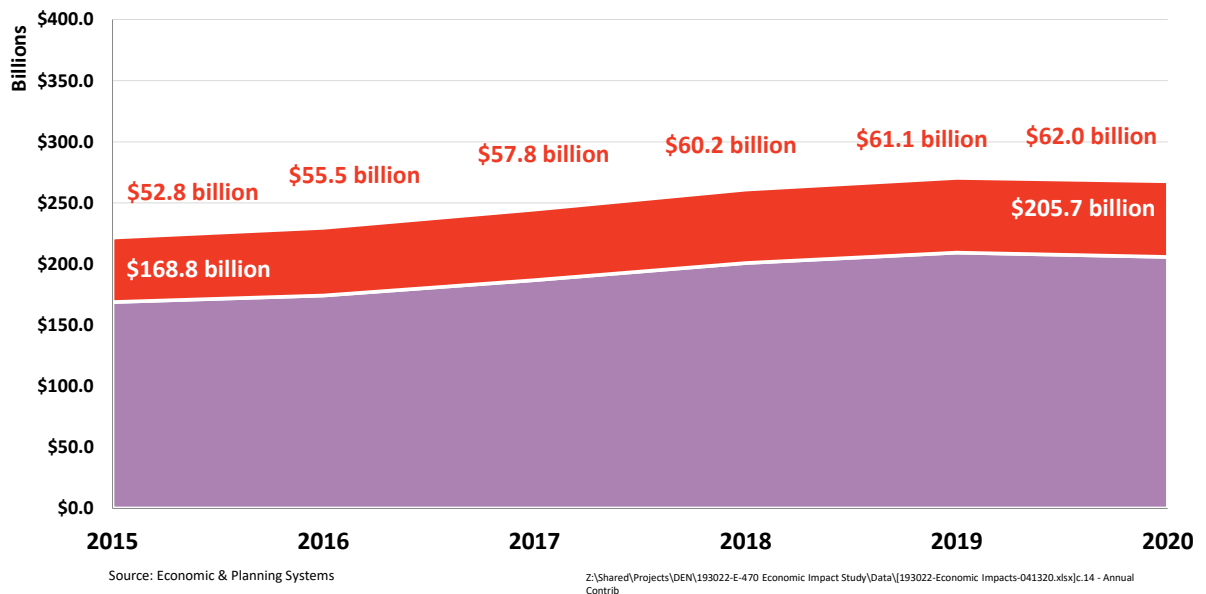
**Figure 9 Influence Area Population Growth, 2015-20**



## Gross Regional Product and Productivity

Using IMPLAN input-output modeling, it is estimated that GRP (value-added) in the Influence Area, compared against the 11-county MSA, grew from \$52.8 billion to \$62.0 billion between 2015 and 2020, as illustrated in **Figure 10**. This increase translates to average year-over-year growth of 3.3 percent compared to 4.0 percent year-over-year growth in GRP outside the Influence Area.

**Figure 10 Influence Area GRP, 2015-20**



## Travel Time Savings

This set of findings relates to the question “how much time does E-470 save drivers?” This section details the annual and daily travel time savings for the region and for individuals in 2015 and 2020. In theory, aggregate travel time savings benefit businesses and households, which translate to aggregate economic impacts. At a more granular level, variation in economic impacts could be measured at a geographic, industrial, demographic, and income-based level. Broadly, however, business in aggregate stands to directly benefit from workers being available to work longer hours, which translates to greater productivity, output, profits, and public tax revenues. Households also stand to benefit directly from lower transportation costs associated with gasoline and vehicular maintenance, as well as from either an increased quality of life (i.e., not spending as much time in a vehicle) or greater earnings potential (if a portion of their travel time savings is reallocated in part to working hours there is more productivity). These impacts, in turn, drive business-to-business and household spending demand for other products and services, which also leads to demand for more labor.

## Travel Demand Modeling Outputs

The following presents the three main outputs of travel demand modeling in greater detail (refer also back to the section beginning on page 9).

### Vehicle Hours Travelled

As indicated previously, VHT and VMT are used in this analysis illustratively and methodologically. They simultaneously are used to depict the benefits of enhanced mobility with E-470 as well as for inputs to the economic modeling. **Table 1** presents a summary of the VHT outputs from the baseline and modified roadway network scenario travel demand model runs. For example, in 2015 drivers would have spent an additional 40,400 hours per day in their vehicles on a roadway network that excluded E-470. By 2020, modeling estimates that drivers would have spent an additional 118,200 hours per day in their vehicles on a roadway network that excluded E-470.<sup>21</sup>

**Table 1 11-County Metro Area Daily Vehicle Hours Traveled (VHT), 2015-20**

	Vehicle Hours Traveled (2015)			Vehicle Hours Traveled (2019)		
	w/ E-470	w/o E-470	Diff.	w/ E-470	w/o E-470	Diff.
Freeway.....	n/a	n/a	n/a	731,684	746,014	14,330
Expressway.....	n/a	n/a	n/a	134,578	139,156	4,578
Ramps.....	n/a	n/a	n/a	85,166	86,616	1,450
Principal Arterial.....	n/a	n/a	n/a	904,432	963,369	58,937
Minor Arterial.....	n/a	n/a	n/a	370,202	390,230	20,028
Collector.....	n/a	n/a	n/a	271,394	290,321	18,928
<b>Total.....</b>	<b>2,192,936</b>	<b>2,233,348</b>	<b>40,412</b>	<b>2,497,456</b>	<b>2,615,705</b>	<b>118,249</b>

Source: FHU; Economic & Planning Systems

<sup>21</sup> Details regarding VHT by roadway classification were not available in documents from the 2016 study.

## Vehicle Miles Travelled

As with VHT, VMT is used to illustrate how E-470 enhances regional mobility. **Table 2** presents a summary of VMT outputs from roadway network scenarios, illustrating the magnitude of VMT by roadway classification in the entire DRCOG planning area.<sup>22</sup> Overall, it appears that E-470 contributes to an increase in VMT (not an overall reduction, as with VHT). The benefit, however, is that the reduction of travel distance occurs on arterials and collectors. In 2015, drivers regionally would have traveled 692,600 miles more on arterials and collectors without E-470, increasing to 1.4 million miles more in their vehicles by 2020.

**Table 2 11-County Metro Area Daily Vehicle Miles Traveled (VMT), 2015-20**

	Vehicle Miles Traveled (2015)			Vehicle Miles Traveled (2019)		
	w/ E-470	w/o E-470	Diff.	w/ E-470	w/o E-470	Diff.
Freeway.....	31,452,321	30,435,515	-1,016,806	37,003,523	35,537,099	-1,466,423
Expressway.....	6,263,708	6,249,814	-13,894	5,489,206	5,522,444	33,239
Ramps.....	2,049,707	1,981,192	-68,515	2,364,954	2,291,226	-73,728
Principal Arterial.....	26,375,397	26,829,783	454,386	27,368,890	28,161,596	792,706
Minor Arterial.....	7,940,360	8,078,171	137,811	10,438,034	10,781,063	343,029
Collector.....	<u>5,292,120</u>	<u>5,392,511</u>	<u>100,391</u>	<u>6,453,635</u>	<u>6,759,051</u>	<u>305,416</u>
<b>Total.....</b>	<b>79,373,613</b>	<b>78,966,986</b>	<b>-406,627</b>	<b>89,118,241</b>	<b>89,052,480</b>	<b>-65,761</b>
<b>Arterials and Collectors.....</b>	<b>39,607,877</b>	<b>40,300,465</b>	<b>692,588</b>	<b>44,260,559</b>	<b>45,701,710</b>	<b>1,441,152</b>

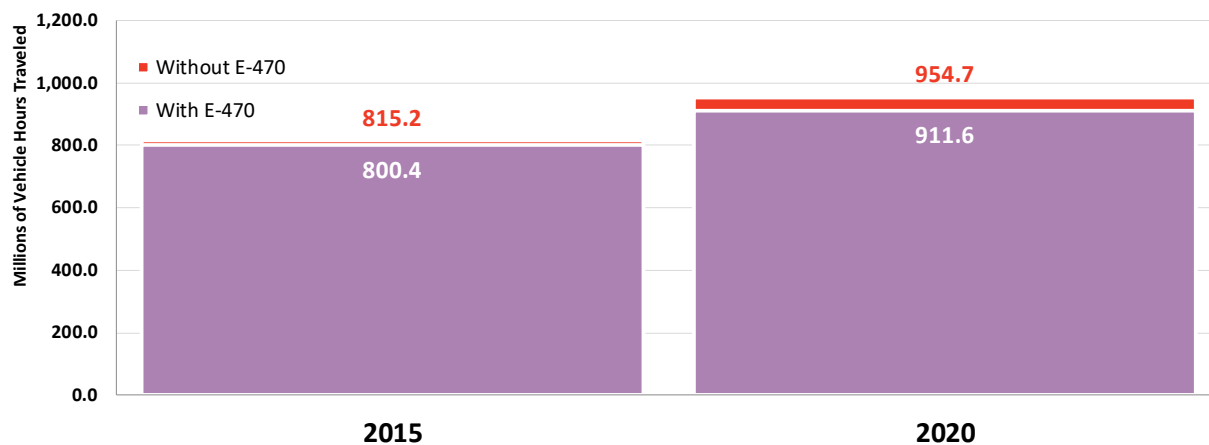
Source: FHU; Economic & Planning Systems

## Travel Time Savings

### Regional Impacts

**Figure 11** summarizes the data presented in **Table 1**. The findings here illustrate the magnitudes of annual vehicle hours traveled with and without E-470. In 2015, E-470 saved drivers a total of 14.8 million hours, and by 2020 had nearly tripled in regional benefit to a travel time savings of 43.1 million hours.

**Figure 11 Impact to Vehicle Hours Travelled (VHT), 2015-20**



Source: Economic & Planning Systems

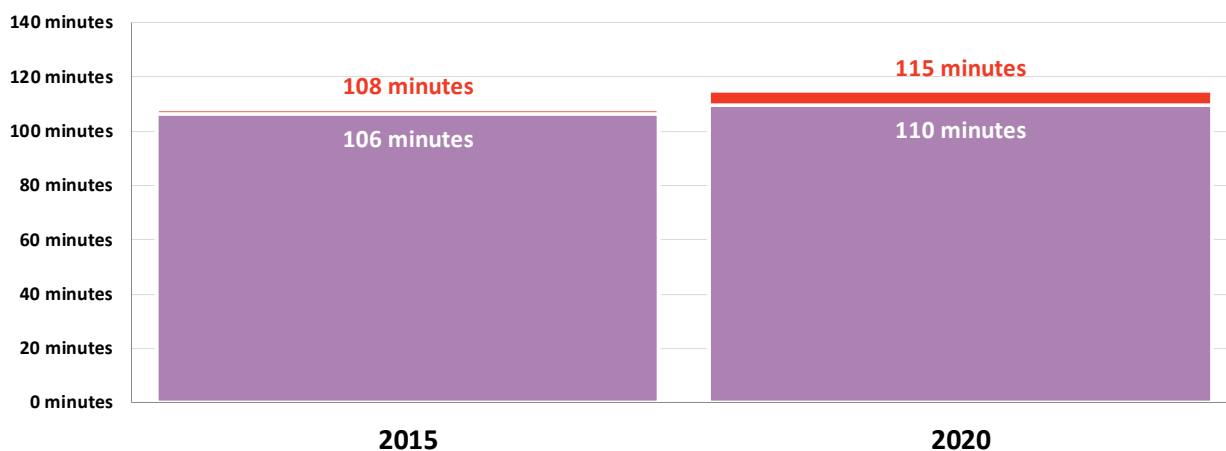
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<sup>22</sup> It should be noted that the term "freeway" accounts for divided lane highways, expressways, on-ramps, as well as tolled roads.

### Household Impacts

To translate these findings into a more accessible language, the analysis can be interpreted that E-470 measurably saves time for individual households daily. **Figure 12** illustrates that average length of time a household spent in their vehicle per day in 2015 and 2020. Data indicate that households average approximately 11 trips per day. A trip is defined as a one-way direction of travel – i.e. from point A to point B, but not a roundtrip. Although modest metrics from a regional perspective, the per-household daily travel time savings more than doubled from two (2) to five (5) minutes over the five years.

**Figure 12 Household Daily Travel Time Impact (VHT), 2015-20**

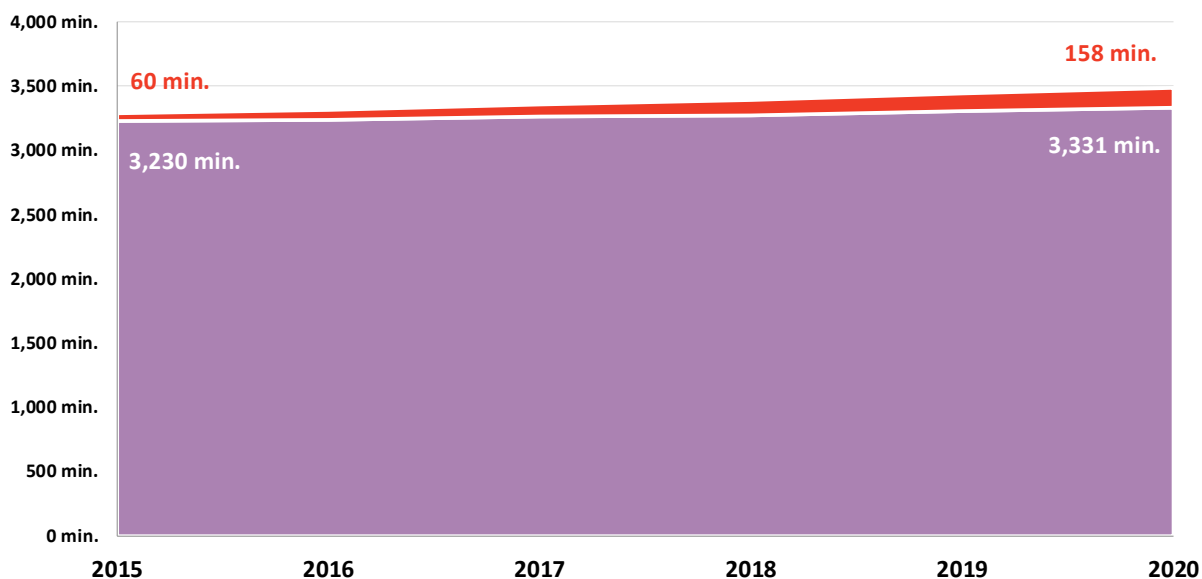


Source: Economic & Planning Systems

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On a monthly basis, as illustrated in **Figure 13** below, the daily per-household travel time savings has expanded from 60 to nearly 160 minutes.

**Figure 13 Monthly per Household Travel Time Savings, 2015-20**



Source: Economic & Planning Systems

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## Value of Time

The second major question “what is the value of the travel time savings?” is illustrated in the following **Table 3**. The analysis is a benefit-cost analysis on a per-user basis. In 2015, there were approximately 74.6 million toll transactions and revenues totaling \$173.0 million, equating to \$2.32 per transaction. By 2020, with an estimated 90.3 million transactions and estimated revenues of \$249.0 million, the average transaction is estimated to be \$2.76.<sup>23</sup>

In terms of user benefits, weighted average factors of business and leisure time from the U.S. Department of Transportation are applied to the travel time savings from the regional travel demand modeling scenarios in terms of VHT. Because the USDOT does not update its VOT annually, 2013 factors were used for both the 2015 and 2020 estimates and escalated as to reflect the shift in Consumer Price Index (CPI) between 2013 and 2020. Applying these adjustments, the hourly VOT used in the analysis for 2015 is \$13.50 and \$13.98 per hour for 2020, defined as travel for all purposes.<sup>24</sup> As a result, the gross VOT is estimated to have been nearly \$199.1 million in 2015 and \$603.5 million in 2020. But because drivers are shifted from the tollways to un-tolled roadways networks, total toll revenues for both years are netted out of the gross VOT estimate. As a result, the net economic impact to drivers is an estimated \$26.1 million in 2015 and \$354.5 billion in 2020, a 15 percent return on transaction for E-470 users in 2015 and a 142 percent return on transaction in 2020 for E-470 users.

**Table 3 Value of Time Analysis, 2015-20**

	2015	2020	2015-20		
			Total Δ	Ann. Δ	Ann. %
<b>E-470 Transactions</b>					
Total Toll revenues	\$173,000,000	\$249,013,096	\$76,013,096	\$15,202,619	7.6%
Transactions	74,609,047	90,279,570	15,670,523	3,134,105	3.9%
Average per-transaction cost	\$2.32	\$2.76	\$0.44	\$0.09	3.5%
<b>User Benefits</b>					
VHT saved	14,750,380	43,160,816	28,410,436	5,682,087	24.0%
Value of Time (VOT) factor	\$13.50	\$13.98	\$0.48	\$0.10	0.7%
Gross VOT	\$199,118,330	\$603,539,215	\$404,420,885	\$80,884,177	24.8%
Less: Toll revenues	\$173,000,000	\$249,013,096	\$76,013,096	\$15,202,619	7.6%
Net VOT	\$26,118,330	\$354,526,119	\$328,407,789	\$65,681,558	68.5%
per-transaction benefit	\$0.35	\$3.93	\$3.58	\$0.72	62.2%
Return on transaction (as %)	15%	142%			

Source: Economic & Planning Systems

<sup>23</sup> The travel demand model was run with a roadway network for 2020; as a result, the VHT and VMT outputs related to 2020 socioeconomics. It was assumed that E-470's transactions and toll revenues were equal to 2019 actuals.

<sup>24</sup> The USDOT provides multiple factors for estimating the value of time savings. As an example, in 2013 local personal trips are valued at \$12.42 per hour, business trips are valued at \$25.23 per hour, and “all purposes” trips are value at \$12.98 per hour, the basis of the 2017 factor here. For intercity travel, however, personal trips are valued at \$17.50 per hour, business trips are valued at \$24.40 per hour, and “all purposes” trips are value at \$19.00 per hour. It would also have been equally reasonable to have applied this all purposes factor because the Denver MSA contains multiple independent cities.

## Economic Activity

The third major question asks, “how much economic activity does E-470 directly support?” This section identifies the findings of the land use dependency analysis, which was undertaken to identify magnitudes of land uses and thus economic activity that are supported entirely by the mobility benefits E-470 creates. It also describes the metrics used in quantifying this dependency and the attributable economic activity, such as employment, Gross Regional Product, and property valuation. These findings are delineated geographically between the broader regional benefit directly attributable to E-470’s mobility benefits versus the economic activity that occurs only within the boundaries of its influence area.

### Analytical Findings

The first geographic distinction is made with the broader regional metrics of economic activity that are attributable to the enhanced mobility benefits of E-470.

#### **Land Use Dependency Analysis**

This technique measures the dependency that surrounding land uses have on E-470. Holding constant the existing (i.e. actual) level of service (measured by VHT) on the regional roadway network, the analysis estimates this dependency in terms of population and employment that would not be supportable if E-470 were not a part of the regional roadway network. Quantifying this dependency involves several guiding assumptions, steps, and metrics, as well as utilizing a special feature of the travel demand model, which identifies origins and destinations of vehicles throughout the region. The findings, aligned against License Plate Toll and Express Toll Account customers by zip code, made proportional reductions to population and employment by TAZ, after which the travel demand model was re-run to confirm VHT outputs.<sup>25</sup>

The chief assumption is that existing levels of service (in the network with E-470) are acceptable – that is, levels of congestion and VHT are acceptable to the population, and that the levels of service quantified in the modified roadway network without E-470 would not be acceptable. The analysis also assumes that the relationship between VHT generation and land uses is linear, e.g. each addition of one job or household generates the same unit of increase in VHT.

**Table 4** summarizes various metrics of the dependency analysis. The top half of the table illustrates the existing socioeconomic conditions for 2015 and 2020. It also illustrates the daily VHT under existing conditions and the modified roadway network scenario without E-470. The difference between daily VHT, shown bold-faced, highlights the magnitude of “congestion” that the dependency analysis assumes to be “unacceptable”. As such, the bottom half of the table illustrates the estimates of regionwide employment and population that would generate only as much VHT in a scenario without E-470 as the VHT generated under existing conditions.

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<sup>25</sup> This methodology is a refinement of the approach taken in the 2016 study. Results for both 2015 and 2020 were recalculated for this study to be consistent with the current methodology. Specifically, results of the travel demand modeling and the alignment of License Plate Toll and Express Toll Account data were used to make initial reductions by TAZ, which were run through the travel demand model. Those outputs were used in the dependency analysis to finalize the supportable land uses.

In 2015, daily VHT was less than 2.2 million with E-470 and more than 2.2 million without E-470, implying that E-470 saved drivers approximately 40,400 hours per day. In 2020, VHT with E-470 was approximately 2.5 million and nearly 2.6 million without E-470, implying that E-470 was now saving drivers approximately 118,000 hours per day. Stated differently, under existing conditions, VHT increased at 2.6 percent per year, but had E-470 not been a part of the regional roadway network and actual levels of land use were still present, VHT would have increased at an average of 3.2 percent per year.

Specifically, in 2015, land uses that accommodate an additional population of approximately 21,000 were supportable only with E-470, increasing to 38,000 by 2020. Likewise, land uses that accommodate additional employment of 2,600 in 2015 were supportable only with E-470, increasing to 23,200 by 2020. These results are significant not for their magnitude but for their rates of growth: the population dependent on E-470 has grown at an average year-over-year rate of 12.5 percent; and the employment dependent on E-470 has grown at a rate of 54.5 percent per year since 2015.

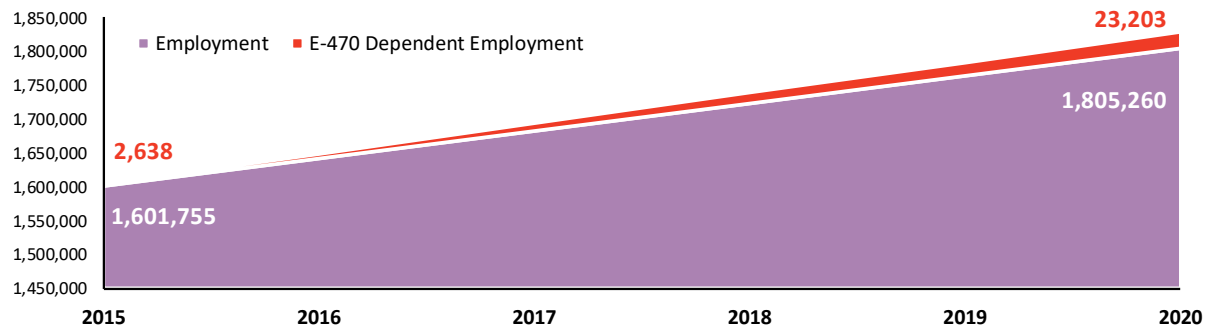
**Table 4 Land Use Dependency Analysis, 2015-2020**

	2015	2020	2015-20		
			Total Δ	Ann. Δ	Ann. %
<b>Socioeconomic (SE) Conditions</b>					
Population	3,061,520	3,322,716	261,196	52,239	1.65%
Employment	1,682,905	1,796,227	113,322	22,664	1.31%
<b>Daily Vehicle Hours Traveled (VHT) by Scenario</b>					
Existing Network: with E-470	2,192,936	2,497,456	304,520	60,904	2.63%
<u>Modified Network: without E-470</u>	<u>2,233,348</u>	<u>2,615,705</u>	<u>382,357</u>	<u>76,471</u>	<u>3.21%</u>
<b>VHT to be Eliminated via SE TAZ Reductions</b>	<b>40,412</b>	<b>118,249</b>	<b>77,837</b>	<b>15,567</b>	<b>23.95%</b>
<b>Modified SE Conditions (Supportable without E-470)</b>					
Population	3,040,583	3,284,936	244,353	48,871	1.56%
Employment	1,680,267	1,773,024	92,757	18,551	1.08%
Daily VHT	2,192,936	2,497,456	304,520	60,904	2.63%
<b><u>Dependent SE Land Uses</u></b>					
Population	20,937	37,780	16,843	3,369	12.53%
Employment	2,638	23,203	20,565	4,113	54.48%

Source: Economic & Planning Systems

Based on the analysis of land use dependencies, EPS estimates that the employment supportable without E-470 would have been 0.2 percent lower in 2015 and 1.3 lower in 2020. Shown in **Figure 14**, this equates to employment dependency increasing from an estimated 2,600 in 2015 to 23,300 by 2020. As discussed with **Figure 4** (see page 13), actual employment growth between 2015 and 2020 averaged 1.3 percent per year. Without E-470, employment growth would have occurred at a rate of 1.1 percent per year.

**Figure 14 Denver MSA Job Growth without E-470, 2015-20**

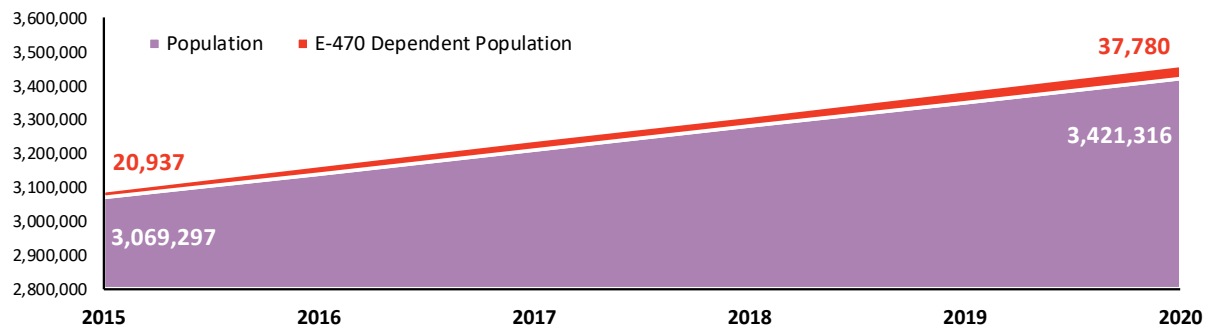


Source: DRCOG; Economic & Planning Systems

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Based on the analysis of land use dependencies, EPS estimates that the population supportable without E-470 would have been 0.7 percent lower in 2015 and 1.1 lower in 2020. Shown in **Figure 15**, this equates to population dependency increasing from an estimated 21,000 in 2015 to 37,800 by 2020. As discussed with **Figure 5** (see page 14), actual population growth between 2015 and 2020 averaged 1.7 percent per year. Without E-470, population growth would have occurred at a rate of 1.6 percent per year.

**Figure 15 Estimated Denver MSA Population Growth without E-470, 2015-20**



Source: DRCOG; Economic & Planning Systems

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## Regional Economic Activity

Gross Regional Product (GRP) is the value of income generated from production, employee compensation, payments to government (taxes), and profit. Gross Domestic Product (GDP) and GRP are the most frequently cited economic contribution metrics in economic impact analysis because they characterize the amount of additional “value” created by the economic activity. The following are findings of the economic value, in terms of GRP, of the enhanced mobility benefits generated by E-470 applying the findings of previous analyses on the influence area economic activity and the dependency of land use on E-470.

### Gross Regional Product

Between 2015 and 2020, U.S. GDP increased from \$18.0 trillion to just over \$22.0 trillion, reflecting an average growth rate of 4.1 percent per year (**Table 5**). The Denver MSA GRP increased from \$221.4 billion in 2015 to a projected \$265.3 billion in 2020, an average growth of 3.2 percent. In this analysis, the portion of GRP attributable to the enhanced mobility benefits of E-470 involves estimation based on two components: employment and productivity. Employment attributable to E-470’s mobility benefits was calculated in the previous analysis (see **Table 4** on page 22), which determined that the land uses for approximately 2,600 and 23,200 jobs in 2015 and 2020 respectively. Productivity is defined as worker output divided by total employment.<sup>26</sup> Using these metrics, worker productivity increased from \$100,000 in 2015 to \$107,000 in 2020.

**Table 5 Summary of Regional E-470 Dependency GRP Impacts, 2015-20**

	2015	2020	2015-20		
			Total Δ	Ann. Δ	Ann. %
<b>US GDP (millions)</b>	<b>\$18,036,650</b>	<b>\$22,070,505</b>	<b>\$4,033,855</b>	<b>\$806,771</b>	<b>4.1%</b>
<b>MSA GRP</b>					
Non-E-470 Dependent	\$221,409,391,739	\$265,287,994,751	\$43,878,603,012	\$8,775,720,602	3.7%
E-470 Dependent (direct impact)	\$263,975,261	\$2,479,611,310	\$2,215,636,049	\$443,127,210	56.5%
<b>Total</b>	<b>\$221,673,367,000</b>	<b>\$267,767,606,061</b>	<b>\$46,094,239,061</b>	<b>\$9,218,847,812</b>	<b>3.9%</b>
E-470 Dependent (as % of MSA)	0.1%	0.9%	4.8%	---	---
<b>MSA Employment</b>					
Non-E-470 Dependent	1,680,267	1,773,024	92,757	18,551	1.1%
E-470 Dependent (direct impact)	2,638	23,203	20,565	4,113	54.5%
<b>Total</b>	<b>1,682,905</b>	<b>1,796,227</b>	<b>113,322</b>	<b>22,664</b>	<b>1.3%</b>
E-470 Dependent (as % of MSA)	0.2%	1.3%	18.1%	---	---
Productivity per worker (IMPLAN derived)	\$100,071	\$106,865	\$6,794	\$1,359	1.3%
<b>E-470-Related GRP Impacts</b>					
Direct Impacts (above)	\$263,975,261	\$2,479,611,310	\$2,215,636,049	\$443,127,210	56.5%
Indirect Impacts	\$112,877,176	\$1,051,770,429	\$938,893,253	\$187,778,651	56.3%
Induced Impacts	\$119,784,507	\$1,129,072,802	\$1,009,288,295	\$201,857,659	56.6%
<b>Total Impacts</b>	<b>\$496,636,944</b>	<b>\$4,660,454,541</b>	<b>\$4,163,817,597</b>	<b>\$832,763,519</b>	<b>56.5%</b>
E-470 Dependent (as % of MSA)	0.2%	1.7%	9.0%	---	---

Source: Economic & Planning Systems

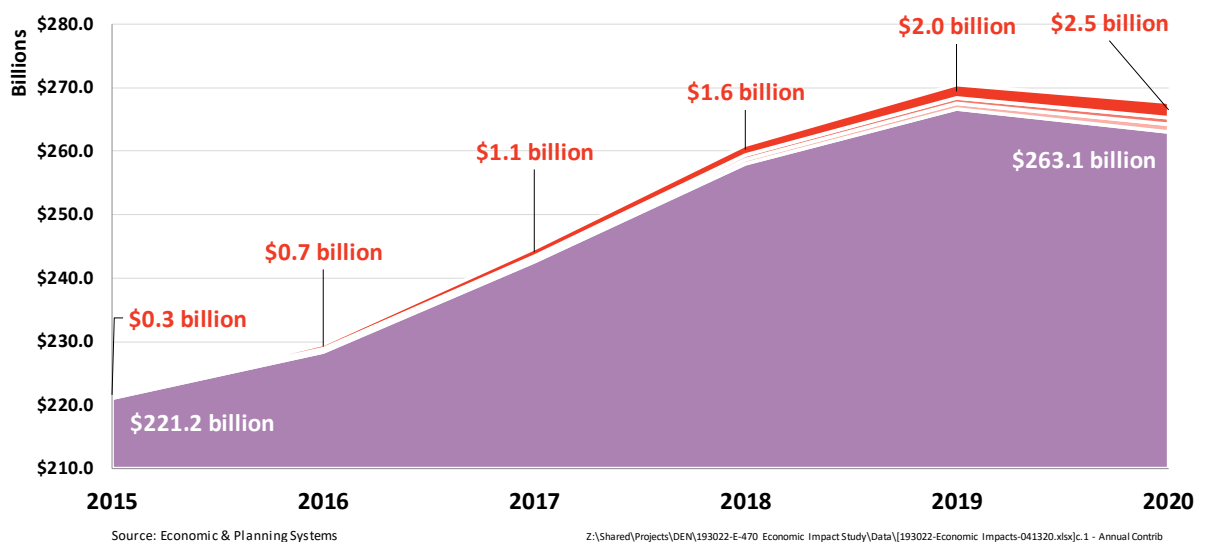
<sup>26</sup> While total output and GRP are not identical metrics, GRP is used in this study and is similar in magnitude to output (if not smaller), and for the purpose of this analysis identifying a per-worker value-added factor, productivity here is calculated as GRP divided by total employment.

**Figure 16** illustrates the high-level GRP impact estimates from **Table 5**. It is estimated that the E-470 dependent land uses generated approximately \$264 million of economic activity in 2015, 0.2 percent of the MSA’s GRP. By 2020, these contributions had increased to approximately \$2.5 billion of annual economic activity, approximately 1.7 percent of the MSA’s GRP.

As with each of the other metrics estimated in this analysis, the enhanced mobility benefits of a system in place over time increase exponentially by comparison to the overall economy and metrics of activity. Specifically, in terms of GRP, the economic impact of E-470’s mobility to support greater land use and economic activity has increased at an average rate of 56.5 percent per year since 2015, whereas non-E-470 dependent activity GRP has increased at 3.9 percent per year. That is, without E-470, regional GRP might have only grown at 3.7 percent per year.

Also using IMPLAN software and regional accounts data, it was determined that the ripple effects of this direct GRP impact generated an additional \$233 million and an estimated \$2.2 billion in indirect and induced economic activity in 2015 and 2020, respectively.

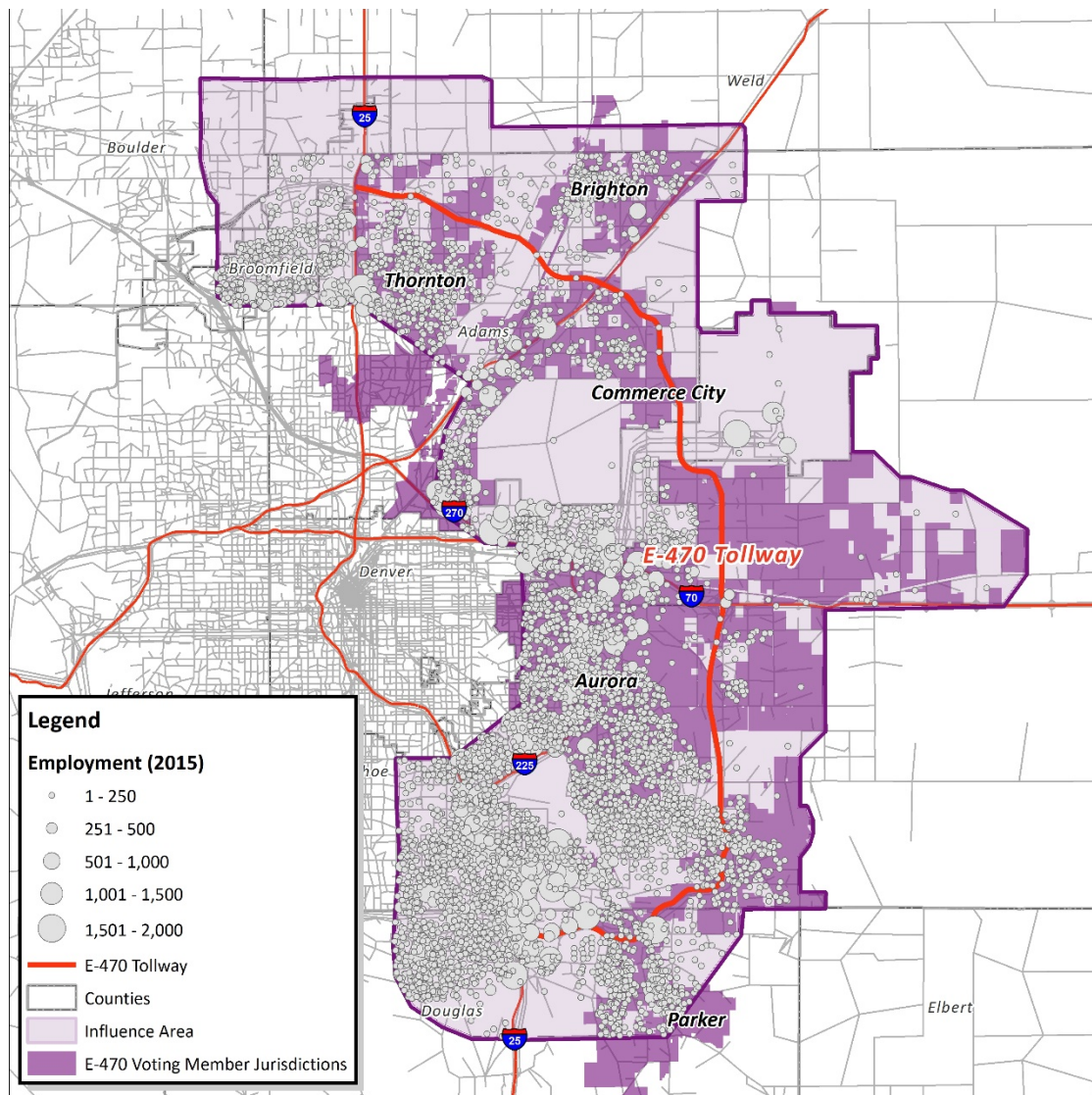
**Figure 16 Summary of E-470 Dependent GRP Impacts, 2015-20**



## Influence Area Economic Activity

In **Figure 17**, economic activity within the boundaries of the Influence Area is illustrated with point-level data from the U.S. Census Longitudinal Employer-Household Dynamics series for 2015. These data points contain magnitudes of jobs at the block level with distributions of wage and salary employment by 2-digit NAICS classifications (e.g., agriculture, professional and technical, health care, accommodations, etc.). These data were used in combination with DRCOG's socioeconomic data for the region to approximate portion of economic activity occurring within the E-470 influence area and for the purpose of generating greater specificity of inputs to the IMPLAN input-output modeling.

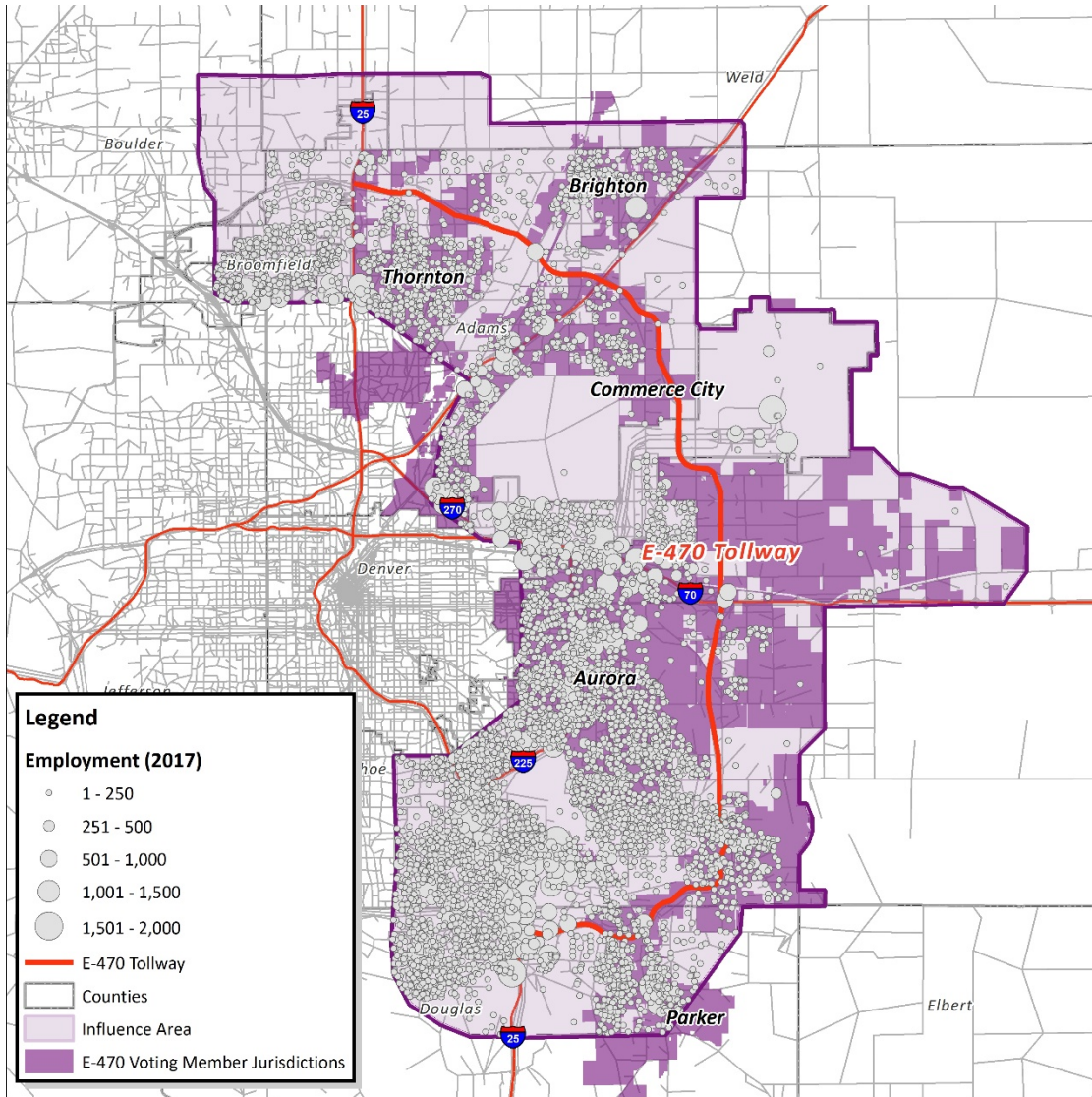
**Figure 17 E-470 Influence Area Jobs, 2015**





In **Figure 18**, block level employment data for 2017 from LEHD were used to approximate the distribution of jobs by 2-digit NAICS category for 2020.<sup>27</sup> Again, these data were used as inputs for the distribution of jobs by industry for the input-output modeling completed to estimate metrics, such as GRP.

**Figure 18 E-470 Influence Area Jobs, 2017**



<sup>27</sup> It should be noted that the U.S. Census LEHD data for 2017, the most recent point-level data available from the Census, were used for purposes of apportionment of activity occurring within E-470 Influence Area. It is likely with the magnitude of known growth between 2017 and 2020 that a larger number of jobs and thus larger portion of GRP might be attributable to the Influence Area than stated by this analysis.



### Gross Regional Product

**Table 6** summarizes the direct, indirect, and induced impacts that this economic activity has had on regional GRP. GRP associated with economic activity in the Influence Area increased from an estimated \$52.8 billion to \$62.0 billion between 2015 and 2020, reflecting an average growth rate of 3.3 percent per year. This magnitude of GRP accounts for 23.8 and 23.2 percent of regional value-added for 2015 and 2020, respectively.

**Table 6 Summary of Influence Area GRP, 2015-20**

	2015	2020	2015-20		
			Total Δ	Ann. Δ	Ann. %
<b>MSA GRP</b>					
Influence Area Direct Activity	\$52,845,878,804	\$62,024,851,926	\$9,178,973,122	\$1,835,794,624	3.3%
<u>Non-Influence Area</u>	<u>\$168,827,488,196</u>	<u>\$205,742,754,135</u>	<u>\$36,915,265,939</u>	<u>\$7,383,053,188</u>	<u>4.0%</u>
<b>Total</b>	<b>\$221,673,367,000</b>	<b>\$267,767,606,061</b>	<b>\$46,094,239,061</b>	<b>\$9,218,847,812</b>	<b>3.9%</b>
as % of MSA GDP	23.8%	23.2%	19.9%	---	---
<b>MSA Employment</b>					
Influence Area	528,085	580,406	52,321	10,464	1.9%
<u>Non-Influence Area</u>	<u>1,154,820</u>	<u>1,215,821</u>	<u>61,001</u>	<u>12,200</u>	<u>1.0%</u>
<b>Total</b>	<b>1,682,905</b>	<b>1,796,227</b>	<b>113,322</b>	<b>22,664</b>	<b>1.3%</b>
as % of MSA	31.4%	32.3%	46.2%	---	---
<b>Influence Area GRP Impacts</b>					
Direct Impacts (above)	\$52,845,878,804	\$62,024,851,926	\$9,178,973,122	\$1,835,794,624	3.3%
Indirect Impacts	\$22,597,168,895	\$26,308,923,841	\$3,711,754,945	\$742,350,989	3.1%
<u>Induced Impacts</u>	<u>\$23,979,965,200</u>	<u>\$28,242,560,873</u>	<u>\$4,262,595,673</u>	<u>\$852,519,135</u>	<u>3.3%</u>
<b>Total Impacts</b>	<b>\$99,423,012,899</b>	<b>\$116,576,336,640</b>	<b>\$17,153,323,741</b>	<b>\$3,430,664,748</b>	<b>3.2%</b>

Source: Economic & Planning Systems

### Property Valuation

**Table 7** summarizes the increase in market valuation (all property types) in the Influence Area. Since 2015, total valuation increased at a rate of 14.6 percent per year, ranging between approximately 10 and 24 percent. This appreciation, however, reflects not only escalation of existing property, but more significantly the build out of property in the Influence Area.

**Table 7 Influence Area Total Property Valuation Summary, 2015-19**

	2015	2019	2015-19		
			Total Δ	Ann. Δ	Ann. %
<b>Influence Area Portions</b>					
Adams County	\$15,777,589,420	\$28,368,738,677	\$12,591,149,257	\$3,147,787,314	15.8%
Arapahoe County	\$35,708,199,837	\$55,501,382,356	\$19,793,182,519	\$4,948,295,630	11.7%
Douglas County	\$3,911,769,886	\$7,213,795,396	\$3,302,025,510	\$825,506,378	16.5%
Aurora	\$37,341,486,540	\$58,762,867,615	\$21,421,381,075	\$5,355,345,269	12.0%
Brighton	\$4,142,808,024	\$7,330,802,608	\$3,187,994,584	\$796,998,646	15.3%
Broomfield	\$8,048,222,835	\$11,985,589,640	\$3,937,366,805	\$984,341,701	10.5%
Commerce City	\$3,065,151,839	\$5,542,905,300	\$2,477,753,461	\$619,438,365	16.0%
Denver	\$7,800,191,096	\$18,057,402,522	\$10,257,211,426	\$2,564,302,857	23.3%
Parker	\$3,107,224,502	\$5,653,484,712	\$2,546,260,210	\$636,565,053	16.1%
<u>Thornton</u>	<u>\$7,740,888,238</u>	<u>\$13,793,856,194</u>	<u>\$6,052,967,956</u>	<u>\$1,513,241,989</u>	<u>15.5%</u>
<b>Total Influence Area [1]</b>	<b>\$63,197,750,239</b>	<b>\$109,141,318,951</b>	<b>\$45,943,568,712</b>	<b>\$11,485,892,178</b>	<b>14.6%</b>

[Note 1]: Influence Area Portions do not equal total. Valuations for each jurisdiction include municipal portions.

Source: Economic & Planning Systems

## Economic Cost of Traffic Incidents

This section details the economic costs associated with reduced incident rates. According to CDOT data, rates of property damage, injury (various degrees of severity), and fatality are higher on local roads, collectors, and arterials than on interstates, highways, and freeways such as E-470. Data from the National Highway Transportation Safety Administration (NHTSA) confirm this as well. CDOT data, along with VMT data from the regional travel demand modeling by county from DRCOG shows in **Table 8** that the rate of fatalities on interstates, freeways, and expressways (such as toll roads) ranges between 0.48 and 0.72 per 100 million vehicle miles traveled (MVMT) compared to 1.38 to 2.19 fatalities per 100 MVMT on arterials and collectors.<sup>28</sup>

**Table 8 CDOT Accident Rates**

	Miles	MVMT	ADT	Property Damage Only (PDO)		Injury		Fatality	
				#	Rate	#	Rate	#	Rate
							per 1 MVM		per 100 MVM
Functional Class									
Interstate	952	11,989	34,503	11,337	0.95	1,206	0.10	57	0.48
Other Freeways and Expressways	332	4,426	36,524	6,518	1.47	632	0.14	32	0.72
Other Principal Arterial	2,883	8,395	7,978	20,752	2.47	2,302	0.27	116	1.38
Minor Arterial	3,391	2,512	2,030	3,754	1.49	577	0.23	55	2.19
Collector (Total)	1,527	749	2,153	1,003	1.34	167	0.22	14	1.87
Local	21	14	1,826	8	0.57	4	0.29	0	0.00
Total State Highway	9,106	28,085	8,450	43,372	1.54	4,888	0.17	274	0.98

MVMT = Million Vehicle Miles Traveled

ADT = Average Daily Trips

Source: CDOT Crash Report 2012; Economic & Planning Systems

Applied to various type of incidents are average economic costs associated with the severity of the incident.<sup>29</sup> Utilizing USDOT's guidance on benefit-cost analysis for transportation projects, **Table 9** illustrates factors used in this analysis, escalated between 2015 and 2019 using the Denver MSA Consumer Price Index (CPI-U).

**Table 9 USDOT Benefit-Cost Analysis Incident Values by Severity Factors**

			2015-19		
			Total Δ	Ann. Δ	Ann. %
Levels of Incident Severity					
PDO	\$3,107	\$3,447	\$340	\$85	2.6%
Minor	\$27,965	\$31,027	\$3,061	\$765	2.6%
Moderate	\$438,125	\$486,083	\$47,957	\$11,989	2.6%
Serious	\$978,791	\$1,085,930	\$107,139	\$26,785	2.6%
Severe	\$2,479,603	\$2,751,022	\$271,418	\$67,855	2.6%
Critical	\$5,527,837	\$6,132,917	\$605,080	\$151,270	2.6%
Fatality	\$9,321,817	\$10,342,187	\$1,020,370	\$255,093	2.6%

Source: USDOT; Economic & Planning Systems

<sup>28</sup> The 2012 Crash Book is the most recent compilation of detailed data. As of June 2020, CDOT staff have indicated that these statistics have not been updated. (<https://www.codot.gov/library/traffic/safety-crash-data>)

<sup>29</sup> [https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2017\\_1.pdf](https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2017_1.pdf)

**Table 10** presents only the difference in regional daily VMT for 2015 and 2020 between the baseline scenario and the modified roadway network scenario without E-470. For example, the results show that without E-470, VMT decreases on freeways, expressways, and ramps, but shows an increase in VMT on arterials and collectors. Applied to the CDOT factors presented above (**Table 8**), the impact that E-470 has on the region's number and distribution of incidents can be calculated. Incidents of Property Damage Only (PDO) that occur on freeways, expressways, and ramps are reduced, but incidents of PDOs are increased on arterials and collectors. This is also true with incidents of injury and fatalities. Incidents of injuries and fatalities that occur on freeways, expressways, and ramps are reduced, but increased as a result of higher VMT on arterials and collectors.

**Table 10 Impact of Changed VMT without E-470 on Incident Types, 2015-20**

	2015	2019	2015-19		
			Total Δ	Ann. Δ	Ann. %
<b>E-470's VMT Impact by Roadway Class</b>					
Freeway	-1,016,806	-1,466,423	-449,617	-112,404	9.6%
Expressway	-13,894	33,239	47,133	11,783	n/a
Ramps	-68,515	-73,728	-5,213	-1,303	1.9%
Principal Arterial	454,386	792,706	338,320	84,580	14.9%
Minor Arterial	137,811	343,029	205,218	51,305	25.6%
<u>Collector</u>	<u>100,391</u>	<u>305,416</u>	<u>205,025</u>	<u>51,256</u>	<u>32.1%</u>
<b>Total</b>	<b>-406,627</b>	<b>-65,761</b>	<b>340,866</b>	<b>85,216</b>	<b>-36.6%</b>
<b>PDOs by Roadway Classification</b>					
Freeway	-351	-506	-155	-39	9.6%
Expressway	-7	18	25	6	n/a
Ramps	0	0	0	0	n/a
Principal Arterial	410	715	305	76	14.9%
Minor Arterial	75	187	112	28	25.6%
<u>Collector</u>	<u>49</u>	<u>149</u>	<u>100</u>	<u>25</u>	<u>32.1%</u>
<b>Total</b>	<b>176</b>	<b>563</b>	<b>388</b>	<b>97</b>	<b>33.8%</b>
<b>Injuries by Roadway Classification</b>					
Freeway	-37	-54	-17	-4	9.6%
Expressway	-1	2	2	1	n/a
Ramps	0	0	0	0	n/a
Principal Arterial	45	79	34	8	14.9%
Minor Arterial	12	29	17	4	25.6%
<u>Collector</u>	<u>8</u>	<u>25</u>	<u>17</u>	<u>4</u>	<u>32.1%</u>
<b>Total</b>	<b>27</b>	<b>81</b>	<b>54</b>	<b>13</b>	<b>31.4%</b>
<b>Fatalities by Roadway Classification</b>					
Freeway	-2	-3	-1	0	9.6%
Expressway	0	0	0	0	n/a
Ramps	0	0	0	0	n/a
Principal Arterial	2	4	2	0	14.9%
Minor Arterial	1	3	2	0	25.6%
<u>Collector</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>32.1%</u>
<b>Total</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>29.3%</b>

Source: Economic & Planning Systems

Using the USDOT BCA statistical values associated with incident types, **Table 11** illustrates the total economic costs associated with incidents that are avoided with a regional roadway network that includes E-470. Mirroring other shifts in the benefits and economic contributions of E-470, the year-over-year increase in E-470's benefit to the region (32.9 percent) illustrates how the region benefits increasingly as it grows around the roadway (see also **Table 31** and **Table 32** on page 43 and 44 for a jurisdictional breakdown of these estimates).<sup>30</sup>

**Table 11 Summary of Economic Costs of Incidents Avoided, 2015-20**

	2015	2019	2015-19		
			Total Δ	Ann. Δ	Ann. %
<b>Economic Cost of Incidents Avoided</b>					
Freeway	-\$18,582,931	-\$29,733,588	-\$11,150,657	-\$2,787,664	12.5%
Expressway	-\$385,247	\$1,022,512	\$1,407,759	\$351,940	n/a
Ramps	\$0	\$0	\$0	\$0	n/a
Principal Arterial	\$23,908,395	\$46,275,341	\$22,366,946	\$5,591,737	18.0%
Minor Arterial	\$10,823,142	\$29,889,058	\$19,065,915	\$4,766,479	28.9%
<u>Collector</u>	<u>\$6,765,559</u>	<u>\$22,835,633</u>	<u>\$16,070,074</u>	<u>\$4,017,518</u>	<u>35.5%</u>
<b>Total</b>	<b>\$22,528,919</b>	<b>\$70,288,956</b>	<b>\$47,760,037</b>	<b>\$11,940,009</b>	<b>32.9%</b>

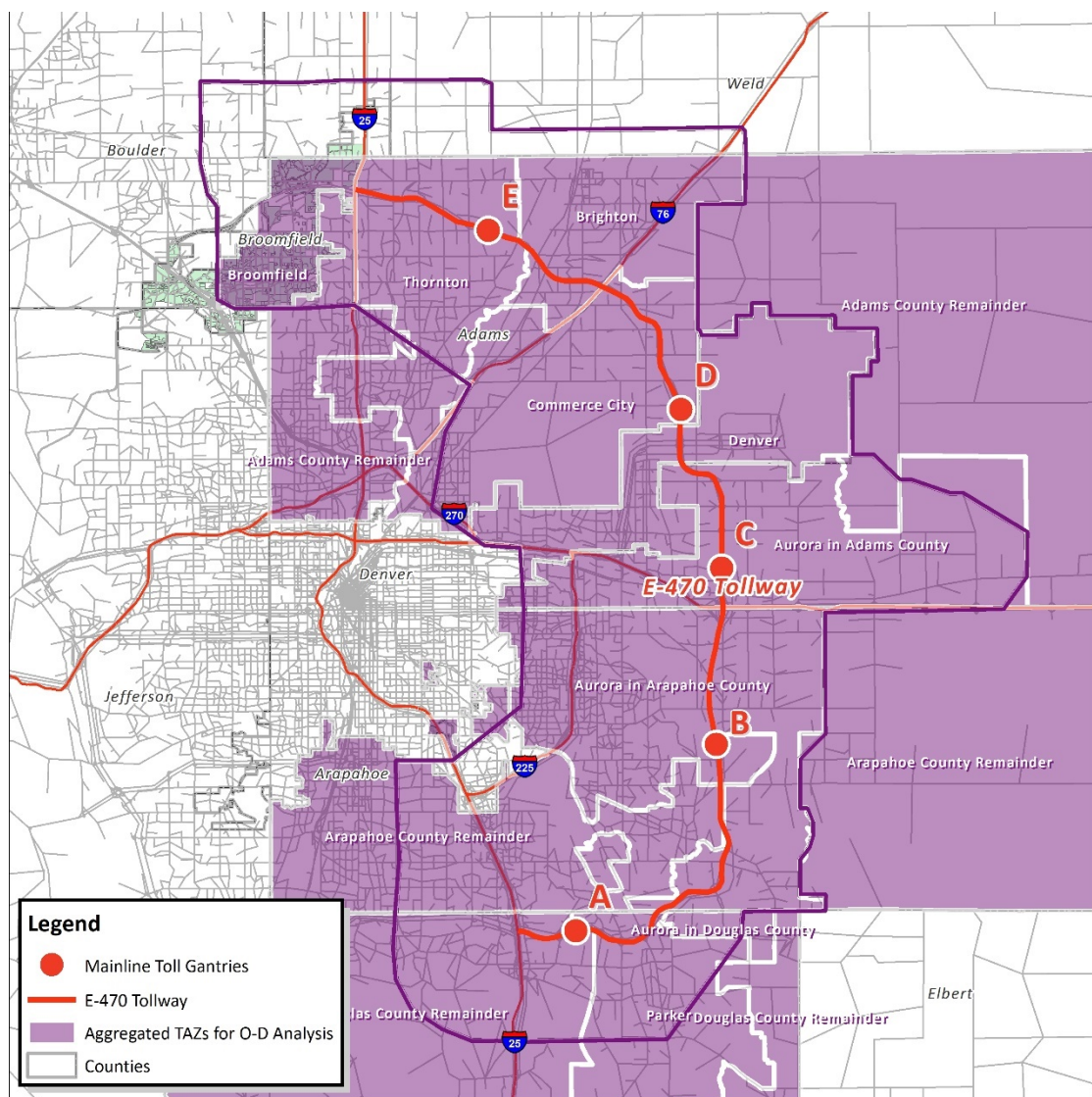
Source: Economic & Planning Systems

<sup>30</sup> It should be noted that EPS updated the USDOT BCA statistical values associated with incidents for 2015 using the release of 2016 values. This resulted in a slight but not material change in the estimation of economic costs associated with incidents avoided for 2015.

## Value of Commercial Freight Movement

The final component of the economic impact analysis includes modeling and analysis to estimate the value of commercial freight movement on the E-470 corridor. As noted earlier, select link analysis was utilized in the travel demand modeling (capturing O-D data for passenger car and commercial vehicles, as well as VHT and VMT) for each of the jurisdictional components, as shown in **Figure 19**. The outputs of the analysis of commercial vehicle movement were categorized into directional travel: northbound and southbound travel. The outputs were also identified in three categories of origin and destination: pass-through traffic originating and terminating outside of the Influence Area; traffic destined for a location within the Influence Area; and traffic originating within the Influence Area.

**Figure 19 E-470 Influence Area Toll Gantries and Aggregated TAZs for O-D Analysis**



## Commercial Traffic

**Table 12** illustrates the aggregation of O-D data from the select link analysis. It should be noted this jurisdictional breakdown only reports the commercial vehicle movements that occur (origin or destination) within a TAZ that is located within the Influence Area.<sup>31</sup>

- **Pass-through:** 60,000 southbound commercial vehicles pass through E-470 annually and 54,000 northbound commercial vehicles pass through E-470 per year.
- **Originating within Influence Area:** 342,000 vehicles originate within the Influence Area headed southbound and 263,000 originate within the Influence Area headed northbound.
- **Terminating within Influence Area:** 106,000 vehicles terminate within the Influence Area headed southbound and 172,000 terminate headed northbound.

Appendix B contains details of these and the following commercial vehicle and value of goods estimates (see **Table 33** through **Table 38** between pages 46 and 48 for details on the number of southbound and northbound pass-through, originating, and terminating vehicles).

**Table 12 Daily and Annual Commercial Vehicle Counts on E-470**

	Commercial Vehicle Counts					
	Pass-Through Influence Area		Originating Within / Terminating Within & Outside Influence Area		Originating Outside / Terminating Within Influence Area	
	SB	NB	SB	NB	SB	NB
<u>Daily Commercial Vehicle Counts</u>						
Adams Remainder.....	n/a	n/a	4	0	0	1
Arapahoe Remainder.....	n/a	n/a	98	177	71	72
Aurora in Adams.....	n/a	n/a	70	53	22	22
Aurora in Arapahoe.....	n/a	n/a	322	150	70	160
Aurora in Douglas.....	n/a	n/a	4	2	1	2
Brighton.....	n/a	n/a	57	17	13	8
Broomfield.....	n/a	n/a	10	0	0	2
Commerce City.....	n/a	n/a	48	40	28	10
Denver.....	n/a	n/a	39	33	18	13
Douglas Remainder.....	n/a	n/a	1	196	47	1
Parker.....	n/a	n/a	260	52	20	175
Thornton.....	n/a	n/a	24	0	0	5
<b>Total Influence Area</b>	<b>164</b>	<b>148</b>	<b>937</b>	<b>720</b>	<b>291</b>	<b>471</b>
<u>Annual Commercial Vehicle Counts</u>						
Adams Remainder.....	n/a	n/a	1,537	52	18	422
Arapahoe Remainder.....	n/a	n/a	35,884	64,472	26,095	26,338
Aurora in Adams.....	n/a	n/a	25,700	19,265	8,211	8,113
Aurora in Arapahoe.....	n/a	n/a	117,394	54,912	25,640	58,285
Aurora in Douglas.....	n/a	n/a	1,394	754	274	828
Brighton.....	n/a	n/a	20,893	6,255	4,899	2,935
Broomfield.....	n/a	n/a	3,577	72	19	648
Commerce City.....	n/a	n/a	17,686	14,695	10,212	3,603
Denver.....	n/a	n/a	14,111	12,059	6,406	4,601
Douglas Remainder.....	n/a	n/a	354	71,393	17,214	529
Parker.....	n/a	n/a	94,925	18,807	7,143	63,759
Thornton.....	n/a	n/a	8,685	54	24	1,872
<b>Total Influence Area</b>	<b>59,885</b>	<b>53,917</b>	<b>342,139</b>	<b>262,790</b>	<b>106,156</b>	<b>171,934</b>

Source: Economic & Planning Systems

<sup>31</sup> This is in contrast to the magnitude of commercial vehicles that may originate or terminate, for example, in a TAZ located within the "Adams Remainder" geography but not in the Influence Area.

## Value of Commercial Freight

**Table 13** shows a summary of the southbound, northbound, and total commercial vehicle counts under each O-D classification (pass-through, originating within, and terminating within the Influence Area). It also shows a summary of the values associated with this commercial traffic.

There is an estimated \$8.0 billion of commercial freight that originates within the Influence Area and terminates either within or outside of the area. There is also an estimated \$3.7 billion of commercial freight that terminates within the Influence Area from origins outside. Overall, it can be determined that the net value-added of commercial freight originating within the Influence Area totals \$4.3 billion annually.

**Table 39** on page 49 summarizes the analysis of the USDOT Bureau of Transportation Statistics Vehicle Inventory and Use Survey (VIUS) data, which contains information on the average empty and loaded weights of commercial vehicle types. This analysis specifically analyzes weight characteristics of 2+axle vehicles by commodity category in Colorado. This information was used to identify the distribution of trucks by weight by commodity type that originate and terminate in the Denver MSA.

**Table 40** on page 50 summarizes the consolidation of VIUS and FAF data to determine the commodity value per commercial vehicle traveling within the Denver MSA by commodity category (Standard Classification of Transported Goods). FAF data were used specifically to identify weight and value of commodities transported in Denver.

Both sets of factors together were used to estimate weight per vehicle by SCTG category. These were completed to estimate the control totals for all 2+ axle commercial vehicles in the Denver MSA. Estimates were then aligned against the FAF value of all commodities by SCTG category transported in and out of the region to determine per-vehicle commercial freight commodity values. (See **Table 41, Table 43, Table 45, Table 47, Table 49, Table 51, Table 53, Table 55, Table 57, Table 59, and Table 61** in the Appendix for distributions of commercial vehicles by commodity category for each jurisdictional component of the Influence Area; and see **Table 42, Table 44, Table 46, Table 48, Table 50, Table 52, Table 54, Table 56, Table 58, Table 60, and Table 62** for the value of commercial freight by commodity category for each jurisdictional component of the Influence Area).

**Table 13 Summary of Commercial Vehicle Traffic and Values**

	Commercial Vehicles			Value of Goods (\$ millions)		
	Southbound	Northbound	Total	Southbound	Northbound	Total
<b>Pass-Through Traffic</b>	<b>59,885</b>	<b>53,917</b>	<b>113,802</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>
<b>Originating within</b>						
Adams County	74,501	40,320	114,821	\$989.0	\$535.3	\$1,524.3
Arapahoe County	153,277	119,384	272,661	\$2,034.9	\$1,584.9	\$3,619.8
Douglas County	96,672	90,955	187,627	\$1,283.4	\$1,207.5	\$2,490.9
Aurora	144,488	74,931	219,419	\$1,918.2	\$994.8	\$2,912.9
Brighton	20,893	6,255	27,148	\$277.4	\$83.0	\$360.4
Broomfield	3,577	72	3,649	\$47.5	\$0.9	\$48.4
Commerce City	17,686	14,695	32,381	\$234.8	\$195.1	\$429.9
Denver	14,111	12,059	26,170	\$187.3	\$160.1	\$347.4
Parker	94,925	18,807	113,732	\$1,260.2	\$249.7	\$1,509.9
Thornton	8,685	54	8,738	\$115.3	\$0.7	\$116.0
<b>Total Influence Area</b>	<b>342,139</b>	<b>262,790</b>	<b>604,928</b>	<b>\$4,542.1</b>	<b>\$3,488.7</b>	<b>\$8,030.8</b>
<b>Terminating within</b>						
Adams County	23,363	16,946	40,309	\$310.2	\$225.0	\$535.1
Arapahoe County	51,734	84,623	136,358	\$686.8	\$1,123.4	\$1,810.2
Douglas County	24,632	65,115	89,747	\$327.0	\$864.5	\$1,191.5
Aurora	34,125	67,227	101,352	\$453.0	\$892.5	\$1,345.5
Brighton	4,899	2,935	7,833	\$65.0	\$39.0	\$104.0
Broomfield	19	648	667	\$0.3	\$8.6	\$8.9
Commerce City	10,212	3,603	13,815	\$135.6	\$47.8	\$183.4
Denver	6,406	4,601	11,008	\$85.0	\$61.1	\$146.1
Parker	7,143	63,759	70,902	\$94.8	\$846.4	\$941.3
Thornton	24	1,872	1,896	\$0.3	\$24.9	\$25.2
<b>Total Influence Area</b>	<b>106,156</b>	<b>171,934</b>	<b>278,089</b>	<b>\$1,409.3</b>	<b>\$2,282.5</b>	<b>\$3,691.8</b>
<b>Net Originating</b>						
Adams County	51,137	23,375	74,512	\$678.9	\$310.3	\$989.2
Arapahoe County	101,543	34,760	136,303	\$1,348.1	\$461.5	\$1,809.5
Douglas County	72,040	25,839	97,880	\$956.4	\$343.0	\$1,299.4
Aurora	110,363	7,704	118,067	\$1,465.1	\$102.3	\$1,567.4
Brighton	15,994	3,321	19,315	\$212.3	\$44.1	\$256.4
Broomfield	3,558	-576	2,981	\$47.2	-\$7.7	\$39.6
Commerce City	7,474	11,091	18,566	\$99.2	\$147.2	\$246.5
Denver	7,704	7,458	15,162	\$102.3	\$99.0	\$201.3
Parker	87,781	-44,952	42,830	\$1,165.4	-\$596.8	\$568.6
Thornton	8,661	-1,818	6,842	\$115.0	-\$24.1	\$90.8
<b>Total Influence Area</b>	<b>235,983</b>	<b>90,856</b>	<b>326,839</b>	<b>\$3,132.8</b>	<b>\$1,206.2</b>	<b>\$4,339.0</b>

Source: Economic & Planning Systems



## Member Jurisdiction Breakdowns

**Table 14** summarizes the economic benefits extending from E-470 are shared by all its member jurisdictions, both at the municipal and county levels. The overall economic impact corresponds (shown in the left-hand column) to the high-level benefits discussed throughout the main body of this report, and the individual impacts (shown in the columns to the right of that) correspond to independently-calculated metrics aligning with various underlying factors. It should be noted that the sum of member jurisdiction benefits does not total the overall estimates because county-level quantifications include underlying municipal quantifications.

Methodologically, two approaches were used in quantifying benefits: 1) those metrics reflecting benefits or changes in socioeconomic activity that can be independently measured specifically by variable and geography (e.g. at the TAZ level), such as employment, population, property valuation, and the movement of commercial goods along the corridor; and 2) those metrics that can be estimated by the apportionment of trip generation and gross and net travel time savings attributable to specific jurisdictions, such as GRP, VHT, costs of avoided accidents, and the net value of time.

**Table 14 E-470 Member Jurisdiction Breakdowns of Economic Benefit**

	Overall	Aurora	Brighton	Commerce City	Parker	Thornton	Adams County	Arapahoe County	Douglas County
<b>Annual Change</b>									
Population (2015-20)	19,729	9,979	1,568	1,039	1,046	636	4,769	10,433	1,662
Employment (2015-20)	10,464	3,330	326	517	356	460	3,088	4,317	1,713
Gross Regional Product (2015-20), in billions	\$17.15	\$3.88	\$0.68	\$1.84	\$1.35	\$2.15	\$9.02	\$5.18	\$2.39
Property Valuation Increase (2015-19), in billions	\$45.94	\$21.42	\$3.19	\$2.48	\$2.55	\$6.05	\$12.59	\$19.79	\$3.30
<b>Current Year Metric</b>									
Vehicle Hours Traveled Saved (2020), in millions	43.2	9.8	1.7	4.6	3.4	5.4	22.7	13.0	6.0
Cost of Avoided Accidents (2019), in millions	\$70.29	\$15.90	\$2.77	\$7.53	\$5.53	\$8.80	\$36.98	\$21.23	\$9.78
Net Value of Time (2020), in millions	\$354.53	\$80.19	\$13.98	\$37.96	\$27.88	\$44.37	\$186.50	\$107.08	\$49.34
<b>Value of Commercial Goods (2020)</b>									
Inflow, in billions	\$3.69	\$1.35	\$0.10	\$0.18	\$0.94	\$0.03	\$0.54	\$1.81	\$1.19
Outflow, in billions	\$8.03	\$2.91	\$0.36	\$0.43	\$1.51	\$0.12	\$1.52	\$3.62	\$2.49
Net value-added, in billions	\$4.34	\$1.57	\$0.26	\$0.25	\$0.57	\$0.09	\$0.99	\$1.81	\$1.30

Source: Economic & Planning Systems



## Appendix A: Supporting Data

**Table 15 Metro Area GRP, Population, and Employment Trends, 2001-18**

	GRP (\$ millions)		Population		Employment	
	7-County MSA [1]	11-County MSA [2]	7-County MSA [1]	11-County MSA [2]	7-County MSA [1]	11-County MSA [2]
2001.....	\$123,360	\$129,883	2,468,383	2,696,001	1,740,056	1,860,564
2002.....	\$124,386	\$130,925	2,494,509	2,732,723	1,714,252	1,837,301
2003.....	\$126,577	\$133,537	2,511,607	2,756,478	1,698,639	1,824,733
2004.....	\$129,912	\$137,652	2,532,539	2,783,738	1,724,590	1,854,869
2005.....	\$138,201	\$147,006	2,560,644	2,819,665	1,765,148	1,900,384
2006.....	\$143,872	\$153,331	2,605,859	2,872,910	1,804,755	1,944,670
2007.....	\$153,467	\$163,652	2,653,222	2,927,361	1,869,080	2,013,910
2008.....	\$156,341	\$167,702	2,701,638	2,981,878	1,894,455	2,038,738
2009.....	\$154,304	\$165,088	2,749,198	3,034,702	1,848,730	1,989,050
2010.....	\$158,308	\$169,883	2,796,619	3,088,508	1,841,234	1,981,375
2011.....	\$163,668	\$176,195	2,850,207	3,146,598	1,883,454	2,028,485
2012.....	\$171,543	\$184,896	2,902,258	3,204,031	1,931,328	2,079,638
2013.....	\$181,696	\$196,879	2,956,749	3,264,963	1,997,677	2,153,092
2014.....	\$193,201	\$210,953	3,012,657	3,327,592	2,072,762	2,237,469
2015.....	\$205,340	\$221,673	3,076,288	3,400,986	2,151,491	2,320,419
2016.....	\$213,666	\$229,673	3,122,306	3,457,679	2,220,631	2,388,690
2017.....	\$226,248	\$244,644	3,157,789	3,504,406	2,278,641	2,455,988
2018.....	\$239,557	\$260,989	3,197,929	3,554,242	2,341,440	2,525,011
<b>2001-18</b>						
Total Δ.....	\$116,197	\$131,106	729,546	858,241	601,384	664,447
Ann. Δ.....	\$6,835	\$7,712	42,914	50,485	35,376	39,085
Ann. %.....	4.0%	4.2%	1.5%	1.6%	1.8%	1.8%

[Note 1]: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties.

[Note 2]: 7-County MSA definition and: Clear Creek, Elbert, Gilpin, and Weld counties.

Source: Bureau of Economic Analysis; Economic & Planning Systems  
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**Table 16 Total Property Valuation in E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$13,718,866,327	\$1,723,269,284	\$335,453,809	\$15,777,589,420
Arapahoe County.....	\$29,197,290,096	\$2,712,944,900	\$3,797,964,841	\$35,708,199,837
Douglas County.....	\$3,219,076,438	\$130,336,786	\$562,356,662	\$3,911,769,886
Aurora.....	\$30,400,969,862	\$2,987,794,461	\$3,952,722,217	\$37,341,486,540
Brighton.....	\$3,550,090,517	\$510,427,171	\$82,290,336	\$4,142,808,024
Broomfield.....	\$7,255,434,188	\$652,857,882	\$139,930,765	\$8,048,222,835
Commerce City.....	\$2,387,439,684	\$551,722,198	\$125,989,957	\$3,065,151,839
Denver.....	\$4,661,550,488	\$2,654,400,297	\$484,240,311	\$7,800,191,096
Parker.....	\$2,466,211,017	\$121,478,786	\$519,534,699	\$3,107,224,502
Thornton.....	<u>\$7,330,521,781</u>	<u>\$395,128,354</u>	<u>\$15,238,103</u>	<u>\$7,740,888,238</u>
<b>Total Influence Area</b>	<b>\$50,796,783,349</b>	<b>\$7,220,951,267</b>	<b>\$5,180,015,623</b>	<b>\$63,197,750,239</b>

Source: Economic & Planning Systems

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**Table 17 Total Property Valuation in E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$25,340,769,565	\$2,537,252,630	\$490,716,482	\$28,368,738,677
Arapahoe County.....	\$47,470,223,997	\$3,564,165,686	\$4,466,992,673	\$55,501,382,356
Douglas County.....	\$5,567,836,745	\$1,118,462,257	\$527,496,394	\$7,213,795,396
Aurora.....	\$50,004,855,325	\$4,041,987,685	\$4,716,024,605	\$58,762,867,615
Brighton.....	\$6,490,636,203	\$731,944,271	\$108,222,134	\$7,330,802,608
Broomfield.....	\$10,863,791,648	\$845,887,848	\$275,910,144	\$11,985,589,640
Commerce City.....	\$4,650,883,540	\$721,908,100	\$170,113,660	\$5,542,905,300
Denver.....	\$10,263,679,234	\$4,397,104,872	\$3,396,618,416	\$18,057,402,522
Parker.....	\$4,084,635,066	\$1,102,204,554	\$466,645,092	\$5,653,484,712
Thornton.....	<u>\$13,147,820,173</u>	<u>\$621,835,963</u>	<u>\$24,200,058</u>	<u>\$13,793,856,194</u>
<b>Total Influence Area</b>	<b>\$88,642,509,541</b>	<b>\$11,616,985,445</b>	<b>\$8,881,823,965</b>	<b>\$109,141,318,951</b>

Source: Economic & Planning Systems

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**Table 18 Total Property Valuation in E-470 Influence Area, 2015-19**

	Property Valuation Increase (2015-19)			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$11,621,903,238	\$813,983,346	\$155,262,673	\$12,591,149,257
Arapahoe County.....	\$18,272,933,901	\$851,220,786	\$669,027,832	\$19,793,182,519
Douglas County.....	\$2,348,760,307	\$988,125,471	-\$34,860,268	\$3,302,025,510
Aurora.....	\$19,603,885,463	\$1,054,193,224	\$763,302,388	\$21,421,381,075
Brighton.....	\$2,940,545,686	\$221,517,100	\$25,931,798	\$3,187,994,584
Broomfield.....	\$3,608,357,460	\$193,029,966	\$135,979,379	\$3,937,366,805
Commerce City.....	\$2,263,443,856	\$170,185,902	\$44,123,703	\$2,477,753,461
Denver.....	\$5,602,128,746	\$1,742,704,575	\$2,912,378,105	\$10,257,211,426
Parker.....	\$1,618,424,049	\$980,725,768	-\$52,889,607	\$2,546,260,210
Thornton.....	<u>\$5,817,298,392</u>	<u>\$226,707,609</u>	<u>\$8,961,955</u>	<u>\$6,052,967,956</u>
<b>Total Influence Area</b>	<b>\$49,627,178,294</b>	<b>\$8,250,278,756</b>	<b>\$3,817,671,067</b>	<b>\$61,695,128,117</b>

Source: Economic & Planning Systems

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**Table 19 Total Property Valuation in Adams County within E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$13,718,866,327	\$1,723,269,284	\$335,453,809	\$15,777,589,420
Arapahoe County.....	\$535,535,936	\$237,756,598	\$78,215,211	\$851,507,745
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$986,350,281	\$503,748,159	\$190,150,624	\$1,680,249,064
Brighton.....	\$3,550,090,517	\$510,427,171	\$82,290,336	\$4,142,808,024
Broomfield.....	\$1,066,002,678	\$346,350,702	\$2,397,405	\$1,414,750,785
Commerce City.....	\$2,387,439,684	\$551,722,198	\$125,989,957	\$3,065,151,839
Denver.....	\$370,255,288	\$745,587,997	\$114,990,261	\$1,230,833,546
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	<u>\$7,330,521,781</u>	<u>\$395,128,354</u>	<u>\$15,238,103</u>	<u>\$7,740,888,238</u>
<b>Total Influence Area</b>	<b>\$15,808,363,876</b>	<b>\$3,154,930,066</b>	<b>\$531,056,686</b>	<b>\$19,494,350,628</b>

Source: Economic & Planning Systems

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**Table 20 Total Property Valuation in Adams County within E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$25,340,769,565	\$2,537,252,630	\$490,716,482	\$28,368,738,677
Arapahoe County.....	\$1,056,574,648	\$412,166,269	\$170,509,226	\$1,639,250,143
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$2,108,004,297	\$873,730,565	\$358,689,856	\$3,340,424,718
Brighton.....	\$6,490,636,203	\$731,944,271	\$108,222,134	\$7,330,802,608
Broomfield.....	\$1,708,116,848	\$501,076,138	\$4,495,724	\$2,213,688,710
Commerce City.....	\$4,650,883,540	\$721,908,100	\$170,113,660	\$5,542,905,300
Denver.....	\$918,023,234	\$1,235,639,847	\$158,068,116	\$2,311,731,197
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	<u>\$13,147,820,173</u>	<u>\$621,835,963</u>	<u>\$24,200,058</u>	<u>\$13,793,856,194</u>
<b>Total Influence Area</b>	<b>\$29,184,398,401</b>	<b>\$4,821,417,925</b>	<b>\$823,789,548</b>	<b>\$34,829,605,874</b>

Source: Economic & Planning Systems

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**Table 21 Total Property Valuation in Arapahoe County within E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$28,130,173,360	\$2,450,147,502	\$3,715,805,230	\$34,296,126,092
Douglas County.....	\$1,014,280,510	\$73,523,257	\$147,575,526	\$1,235,379,293
Aurora.....	\$28,882,255,628	\$2,459,005,502	\$3,758,604,410	\$35,099,865,540
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$262,198,242	\$64,665,257	\$104,776,346	\$431,639,845
Thornton.....	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
<b>Total Influence Area</b>	<b>\$45,464,841,059</b>	<b>\$6,345,377,403</b>	<b>\$5,414,917,068</b>	<b>\$57,225,135,530</b>

Source: Economic & Planning Systems

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**Table 22 Total Property Valuation in Arapahoe County within E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$45,583,632,749	\$3,090,154,517	\$4,287,966,147	\$52,961,753,413
Douglas County.....	\$1,942,835,263	\$174,868,141	\$239,327,116	\$2,357,030,520
Aurora.....	\$47,065,731,708	\$3,106,412,220	\$4,348,791,777	\$54,520,935,705
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$460,736,304	\$158,610,438	\$178,501,486	\$797,848,228
Thornton.....	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
<b>Total Influence Area</b>	<b>\$69,286,746,546</b>	<b>\$8,778,691,203</b>	<b>\$6,444,958,216</b>	<b>\$84,510,395,965</b>

Source: Economic & Planning Systems

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**Table 23 Total Property Valuation in Broomfield County within E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$0	\$0	\$0	\$0
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$0	\$0	\$0	\$0
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$6,189,431,510	\$306,507,180	\$137,533,360	\$6,633,472,050
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$6,189,431,510</b>	<b>\$306,507,180</b>	<b>\$137,533,360</b>	<b>\$6,633,472,050</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022-Property Valuation Compiled.xlsx\TABLE - Broomfield 2015

**Table 24 Total Property Valuation in Broomfield County within E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$0	\$0	\$0	\$0
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$0	\$0	\$0	\$0
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$9,155,674,800	\$344,811,710	\$271,414,420	\$9,771,900,930
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$9,155,674,800</b>	<b>\$344,811,710</b>	<b>\$271,414,420</b>	<b>\$9,771,900,930</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022-Property Valuation Compiled.xlsx\TABLE - Broomfield 2019

**Table 25 Total Property Valuation in Denver County within E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$531,580,800	\$25,040,800	\$3,944,400	\$560,566,000
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$531,580,800	\$25,040,800	\$3,944,400	\$560,566,000
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$4,291,295,200	\$1,908,812,300	\$369,250,050	\$6,569,357,550
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$7,899,275,400</b>	<b>\$2,333,952,100</b>	<b>\$467,964,250</b>	<b>\$10,701,191,750</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022-Property Valuation Compiled.xlsx\TABLE - Denver 2015

**Table 26 Total Property Valuation in Denver County within E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$830,016,600	\$61,844,900	\$8,517,300	\$900,378,800
Douglas County.....	\$0	\$0	\$0	\$0
Aurora.....	\$830,016,600	\$61,844,900	\$8,517,300	\$900,378,800
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$9,345,656,000	\$3,161,465,025	\$3,238,550,300	\$15,745,671,325
Parker.....	\$0	\$0	\$0	\$0
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$14,940,984,100</b>	<b>\$3,927,411,041</b>	<b>\$3,419,293,900</b>	<b>\$22,287,689,041</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022- Property Valuation Compiled.xlsx\TABLE - Denver 2019

**Table 27 Total Property Valuation in Douglas County within E-470 Influence Area, 2015**

	2015			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$0	\$0	\$0	\$0
Douglas County.....	\$2,204,795,928	\$56,813,529	\$414,781,136	\$2,676,390,593
Aurora.....	\$783,153	\$0	\$22,783	\$805,936
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$2,204,012,775	\$56,813,529	\$414,758,353	\$2,675,584,657
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$5,936,527,585</b>	<b>\$154,885,855</b>	<b>\$947,499,807</b>	<b>\$7,038,913,247</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022- Property Valuation Compiled.xlsx\TABLE - Douglas 2015

**Table 28 Total Property Valuation in Douglas County within E-470 Influence Area, 2019**

	2019			
	Residential	Commercial	Other	Total
<u>Total Property Valuation</u>				
Adams County.....	\$0	\$0	\$0	\$0
Arapahoe County.....	\$0	\$0	\$0	\$0
Douglas County.....	\$3,625,001,482	\$943,594,116	\$288,169,278	\$4,856,764,876
Aurora.....	\$1,102,720	\$0	\$25,672	\$1,128,392
Brighton.....	\$0	\$0	\$0	\$0
Broomfield.....	\$0	\$0	\$0	\$0
Commerce City.....	\$0	\$0	\$0	\$0
Denver.....	\$0	\$0	\$0	\$0
Parker.....	\$3,623,898,762	\$943,594,116	\$288,143,606	\$4,855,636,484
Thornton.....	\$0	\$0	\$0	\$0
<b>Total Influence Area</b>	<b>\$8,357,813,877</b>	<b>\$2,673,599,481</b>	<b>\$357,186,154</b>	<b>\$11,388,599,512</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\93022- E-470 Economic Impact Study\Data\93022- Property Valuation Compiled.xlsx\TABLE - Douglas 2019

**Table 29 Member Jurisdiction Detail of Travel Time Savings, 2015**

	Vehicle Hours Traveled (VHT)			Value of Time		
	w/ E-470	w/o E-470	Diff.	Gross	Toll Revs. [1]	Net
Aurora.....	181,051,857	184,388,329	3,336,471	\$45,039,691	\$39,131,840	\$5,907,851
Brighton.....	31,554,752	32,136,252	581,499	\$7,849,775	\$6,820,121	\$1,029,654
Broomfield.....	0	0	0	\$0	\$0	\$0
Commerce City.....	85,697,879	87,277,142	1,579,263	\$21,318,787	\$18,522,404	\$2,796,383
Denver.....	26,209,412	26,692,406	482,994	\$6,520,031	\$5,664,800	\$855,232
Thornton.....	62,937,074	64,096,895	1,159,821	\$15,656,655	\$13,602,973	\$2,053,682
Parker.....	100,182,028	102,028,208	1,846,181	\$24,921,962	\$21,652,951	\$3,269,011
Adams County.....	421,074,891	428,834,570	7,759,679	\$104,749,453	\$91,009,479	\$13,739,974
Arapahoe County.....	241,747,337	246,202,321	4,454,983	\$60,138,711	\$52,250,323	\$7,888,388
Douglas County.....	111,390,000	113,442,724	2,052,724	\$27,710,134	\$24,075,399	\$3,634,735
<b>Total.....</b>	<b>800,421,640</b>	<b>815,172,020</b>	<b>14,750,380</b>	<b>\$199,118,330</b>	<b>\$173,000,000</b>	<b>\$26,118,330</b>

[Note 1]: Toll revenues are apportioned on the basis of linear frontage miles, not origin of transactions.

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Economic Impacts-04 B20.xlsx;c-7 - VOT Detail 2015

**Table 30 Member Jurisdiction Detail of Travel Time Savings, 2020**

	Vehicle Hours Traveled (VHT)			Value of Time		
	w/ E-470	w/o E-470	Diff.	Gross	Toll Revs. [1]	Net
Aurora.....	206,193,492	215,956,279	9,762,787	\$136,517,918	\$56,325,668	\$80,192,250
Brighton.....	35,936,580	37,638,094	1,701,514	\$23,793,123	\$9,816,759	\$13,976,364
Broomfield.....	0	0	0	\$0	\$0	\$0
Commerce City.....	97,598,253	102,219,306	4,621,052	\$64,618,481	\$26,660,816	\$37,957,665
Denver.....	29,848,963	31,262,242	1,413,280	\$19,762,594	\$8,153,811	\$11,608,783
Thornton.....	71,676,785	75,070,516	3,393,731	\$47,456,229	\$19,579,875	\$27,876,354
Parker.....	114,093,733	119,495,808	5,402,075	\$75,539,915	\$31,166,870	\$44,373,045
Adams County.....	479,547,151	502,252,604	22,705,453	\$317,501,672	\$130,997,411	\$186,504,262
Arapahoe County.....	275,317,406	288,353,051	13,035,645	\$182,283,925	\$75,208,178	\$107,075,747
Douglas County.....	126,858,092	132,864,530	6,006,438	\$83,991,024	\$34,653,697	\$49,337,327
<b>Total.....</b>	<b>911,571,612</b>	<b>954,732,427</b>	<b>43,160,816</b>	<b>\$603,539,215</b>	<b>\$249,013,096</b>	<b>\$354,526,119</b>

[Note 1]: Toll revenues are apportioned on the basis of linear frontage miles, not origin of transactions.

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Economic Impacts-04 B20.xlsx;c-8 - VOT Detail 2020

**Table 31 Member Jurisdiction Detail of Reduction in Costs Associated with Accidents, 2015**

	Vehicle Miles Travelled (VMT)			Difference in Incidents			Avoided Costs
	w/ E-470	w/o E-470	Diff.	PDO	Injury	Fatality	
<b>Member Jurisdictions</b>							
Aurora.....	17,953,962	17,861,985	-91,977	40	6	1	\$5,095,942
Brighton.....	3,129,119	3,113,089	-16,030	7	1	0	\$888,150
Commerce City.....	8,498,209	8,454,673	-43,536	19	3	0	\$2,412,079
Denver.....	2,599,050	2,585,735	-13,315	6	1	0	\$737,698
Thornton.....	6,241,139	6,209,166	-31,973	14	2	0	\$1,771,447
Parker.....	9,934,526	9,883,632	-50,894	22	3	0	\$2,819,755
Adams County.....	41,755,787	41,541,874	-213,913	92	14	1	\$11,851,706
Arapahoe County.....	23,972,815	23,850,003	-122,812	53	8	1	\$6,804,297
Douglas County.....	11,045,962	10,989,374	-56,588	24	4	0	\$3,135,218
<b>Total.....</b>	<b>79,373,613</b>	<b>78,966,986</b>	<b>-406,627</b>	<b>176</b>	<b>27</b>	<b>2</b>	<b>\$22,528,919</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Economic Impacts-04 B20.xlsx;c-4 - Accidents Detail 2015



**Table 32 Member Jurisdiction Detail of Reduction in Costs Associated with Accidents, 2020**

	Vehicle Miles Travelled (VMT)			Difference in Incidents			Avoided Costs
	w/ E-470	w/o E-470	Diff.	PDO	Injury	Fatality	
<b>Member Jurisdictions</b>							
Aurora.....	20,158,154	20,143,280	-14,875	127	18	1	\$15,899,053
Brighton.....	3,513,278	3,510,686	-2,592	22	3	0	\$2,770,978
Commerce City.....	9,541,526	9,534,486	-7,041	60	9	1	\$7,525,552
Denver.....	2,918,133	2,915,980	-2,153	18	3	0	\$2,301,577
Thornton.....	7,007,358	7,002,188	-5,171	44	6	1	\$5,526,814
Parker.....	11,154,179	11,145,948	-8,231	71	10	1	\$8,797,476
Adams County.....	46,882,108	46,847,513	-34,595	296	43	3	\$36,976,655
Arapahoe County.....	26,915,936	26,896,074	-19,861	170	24	2	\$21,229,021
Douglas County.....	<u>12,402,065</u>	<u>12,392,913</u>	<u>-9,152</u>	<u>78</u>	<u>11</u>	<u>1</u>	<u>\$9,781,703</u>
<b>Total.....</b>	<b>89,118,241</b>	<b>89,052,480</b>	<b>-65,761</b>	<b>563</b>	<b>81</b>	<b>6</b>	<b>\$70,288,956</b>

Source: Economic & Planning Systems  
Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Economic Impacts-04 E20.xlsx[c.5 - Accidents Detail 2020]



## Appendix B: Commercial Freight Data

**Table 33 SB Pass-Through Commercial Traffic**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Southbound</b>													
<b>Originating</b>													
Adams Remainder.....	0	0	0	1	0	1	0	1	0	0	0	0	1
Arapahoe Remainder.....	0	5	0	0	0	0	0	0	0	26	0	0	67
Aurora in Adams.....	0	10	0	16	0	0	0	0	0	7	12	0	24
Aurora in Arapahoe.....	0	29	0	9	0	0	0	0	0	117	11	0	155
Aurora in Douglas.....	0	1	0	0	0	0	0	0	0	1	0	0	2
Brighton.....	0	5	15	15	0	0	0	0	8	2	2	0	11
Broomfield.....	0	1	1	1	0	1	0	2	1	0	0	0	2
Commerce City.....	0	5	9	11	0	0	0	0	5	2	3	0	14
Denver.....	0	8	0	10	0	0	0	0	0	3	6	0	12
Douglas Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Parker.....	0	42	0	0	0	0	0	0	0	47	0	0	171
Thornton.....	0	2	4	4	0	1	0	4	2	1	1	0	5
Other.....	0	71	22	70	1	13	0	28	18	47	20	0	164

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\1Pass-through

**Table 34 NB Pass-Through Commercial Traffic**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Northbound</b>													
<b>Originating</b>													
Adams Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Arapahoe Remainder.....	0	6	12	28	1	5	0	6	11	0	45	2	61
Aurora in Adams.....	1	0	0	0	0	15	1	8	0	0	0	5	23
Aurora in Arapahoe.....	1	0	21	10	0	13	1	10	15	0	0	4	75
Aurora in Douglas.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Brighton.....	1	0	0	0	0	0	1	0	0	0	0	1	14
Broomfield.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Commerce City.....	1	0	0	0	0	0	2	0	0	0	0	4	33
Denver.....	1	0	0	0	0	7	1	4	0	0	0	2	18
Douglas Remainder.....	0	21	5	91	1	1	0	1	3	0	41	0	31
Parker.....	0	0	12	11	0	1	0	2	6	0	0	0	19
Thornton.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Other.....	1	72	22	160	2	8	2	10	13	1	175	5	148

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\1Pass-through

**Table 35 SB Commercial Traffic, Origin Within E-470, Destination Within and Outside**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Originating</b>													
Adams Remainder.....	0	0	0	1	0	1	0	1	0	0	0	0	1
Arapahoe Remainder.....	0	5	0	0	0	0	0	0	0	26	0	0	67
Aurora in Adams.....	0	10	0	16	0	0	0	0	0	7	12	0	24
Aurora in Arapahoe.....	0	29	0	9	0	0	0	0	0	117	11	0	155
Aurora in Douglas.....	0	1	0	0	0	0	0	0	0	1	0	0	2
Brighton.....	0	5	15	15	0	0	0	0	8	2	2	0	11
Broomfield.....	0	1	1	1	0	1	0	2	1	0	0	0	2
Commerce City.....	0	5	9	11	0	0	0	0	5	2	3	0	14
Denver.....	0	8	0	10	0	0	0	0	0	3	6	0	12
Douglas Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Parker.....	0	42	0	0	0	0	0	0	0	47	0	0	171
Thornton.....	0	2	4	4	0	1	0	4	2	1	1	0	5
Other.....	0	71	22	70	1	13	0	28	18	47	20	0	164

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\2 Originate in Area

**Table 36 NB Commercial Traffic, Origin Within E-470, Destination Within and Outside**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Originating</b>													
Adams Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Arapahoe Remainder.....	0	6	12	28	1	5	0	6	11	0	45	2	61
Aurora in Adams.....	1	0	0	0	0	15	1	8	0	0	0	5	23
Aurora in Arapahoe.....	1	0	21	10	0	13	1	10	15	0	0	4	75
Aurora in Douglas.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Brighton.....	1	0	0	0	0	0	1	0	0	0	0	1	14
Broomfield.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Commerce City.....	1	0	0	0	0	0	2	0	0	0	0	4	33
Denver.....	1	0	0	0	0	7	1	4	0	0	0	2	18
Douglas Remainder.....	0	21	5	91	1	1	0	1	3	0	41	0	31
Parker.....	0	0	12	11	0	1	0	2	6	0	0	0	19
Thornton.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Other.....	1	72	22	160	2	8	2	10	13	1	175	5	148

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\2 Originate in Area

**Table 37 SB Commercial Traffic, Origin Outside E-470, Destination Within**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Originating</b>													
Adams Remainder.....	0	0	0	1	0	1	0	1	0	0	0	0	1
Arapahoe Remainder.....	0	5	0	0	0	0	0	0	0	26	0	0	67
Aurora in Adams.....	0	10	0	16	0	0	0	0	0	7	12	0	24
Aurora in Arapahoe.....	0	29	0	9	0	0	0	0	0	117	11	0	155
Aurora in Douglas.....	0	1	0	0	0	0	0	0	0	1	0	0	2
Brighton.....	0	5	15	15	0	0	0	0	8	2	2	0	11
Broomfield.....	0	1	1	1	0	1	0	2	1	0	0	0	2
Commerce City.....	0	5	9	11	0	0	0	0	5	2	3	0	14
Denver.....	0	8	0	10	0	0	0	0	0	3	6	0	12
Douglas Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Parker.....	0	42	0	0	0	0	0	0	0	47	0	0	171
Thornton.....	0	2	4	4	0	1	0	4	2	1	1	0	5
Other.....	0	71	22	70	1	13	0	28	18	47	20	0	164

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\3 Originate Outside

**Table 38 NB Commercial Traffic, Origin Outside E-470, Destination Within**

	Terminating												
	Adams Remainder	Arapahoe Remainder	Aurora in Adams	Aurora in Arapahoe	Aurora in Douglas	Brighton	Broomfield	Commerce City	Denver	Douglas Remainder	Parker	Thornton	Other
<b>Originating</b>													
Adams Remainder.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Arapahoe Remainder.....	0	6	12	28	1	5	0	6	11	0	45	2	61
Aurora in Adams.....	1	0	0	0	0	15	1	8	0	0	0	5	23
Aurora in Arapahoe.....	1	0	21	10	0	13	1	10	15	0	0	4	75
Aurora in Douglas.....	0	0	0	0	0	0	0	0	0	0	0	0	1
Brighton.....	1	0	0	0	0	0	1	0	0	0	0	1	14
Broomfield.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Commerce City.....	1	0	0	0	0	0	2	0	0	0	0	4	33
Denver.....	1	0	0	0	0	7	1	4	0	0	0	2	18
Douglas Remainder.....	0	21	5	91	1	1	0	1	3	0	41	0	31
Parker.....	0	0	12	11	0	1	0	2	6	0	0	0	19
Thornton.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Other.....	1	72	22	160	2	8	2	10	13	1	175	5	148

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\3 Originate Outside

**Table 39 Average Weight of 2+ Axle Commercial Vehicles by Commodity in Colorado**

Code	Commodity Description	2+ Axle Trucks in Colorado			
		n =	Average Weight w/ Cargo	Average Empty Weight	Average Cargo Weight
1	LIVEANIMAL	11	54,457	24,922	29,536
2	ANIMALFEED	17	58,754	24,981	33,773
3	GRAINS	70	69,043	25,191	43,852
4	OTHERAGRIC	59	53,661	24,240	29,422
5	CHEMICALS	3	52,600	23,633	28,967
6	FERTILIZER	3	49,213	20,637	28,577
7	PHARMACEUT				
8	OTHERCHEM				
9	ALCOHOLIC	5	52,000	18,900	33,100
10	BAKERYPROD				
11	MEATS				
12	TOBACCO				
13	OTHERFOOD	12	56,103	27,727	28,377
14	LOGS	9	49,901	25,169	24,733
15	PAPER	3	59,500	34,000	25,500
16	PRINTPROD	1	80,000	0	80,000
17	NEWSPRINT				
18	WOOD	10	40,885	21,768	19,118
19	BASEMETAL	4	38,250	23,000	15,250
20	METALPRIM	4	53,550	31,070	22,480
21	NONMETAL	92	62,398	27,059	35,339
22	TOOLS_NON	10	32,033	22,650	9,383
23	TOOLS_PWD	4	27,000	16,195	10,805
24	ELECTRONIC	0	0	0	0
25	FURNITURE	1	80,000	25,000	55,000
26	MACHINERY	28	65,293	32,242	33,051
27	MISCPROD	6	36,833	19,564	17,269
28	PRECISION	1	40,500	20,000	20,500
29	TEXTILES				
30	VEHICLES	7	45,143	27,186	17,957
31	OTHERTRANS	4	72,625	38,767	33,858
32	COAL	1	50,200	24,160	26,040
33	CRUDEPETRLM				
34	GRAVEL	113	61,844	26,624	35,220
35	ORES				
36	STONE	5	40,220	18,700	21,520
37	SANDS	6	51,767	23,192	28,575
38	OTHERMIN	4	51,500	24,903	26,597
39	FUELOIL	2	47,650	19,845	27,805
40	GASOLINE	2	80,000	28,250	51,750
41	PLASTICS				
42	OTHERCOAL	2	45,350	23,400	21,950
43	HAZWASTE				
44	OTHERWASTE	51	49,146	29,891	19,255
45	RECYCLABLE	15	52,243	26,847	25,396
46	MAIL				
47	EMPCONTAIN	1	80,000	0	80,000
48	PASSENGERS	0	0	0	0
49	MIXFREIGHT	2	44,000	21,250	22,750
50	multiple categories	73	44,997	21,140	23,856
99	OTHER	24	51,587	22,332	29,255
		665	56,162	25,508	30,654

Source: USDOT, Bureau of Transportation Statistics (BTS), Vehicle Inventory and Use Survey (VIUS) 2002; Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-VIUS Survey Data.xlsx\TABLE - Weight by VIUS Category

**Table 40 Classification of Commercial Goods Counts, Values for Denver MSA**

SCTG Commodity Category	VIUS Commodity Category	Thousand Tons of Commodity	Pounds of Commodity (Millions)	VIUS Factor: Pounds of Commodity per 2+ Axle Vehicle	Estimated Count of Commercial Vehicles	Distribution of Vehicles by SCTG Category	\$ Millions in Total Commodity Value	Commodity Value (\$) per Commercial Vehicle
Alcoholic beverages.....	ALCOHOLIC.....	1,072	2,144	33,100	64,761	1%	\$2,271.77	\$35,079
Animal feed.....	ANIMALFEED.....	1,712	3,423	33,773	101,367	2%	\$509.27	\$5,024
Articles-base metal.....	BASEMETAL.....	928	1,856	15,250	121,720	2%	\$2,802.70	\$23,026
Base metals.....	BASEMETAL.....	1,509	3,018	15,250	197,929	3%	\$2,725.27	\$13,769
Basic chemicals.....	CHEMICALS.....	1,292	2,585	28,967	89,240	1%	\$1,225.16	\$13,729
Building stone.....	STONE.....	445	890	21,520	41,359	1%	\$272.06	\$6,578
Cereal grains.....	GRAINS.....	3,828	7,656	43,852	174,589	3%	\$978.97	\$5,607
Chemical prods.....	CHEMICALS.....	1,063	2,126	28,967	73,387	1%	\$2,733.78	\$37,252
Coal.....	COAL.....	85	170	26,040	6,544	0%	\$3.41	\$521
Coal-n.e.c.....	COAL.....	1,587	3,175	26,040	121,923	2%	\$2,378.59	\$19,509
Crude petroleum.....	CRUDEPETRLM.....	878	1,756			0%	\$574.68	
Electronics.....	ELECTRONIC.....	859	1,718	0		0%	\$10,683.53	
Fertilizers.....	FERTILIZER.....	431	863	28,577	30,190	0%	\$204.37	\$6,770
Fuel oils.....	FUELOIL.....	1,254	2,508	27,805	90,183	1%	\$1,192.27	\$13,221
Furniture.....	FURNITURE.....	797	1,595	55,000	28,995	0%	\$3,795.36	\$130,898
Gasoline.....	GASOLINE.....	1,860	3,720	51,750	71,891	1%	\$1,370.38	\$19,062
Gravel.....	GRAVEL.....	34,915	69,830	35,220	1,982,678	32%	\$255.34	\$129
Live animals/fish.....	LIVEANIMAL.....	558	1,116	29,536	37,801	1%	\$1,640.74	\$43,404
Logs.....	LOGS.....	357	714	24,733	28,873	0%	\$44.72	\$1,549
Machinery.....	MACHINERY.....	677	1,353	33,051	40,942	1%	\$6,533.13	\$159,571
Meat/seafood.....	MEATS.....	788	1,576			0%	\$3,812.43	
Metallic ores.....	METALPRIM.....	26	52	22,480	2,332	0%	\$9.27	\$3,974
Milled grain prods.....	GRAINS.....	1,526	3,052	43,852	69,607	1%	\$1,556.74	\$22,365
Misc. mfg. prods.....	MISCPROD.....	925	1,850	17,269	107,105	2%	\$3,990.10	\$37,254
Mixed freight.....	MIXFREIGHT.....	4,560	9,120	22,750	400,894	7%	\$15,799.91	\$39,412
Motorized vehicles.....	VEHICLES.....	951	1,903	17,957	105,958	2%	\$10,974.81	\$103,577
Natural sands.....	SANDS.....	11,099	22,198	28,575	776,828	13%	\$81.99	\$106
Newsprint/paper.....	NEWSPRINT.....	207	414			0%	\$302.42	
Nonmetal min. prods.....	NONMETAL.....	9,714	19,428	35,339	549,746	9%	\$3,504.64	\$6,375
Nonmetallic minerals.....	OTHERMIN.....	1,639	3,278	26,597	123,249	2%	\$167.38	\$1,358
Other ag prods.....	OTHERAGRIC.....	1,757	3,514	29,422	119,424	2%	\$1,509.32	\$12,638
Other foodstuffs.....	OTHERFOOD.....	3,826	7,652	28,377	269,661	4%	\$4,905.63	\$18,192
Paper articles.....	PAPER.....	575	1,150	25,500	45,109	1%	\$996.89	\$22,100
Pharmaceuticals.....	PHARMACEUT.....	165	329			0%	\$6,583.53	
Plastics/rubber.....	PLASTICS.....	845	1,689			0%	\$3,255.47	
Precision instruments.....	PRECISION.....	94	188	20,500	9,186	0%	\$2,527.06	\$275,108
Printed prods.....	PRINTPROD.....	373	746	80,000	9,328	0%	\$1,259.82	\$135,058
Textiles/leather.....	TEXTILES.....	206	413			0%	\$2,996.43	
Tobacco prods.....	TOBACCO.....	4	7			0%	\$120.94	
Transport equip.....	OTHERTRANS.....	76	152	33,858	4,482	0%	\$1,620.84	\$361,628
Waste/scrap.....	0.....	5,716	11,432			0%	\$277.63	
Wood prods.....	WOOD.....	2,507	5,013	19,118	262,243	4%	\$1,930.22	\$7,360
		<b>103,687</b>	<b>207,373</b>	<b>1,010,022</b>	<b>6,159,525</b>	<b>100%</b>	<b>\$2,461.38</b>	<b>\$13,276</b>

Source: Freight Analysis Framework Data (Oak Ridge National Laboratory); Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-FAF Commercial Freight Data.xlsx\TABLE - Dest Value Data

**Table 41 Annual Commercial Vehicle Distribution, Total Corridor**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	937	720	291	471
Estimated Annual CV Counts	59,885	53,917	342,139	262,790	106,156	171,934
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	3,597	2,763	1,116	1,808
Animal feed.....	986	887	5,631	4,325	1,747	2,830
Articles-base metal.....	1,183	1,065	6,761	5,193	2,098	3,398
Base metals.....	1,924	1,733	10,994	8,444	3,411	5,525
Basic chemicals.....	868	781	4,957	3,807	1,538	2,491
Building stone.....	402	362	2,297	1,765	713	1,154
Cereal grains.....	1,697	1,528	9,698	7,449	3,009	4,873
Chemical prods.....	713	642	4,076	3,131	1,265	2,048
Coal.....	64	57	363	279	113	183
Coal-n.e.c.....	1,185	1,067	6,772	5,202	2,101	3,403
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	1,677	1,288	520	843
Fuel oils.....	877	789	5,009	3,848	1,554	2,517
Furniture.....	282	254	1,611	1,237	500	809
Gasoline.....	699	629	3,993	3,067	1,239	2,007
Gravel.....	19,276	17,355	110,130	84,589	34,170	55,343
Live animals/fish.....	368	331	2,100	1,613	651	1,055
Logs.....	281	253	1,604	1,232	498	806
Machinery.....	398	358	2,274	1,747	706	1,143
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	130	99	40	65
Milled grain prods.....	677	609	3,866	2,970	1,200	1,943
Misc. mfg. prods.....	1,041	938	5,949	4,570	1,846	2,990
Mixed freight.....	3,898	3,509	22,268	17,104	6,909	11,190
Motorized vehicles.....	1,030	927	5,886	4,521	1,826	2,958
Natural sands.....	7,553	6,800	43,150	33,143	13,388	21,684
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	30,536	23,454	9,475	15,345
Nonmetallic minerals.....	1,198	1,079	6,846	5,258	2,124	3,440
Other ag prods.....	1,161	1,045	6,634	5,095	2,058	3,334
Other foodstuffs.....	2,622	2,360	14,979	11,505	4,647	7,527
Paper articles.....	439	395	2,506	1,925	777	1,259
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	510	392	158	256
Printed prods.....	91	82	518	398	161	260
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	249	191	77	125
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	14,567	11,188	4,520	7,320
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>342,139</b>	<b>262,790</b>	<b>106,156</b>	<b>171,934</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 1.1 - Total CV



**Table 42 Annual Commercial Goods Movement Value, Total Corridor**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	937	720	291	471
Estimated Annual CV Counts	59,885	53,917	342,139	262,790	106,156	171,934
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$126,188,480	\$96,922,755	\$39,152,589	\$63,413,057
Animal feed.....	\$4,951,272	\$4,457,852	\$28,287,879	\$21,727,333	\$8,776,900	\$14,215,409
Articles-base metal.....	\$27,248,825	\$24,533,342	\$155,679,490	\$119,574,188	\$48,302,786	\$78,233,071
Base metals.....	\$26,495,981	\$23,855,523	\$151,378,304	\$116,270,536	\$46,968,254	\$76,071,611
Basic chemicals.....	\$11,911,431	\$10,724,397	\$68,053,046	\$52,270,134	\$21,114,867	\$34,198,460
Building stone.....	\$2,645,030	\$2,381,439	\$15,111,731	\$11,607,007	\$4,688,728	\$7,594,046
Cereal grains.....	\$9,517,883	\$8,569,378	\$54,378,096	\$41,766,688	\$16,871,930	\$27,326,435
Chemical prods.....	\$26,578,782	\$23,930,072	\$151,851,364	\$116,633,884	\$47,115,031	\$76,309,337
Coal.....	\$33,163	\$29,858	\$189,468	\$145,527	\$58,786	\$95,213
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$132,121,983	\$101,480,156	\$40,993,582	\$66,394,800
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$11,352,256	\$8,719,432	\$3,522,273	\$5,704,810
Fuel oils.....	\$11,591,664	\$10,436,496	\$66,226,135	\$50,866,921	\$20,548,030	\$33,280,389
Furniture.....	\$36,899,843	\$33,222,587	\$210,818,219	\$161,925,103	\$65,410,719	\$105,941,745
Gasoline.....	\$13,323,305	\$11,995,570	\$76,119,441	\$58,465,764	\$23,617,633	\$38,252,037
Gravel.....	\$2,482,542	\$2,235,144	\$14,183,393	\$10,893,970	\$4,400,692	\$7,127,531
Live animals/fish.....	\$15,951,854	\$14,362,171	\$91,137,012	\$70,000,449	\$28,277,145	\$45,798,765
Logs.....	\$434,749	\$391,424	\$2,483,834	\$1,907,782	\$770,661	\$1,248,193
Machinery.....	\$63,517,340	\$57,187,517	\$362,890,778	\$278,728,882	\$112,594,380	\$182,362,238
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$514,769	\$395,384	\$159,718	\$258,685
Milled grain prods.....	\$15,135,125	\$13,626,833	\$86,470,831	\$66,416,452	\$26,829,366	\$43,453,885
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$221,635,304	\$170,233,481	\$68,766,943	\$111,377,617
Mixed freight.....	\$153,612,285	\$138,304,046	\$877,626,196	\$674,086,482	\$272,301,704	\$441,030,433
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$609,609,503	\$468,228,419	\$189,143,974	\$306,344,939
Natural sands.....	\$797,180	\$717,737	\$4,554,493	\$3,498,212	\$1,413,126	\$2,288,754
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$194,669,427	\$149,521,550	\$60,400,222	\$97,826,549
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$9,297,600	\$7,141,294	\$2,884,773	\$4,672,290
Other ag prods.....	\$14,674,093	\$13,211,746	\$83,836,839	\$64,393,337	\$26,012,116	\$42,130,234
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$272,489,650	\$209,293,650	\$84,545,558	\$136,933,274
Paper articles.....	\$9,692,071	\$8,726,207	\$55,373,274	\$42,531,063	\$17,180,705	\$27,826,538
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$140,368,829	\$107,814,387	\$43,552,336	\$70,539,058
Printed prods.....	\$12,248,381	\$11,027,768	\$69,978,124	\$53,748,746	\$21,712,162	\$35,165,863
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$90,031,805	\$69,151,563	\$27,934,232	\$45,243,369
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$107,216,532	\$82,350,795	\$33,266,150	\$53,879,150
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$4,542,124,087</b>	<b>\$3,488,711,327</b>	<b>\$1,409,288,072</b>	<b>\$2,282,537,785</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 1.2 - Total Value

**Table 43 Annual Commercial Vehicle Distribution, Adams County**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	204	110	64	46
Estimated Annual CV Counts	59,885	53,917	74,501	40,320	23,363	16,946
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	783	424	246	178
Animal feed.....	986	887	1,226	664	384	279
Articles-base metal.....	1,183	1,065	1,472	797	462	335
Base metals.....	1,924	1,733	2,394	1,296	751	545
Basic chemicals.....	868	781	1,079	584	338	246
Building stone.....	402	362	500	271	157	114
Cereal grains.....	1,697	1,528	2,112	1,143	662	480
Chemical prods.....	713	642	888	480	278	202
Coal.....	64	57	79	43	25	18
Coal-n.e.c.....	1,185	1,067	1,475	798	462	335
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	365	198	115	83
Fuel oils.....	877	789	1,091	590	342	248
Furniture.....	282	254	351	190	110	80
Gasoline.....	699	629	870	471	273	198
Gravel.....	19,276	17,355	23,981	12,979	7,520	5,455
Live animals/fish.....	368	331	457	247	143	104
Logs.....	281	253	349	189	110	79
Machinery.....	398	358	495	268	155	113
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	28	15	9	6
Milled grain prods.....	677	609	842	456	264	191
Misc. mfg. prods.....	1,041	938	1,295	701	406	295
Mixed freight.....	3,898	3,509	4,849	2,624	1,521	1,103
Motorized vehicles.....	1,030	927	1,282	694	402	292
Natural sands.....	7,553	6,800	9,396	5,085	2,947	2,137
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	6,649	3,599	2,085	1,512
Nonmetallic minerals.....	1,198	1,079	1,491	807	467	339
Other ag prods.....	1,161	1,045	1,444	782	453	329
Other foodstuffs.....	2,622	2,360	3,262	1,765	1,023	742
Paper articles.....	439	395	546	295	171	124
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	111	60	35	25
Printed prods.....	91	82	113	61	35	26
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	54	29	17	12
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	3,172	1,717	995	721
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>74,501</b>	<b>40,320</b>	<b>23,363</b>	<b>16,946</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx|TABLE 17.1- Adams Ttl CV

**Table 44 Annual Commercial Goods Movement Value, Adams County**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	204	110	64	46
Estimated Annual CV Counts	59,885	53,917	74,501	40,320	23,363	16,946
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$27,477,536	\$14,871,083	\$8,616,910	\$6,249,962
Animal feed.....	\$4,951,272	\$4,457,852	\$6,159,684	\$3,333,675	\$1,931,667	\$1,401,064
Articles-base metal.....	\$27,248,825	\$24,533,342	\$33,899,202	\$18,346,545	\$10,630,734	\$7,710,615
Base metals.....	\$26,495,981	\$23,855,523	\$32,962,619	\$17,839,658	\$10,337,023	\$7,497,583
Basic chemicals.....	\$11,911,431	\$10,724,397	\$14,818,548	\$8,019,928	\$4,647,072	\$3,370,584
Building stone.....	\$2,645,030	\$2,381,439	\$3,290,579	\$1,780,890	\$1,031,920	\$748,466
Cereal grains.....	\$9,517,883	\$8,569,378	\$11,840,828	\$6,408,360	\$3,713,264	\$2,693,281
Chemical prods.....	\$26,578,782	\$23,930,072	\$33,065,627	\$17,895,407	\$10,369,327	\$7,521,013
Coal.....	\$33,163	\$29,858	\$41,257	\$22,328	\$12,938	\$9,384
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$28,769,556	\$15,570,336	\$9,022,085	\$6,543,841
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$2,471,953	\$1,337,843	\$775,200	\$562,263
Fuel oils.....	\$11,591,664	\$10,436,496	\$14,420,738	\$7,804,630	\$4,522,320	\$3,280,100
Furniture.....	\$36,899,843	\$33,222,587	\$45,905,657	\$24,844,544	\$14,395,939	\$10,441,570
Gasoline.....	\$13,323,305	\$11,995,570	\$16,575,005	\$8,970,538	\$5,197,894	\$3,770,103
Gravel.....	\$2,482,542	\$2,235,144	\$3,088,433	\$1,671,487	\$968,528	\$702,486
Live animals/fish.....	\$15,951,854	\$14,362,171	\$19,845,080	\$10,740,331	\$6,223,385	\$4,513,905
Logs.....	\$434,749	\$391,424	\$540,855	\$292,715	\$169,611	\$123,021
Machinery.....	\$63,517,340	\$57,187,517	\$79,019,450	\$42,766,019	\$24,780,370	\$17,973,538
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$112,091	\$60,665	\$35,152	\$25,496
Milled grain prods.....	\$15,135,125	\$13,626,833	\$18,829,019	\$10,190,430	\$5,904,750	\$4,282,795
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$48,261,077	\$26,119,318	\$15,134,595	\$10,977,327
Mixed freight.....	\$153,612,285	\$138,304,046	\$191,103,063	\$103,426,653	\$59,929,607	\$43,467,756
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$132,742,441	\$71,841,373	\$41,627,812	\$30,193,216
Natural sands.....	\$797,180	\$717,737	\$991,741	\$536,739	\$311,008	\$225,579
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$42,389,259	\$22,941,438	\$13,293,202	\$9,641,739
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$2,024,552	\$1,095,705	\$634,896	\$460,499
Other ag prods.....	\$14,674,093	\$13,211,746	\$18,255,468	\$9,880,019	\$5,724,885	\$4,152,336
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$59,334,608	\$32,112,410	\$18,607,236	\$13,496,080
Paper articles.....	\$9,692,071	\$8,726,207	\$12,057,528	\$6,525,640	\$3,781,221	\$2,742,571
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$30,565,306	\$16,542,212	\$9,585,230	\$6,952,297
Printed prods.....	\$12,248,381	\$11,027,768	\$15,237,733	\$8,246,795	\$4,778,528	\$3,465,931
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$19,604,421	\$10,610,085	\$6,147,914	\$4,459,166
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$23,346,395	\$12,635,274	\$7,321,391	\$5,310,304
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$989,047,306</b>	<b>\$535,281,075</b>	<b>\$310,163,613</b>	<b>\$224,965,871</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 17.2 - Adams TII Value

**Table 45 Annual Commercial Vehicle Distribution, Arapahoe County**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	420	327	142	232
Estimated Annual CV Counts	59,885	53,917	153,277	119,384	51,734	84,623
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	1,612	1,255	544	890
Animal feed.....	986	887	2,522	1,965	851	1,393
Articles-base metal.....	1,183	1,065	3,029	2,359	1,022	1,672
Base metals.....	1,924	1,733	4,925	3,836	1,662	2,719
Basic chemicals.....	868	781	2,221	1,730	750	1,226
Building stone.....	402	362	1,029	802	347	568
Cereal grains.....	1,697	1,528	4,345	3,384	1,466	2,399
Chemical prods.....	713	642	1,826	1,422	616	1,008
Coal.....	64	57	163	127	55	90
Coal-n.e.c.....	1,185	1,067	3,034	2,363	1,024	1,675
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	751	585	254	415
Fuel oils.....	877	789	2,244	1,748	757	1,239
Furniture.....	282	254	722	562	244	398
Gasoline.....	699	629	1,789	1,393	604	988
Gravel.....	19,276	17,355	49,338	38,428	16,653	27,239
Live animals/fish.....	368	331	941	733	317	519
Logs.....	281	253	718	560	243	397
Machinery.....	398	358	1,019	794	344	562
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	58	45	20	32
Milled grain prods.....	677	609	1,732	1,349	585	956
Misc. mfg. prods.....	1,041	938	2,665	2,076	900	1,471
Mixed freight.....	3,898	3,509	9,976	7,770	3,367	5,508
Motorized vehicles.....	1,030	927	2,637	2,054	890	1,456
Natural sands.....	7,553	6,800	19,331	15,056	6,525	10,673
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	13,680	10,655	4,617	7,553
Nonmetallic minerals.....	1,198	1,079	3,067	2,389	1,035	1,693
Other ag prods.....	1,161	1,045	2,972	2,315	1,003	1,641
Other foodstuffs.....	2,622	2,360	6,710	5,227	2,265	3,705
Paper articles.....	439	395	1,123	874	379	620
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	229	178	77	126
Printed prods.....	91	82	232	181	78	128
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	112	87	38	62
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	6,526	5,083	2,203	3,603
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>153,277</b>	<b>119,384</b>	<b>51,734</b>	<b>84,623</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 18.1- Arap TII CV

**Table 46 Annual Commercial Goods Movement Value, Arapahoe County**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	420	327	142	232
Estimated Annual CV Counts	59,885	53,917	153,277	119,384	51,734	84,623
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$56,532,210	\$44,031,404	\$19,080,830	\$31,210,975
Animal feed.....	\$4,951,272	\$4,457,852	\$12,672,918	\$9,870,592	\$4,277,381	\$6,996,616
Articles-base metal.....	\$27,248,825	\$24,533,342	\$69,744,129	\$54,321,809	\$23,540,136	\$38,505,168
Base metals.....	\$26,495,981	\$23,855,523	\$67,817,205	\$52,820,980	\$22,889,758	\$37,441,330
Basic chemicals.....	\$11,911,431	\$10,724,397	\$30,487,641	\$23,745,996	\$10,290,231	\$16,831,980
Building stone.....	\$2,645,030	\$2,381,439	\$6,770,028	\$5,272,991	\$2,285,029	\$3,737,678
Cereal grains.....	\$9,517,883	\$8,569,378	\$24,361,288	\$18,974,346	\$8,222,456	\$13,449,670
Chemical prods.....	\$26,578,782	\$23,930,072	\$68,029,135	\$52,986,047	\$22,961,289	\$37,558,335
Coal.....	\$33,163	\$29,858	\$84,881	\$66,112	\$28,649	\$46,862
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$59,190,408	\$46,101,802	\$19,978,029	\$32,678,545
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$5,085,790	\$3,961,184	\$1,716,563	\$2,807,824
Fuel oils.....	\$11,591,664	\$10,436,496	\$29,669,188	\$23,108,525	\$10,013,986	\$16,380,119
Furniture.....	\$36,899,843	\$33,222,587	\$94,446,179	\$73,561,565	\$31,877,606	\$52,142,971
Gasoline.....	\$13,323,305	\$11,995,570	\$34,101,371	\$26,560,632	\$11,509,942	\$18,827,091
Gravel.....	\$2,482,542	\$2,235,144	\$6,354,134	\$4,949,063	\$2,144,656	\$3,508,066
Live animals/fish.....	\$15,951,854	\$14,362,171	\$40,829,216	\$31,800,768	\$13,780,734	\$22,541,479
Logs.....	\$434,749	\$391,424	\$1,112,753	\$866,693	\$375,578	\$614,342
Machinery.....	\$63,517,340	\$57,187,517	\$162,574,409	\$126,624,794	\$54,872,342	\$89,756,015
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$230,616	\$179,620	\$77,838	\$127,321
Milled grain prods.....	\$15,135,125	\$13,626,833	\$38,738,775	\$30,172,581	\$13,075,166	\$21,387,364
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$99,292,213	\$77,336,010	\$33,513,246	\$54,818,427
Mixed freight.....	\$153,612,285	\$138,304,046	\$393,174,941	\$306,233,289	\$132,704,955	\$217,068,700
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$273,103,950	\$212,713,253	\$92,178,426	\$150,778,479
Natural sands.....	\$797,180	\$717,737	\$2,040,405	\$1,589,216	\$688,680	\$1,126,491
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$87,211,550	\$67,926,709	\$29,435,764	\$48,148,790
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$4,165,308	\$3,244,245	\$1,405,881	\$2,299,633
Other ag prods.....	\$14,674,093	\$13,211,746	\$37,558,751	\$29,253,492	\$12,676,882	\$20,735,882
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$122,074,868	\$95,080,801	\$41,202,880	\$67,396,546
Paper articles.....	\$9,692,071	\$8,726,207	\$24,807,126	\$19,321,597	\$8,372,936	\$13,695,813
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$62,884,980	\$48,979,404	\$21,225,026	\$34,718,288
Printed prods.....	\$12,248,381	\$11,027,768	\$31,350,073	\$24,417,721	\$10,581,320	\$17,308,121
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$40,334,085	\$31,415,124	\$13,613,617	\$22,268,122
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
<u>Wood prods.....</u>	<u>\$18,766,277</u>	<u>\$16,896,123</u>	<u>\$48,032,812</u>	<u>\$37,411,453</u>	<u>\$16,212,102</u>	<u>\$26,518,526</u>
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$2,034,863,338</b>	<b>\$1,584,899,818</b>	<b>\$686,809,914</b>	<b>\$1,123,431,568</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 18.2 - Arapahoe County

**Table 47 Annual Commercial Vehicle Distribution, Thornton**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	24	0	0	5
Estimated Annual CV Counts	59,885	53,917	8,685	54	24	1,872
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	91	1	0	20
Animal feed.....	986	887	143	1	0	31
Articles-base metal.....	1,183	1,065	172	1	0	37
Base metals.....	1,924	1,733	279	2	1	60
Basic chemicals.....	868	781	126	1	0	27
Building stone.....	402	362	58	0	0	13
Cereal grains.....	1,697	1,528	246	2	1	53
Chemical prods.....	713	642	103	1	0	22
Coal.....	64	57	9	0	0	2
Coal-n.e.c.....	1,185	1,067	172	1	0	37
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	43	0	0	9
Fuel oils.....	877	789	127	1	0	27
Furniture.....	282	254	41	0	0	9
Gasoline.....	699	629	101	1	0	22
Gravel.....	19,276	17,355	2,795	17	8	603
Live animals/fish.....	368	331	53	0	0	11
Logs.....	281	253	41	0	0	9
Machinery.....	398	358	58	0	0	12
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	3	0	0	1
Milled grain prods.....	677	609	98	1	0	21
Misc. mfg. prods.....	1,041	938	151	1	0	33
Mixed freight.....	3,898	3,509	565	3	2	122
Motorized vehicles.....	1,030	927	149	1	0	32
Natural sands.....	7,553	6,800	1,095	7	3	236
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	775	5	2	167
Nonmetallic minerals.....	1,198	1,079	174	1	0	37
Other ag prods.....	1,161	1,045	168	1	0	36
Other foodstuffs.....	2,622	2,360	380	2	1	82
Paper articles.....	439	395	64	0	0	14
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	13	0	0	3
Printed prods.....	91	82	13	0	0	3
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	6	0	0	1
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	370	2	1	80
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>8,685</b>	<b>54</b>	<b>24</b>	<b>1,872</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 13.1- Thornton CV

**Table 48 Annual Commercial Goods Movement Value, Thornton**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	24	0	0	5
Estimated Annual CV Counts	59,885	53,917	8,685	54	24	1,872
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$3,203,060	\$19,744	\$8,741	\$690,436
Animal feed.....	\$4,951,272	\$4,457,852	\$718,035	\$4,426	\$1,959	\$154,776
Articles-base metal.....	\$27,248,825	\$24,533,342	\$3,951,635	\$24,358	\$10,784	\$851,795
Base metals.....	\$26,495,981	\$23,855,523	\$3,842,457	\$23,685	\$10,486	\$828,261
Basic chemicals.....	\$11,911,431	\$10,724,397	\$1,727,400	\$10,648	\$4,714	\$372,350
Building stone.....	\$2,645,030	\$2,381,439	\$383,583	\$2,364	\$1,047	\$82,683
Cereal grains.....	\$9,517,883	\$8,569,378	\$1,380,287	\$8,508	\$3,767	\$297,528
Chemical prods.....	\$26,578,782	\$23,930,072	\$3,854,465	\$23,759	\$10,518	\$830,850
Coal.....	\$33,163	\$29,858	\$4,809	\$30	\$13	\$1,037
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$3,353,671	\$20,672	\$9,152	\$722,901
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$288,156	\$1,776	\$786	\$62,113
Fuel oils.....	\$11,591,664	\$10,436,496	\$1,681,027	\$10,362	\$4,587	\$362,354
Furniture.....	\$36,899,843	\$33,222,587	\$5,351,229	\$32,985	\$14,603	\$1,153,485
Gasoline.....	\$13,323,305	\$11,995,570	\$1,932,151	\$11,910	\$5,273	\$416,485
Gravel.....	\$2,482,542	\$2,235,144	\$360,019	\$2,219	\$982	\$77,604
Live animals/fish.....	\$15,951,854	\$14,362,171	\$2,313,344	\$14,259	\$6,313	\$498,653
Logs.....	\$434,749	\$391,424	\$63,048	\$389	\$172	\$13,590
Machinery.....	\$63,517,340	\$57,187,517	\$9,211,309	\$56,779	\$25,137	\$1,985,545
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$13,066	\$81	\$36	\$2,817
Milled grain prods.....	\$15,135,125	\$13,626,833	\$2,194,901	\$13,529	\$5,990	\$473,122
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$5,625,801	\$34,677	\$15,352	\$1,212,670
Mixed freight.....	\$153,612,285	\$138,304,046	\$22,276,911	\$137,315	\$60,791	\$4,801,902
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$15,473,805	\$95,381	\$42,226	\$3,335,458
Natural sands.....	\$797,180	\$717,737	\$115,607	\$713	\$315	\$24,920
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$4,941,322	\$30,458	\$13,484	\$1,065,127
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$236,002	\$1,455	\$644	\$50,872
Other ag prods.....	\$14,674,093	\$13,211,746	\$2,128,042	\$13,117	\$5,807	\$458,710
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$6,916,644	\$42,634	\$18,875	\$1,490,918
Paper articles.....	\$9,692,071	\$8,726,207	\$1,405,548	\$8,664	\$3,836	\$302,973
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$3,563,002	\$21,962	\$9,723	\$768,023
Printed prods.....	\$12,248,381	\$11,027,768	\$1,776,265	\$10,949	\$4,847	\$382,883
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$2,285,290	\$14,087	\$6,236	\$492,606
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$2,721,493	\$16,775	\$7,427	\$586,632
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$115,293,386</b>	<b>\$710,669</b>	<b>\$314,622</b>	<b>\$24,852,077</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 13.2 - Thornton Value

**Table 49 Annual Commercial Vehicle Distribution, Parker**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	260	52	20	175
Estimated Annual CV Counts	59,885	53,917	94,925	18,807	7,143	63,759
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	998	198	75	670
Animal feed.....	986	887	1,562	310	118	1,049
Articles-base metal.....	1,183	1,065	1,876	372	141	1,260
Base metals.....	1,924	1,733	3,050	604	230	2,049
Basic chemicals.....	868	781	1,375	272	103	924
Building stone.....	402	362	637	126	48	428
Cereal grains.....	1,697	1,528	2,691	533	202	1,807
Chemical prods.....	713	642	1,131	224	85	760
Coal.....	64	57	101	20	8	68
Coal-n.e.c.....	1,185	1,067	1,879	372	141	1,262
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	465	92	35	313
Fuel oils.....	877	789	1,390	275	105	934
Furniture.....	282	254	447	89	34	300
Gasoline.....	699	629	1,108	220	83	744
Gravel.....	19,276	17,355	30,555	6,054	2,299	20,523
Live animals/fish.....	368	331	583	115	44	391
Logs.....	281	253	445	88	33	299
Machinery.....	398	358	631	125	47	424
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	36	7	3	24
Milled grain prods.....	677	609	1,073	213	81	721
Misc. mfg. prods.....	1,041	938	1,651	327	124	1,109
Mixed freight.....	3,898	3,509	6,178	1,224	465	4,150
Motorized vehicles.....	1,030	927	1,633	324	123	1,097
Natural sands.....	7,553	6,800	11,972	2,372	901	8,041
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	8,472	1,679	638	5,691
Nonmetallic minerals.....	1,198	1,079	1,899	376	143	1,276
Other ag prods.....	1,161	1,045	1,840	365	138	1,236
Other foodstuffs.....	2,622	2,360	4,156	823	313	2,791
Paper articles.....	439	395	695	138	52	467
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	142	28	11	95
Printed prods.....	91	82	144	28	11	97
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	69	14	5	46
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	4,041	801	304	2,715
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>94,925</b>	<b>18,807</b>	<b>7,143</b>	<b>63,759</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx|TABLE 12.1- Parker CV



**Table 50 Annual Commercial Goods Movement Value, Parker**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	260	52	20	175
Estimated Annual CV Counts	59,885	53,917	94,925	18,807	7,143	63,759
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$35,010,383	\$6,936,447	\$2,634,615	\$23,515,601
Animal feed.....	\$4,951,272	\$4,457,852	\$7,848,335	\$1,554,955	\$590,606	\$5,271,531
Articles-base metal.....	\$27,248,825	\$24,533,342	\$43,192,521	\$8,557,537	\$3,250,341	\$29,011,339
Base metals.....	\$26,495,981	\$23,855,523	\$41,999,178	\$8,321,105	\$3,160,539	\$28,209,800
Basic chemicals.....	\$11,911,431	\$10,724,397	\$18,880,988	\$3,740,804	\$1,420,840	\$12,681,889
Building stone.....	\$2,645,030	\$2,381,439	\$4,192,677	\$830,676	\$315,509	\$2,816,116
Cereal grains.....	\$9,517,883	\$8,569,378	\$15,086,939	\$2,989,106	\$1,135,328	\$10,133,521
Chemical prods.....	\$26,578,782	\$23,930,072	\$42,130,426	\$8,347,109	\$3,170,416	\$28,297,956
Coal.....	\$33,163	\$29,858	\$52,567	\$10,415	\$3,956	\$35,308
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$36,656,605	\$7,262,606	\$2,758,497	\$24,621,327
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$3,149,628	\$624,022	\$237,017	\$2,115,527
Fuel oils.....	\$11,591,664	\$10,436,496	\$18,374,121	\$3,640,381	\$1,382,697	\$12,341,439
Furniture.....	\$36,899,843	\$33,222,587	\$58,490,494	\$11,588,455	\$4,401,550	\$39,286,606
Gasoline.....	\$13,323,305	\$11,995,570	\$21,118,970	\$4,184,205	\$1,589,253	\$14,185,086
Gravel.....	\$2,482,542	\$2,235,144	\$3,935,114	\$779,646	\$296,127	\$2,643,118
Live animals/fish.....	\$15,951,854	\$14,362,171	\$25,285,523	\$5,009,705	\$1,902,796	\$16,983,655
Logs.....	\$434,749	\$391,424	\$689,128	\$136,534	\$51,859	\$462,870
Machinery.....	\$63,517,340	\$57,187,517	\$100,682,290	\$19,947,722	\$7,576,584	\$67,625,783
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$142,820	\$28,296	\$10,748	\$95,929
Milled grain prods.....	\$15,135,125	\$13,626,833	\$23,990,914	\$4,753,210	\$1,805,374	\$16,114,098
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$61,491,642	\$12,183,058	\$4,627,394	\$41,302,402
Mixed freight.....	\$153,612,285	\$138,304,046	\$243,493,140	\$48,242,184	\$18,323,443	\$163,548,268
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$169,133,206	\$33,509,590	\$12,727,680	\$113,602,556
Natural sands.....	\$797,180	\$717,737	\$1,263,622	\$250,356	\$95,091	\$848,743
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$54,010,090	\$10,700,773	\$4,064,389	\$36,277,230
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$2,579,574	\$511,079	\$194,119	\$1,732,636
Other ag prods.....	\$14,674,093	\$13,211,746	\$23,260,125	\$4,608,422	\$1,750,380	\$15,623,246
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$75,600,934	\$14,978,468	\$5,689,152	\$50,779,262
Paper articles.....	\$9,692,071	\$8,726,207	\$15,363,047	\$3,043,810	\$1,156,106	\$10,318,975
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$38,944,652	\$7,715,926	\$2,930,679	\$26,158,151
Printed prods.....	\$12,248,381	\$11,027,768	\$19,415,092	\$3,846,623	\$1,461,032	\$13,040,633
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$24,978,889	\$4,948,953	\$1,879,721	\$16,777,696
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	<u>\$18,766,277</u>	<u>\$16,896,123</u>	<u>\$29,746,708</u>	<u>\$5,893,579</u>	<u>\$2,238,511</u>	<u>\$19,980,122</u>
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$1,260,190,341</b>	<b>\$249,675,758</b>	<b>\$94,832,347</b>	<b>\$846,438,419</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022 - E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 12.2 - Parker Value

**Table 51 Annual Commercial Vehicle Distribution, Portion of Douglas Co.**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	1	196	47	1
Estimated Annual CV Counts	59,885	53,917	354	71,393	17,214	529
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	4	751	181	6
Animal feed.....	986	887	6	1,175	283	9
Articles-base metal.....	1,183	1,065	7	1,411	340	10
Base metals.....	1,924	1,733	11	2,294	553	17
Basic chemicals.....	868	781	5	1,034	249	8
Building stone.....	402	362	2	479	116	4
Cereal grains.....	1,697	1,528	10	2,024	488	15
Chemical prods.....	713	642	4	851	205	6
Coal.....	64	57	0	76	18	1
Coal-n.e.c.....	1,185	1,067	7	1,413	341	10
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	2	350	84	3
Fuel oils.....	877	789	5	1,045	252	8
Furniture.....	282	254	2	336	81	2
Gasoline.....	699	629	4	833	201	6
Gravel.....	19,276	17,355	114	22,981	5,541	170
Live animals/fish.....	368	331	2	438	106	3
Logs.....	281	253	2	335	81	2
Machinery.....	398	358	2	475	114	4
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	0	27	7	0
Milled grain prods.....	677	609	4	807	195	6
Misc. mfg. prods.....	1,041	938	6	1,241	299	9
Mixed freight.....	3,898	3,509	23	4,647	1,120	34
Motorized vehicles.....	1,030	927	6	1,228	296	9
Natural sands.....	7,553	6,800	45	9,004	2,171	67
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	32	6,372	1,536	47
Nonmetallic minerals.....	1,198	1,079	7	1,429	344	11
Other ag prods.....	1,161	1,045	7	1,384	334	10
Other foodstuffs.....	2,622	2,360	15	3,126	754	23
Paper articles.....	439	395	3	523	126	4
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	1	106	26	1
Printed prods.....	91	82	1	108	26	1
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	0	52	13	0
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	15	3,040	733	23
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>354</b>	<b>71,393</b>	<b>17,214</b>	<b>529</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 11.1- Doug Rem CV

**Table 52 Annual Commercial Goods Movement Value, Portion of Douglas Co.**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	1	196	47	1
Estimated Annual CV Counts	59,885	53,917	354	71,393	17,214	529
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$130,537	\$26,331,388	\$6,349,062	\$194,995
Animal feed.....	\$4,951,272	\$4,457,852	\$29,263	\$5,902,750	\$1,423,280	\$43,712
Articles-base metal.....	\$27,248,825	\$24,533,342	\$161,044	\$32,485,192	\$7,832,876	\$240,567
Base metals.....	\$26,495,981	\$23,855,523	\$156,595	\$31,587,676	\$7,616,466	\$233,920
Basic chemicals.....	\$11,911,431	\$10,724,397	\$70,398	\$14,200,434	\$3,424,029	\$105,160
Building stone.....	\$2,645,030	\$2,381,439	\$15,632	\$3,153,322	\$760,333	\$23,352
Cereal grains.....	\$9,517,883	\$8,569,378	\$56,252	\$11,346,921	\$2,735,986	\$84,029
Chemical prods.....	\$26,578,782	\$23,930,072	\$157,084	\$31,686,388	\$7,640,267	\$234,651
Coal.....	\$33,163	\$29,858	\$196	\$39,536	\$9,533	\$293
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$136,675	\$27,569,515	\$6,647,601	\$204,164
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$11,743	\$2,368,843	\$571,179	\$17,542
Fuel oils.....	\$11,591,664	\$10,436,496	\$68,508	\$13,819,217	\$3,332,109	\$102,337
Furniture.....	\$36,899,843	\$33,222,587	\$218,083	\$43,990,832	\$10,607,132	\$325,771
Gasoline.....	\$13,323,305	\$11,995,570	\$78,743	\$15,883,625	\$3,829,882	\$117,625
Gravel.....	\$2,482,542	\$2,235,144	\$14,672	\$2,959,608	\$713,625	\$21,917
Live animals/fish.....	\$15,951,854	\$14,362,171	\$94,278	\$19,017,298	\$4,585,478	\$140,831
Logs.....	\$434,749	\$391,424	\$2,569	\$518,295	\$124,972	\$3,838
Machinery.....	\$63,517,340	\$57,187,517	\$375,396	\$75,723,376	\$18,258,529	\$560,764
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$533	\$107,415	\$25,900	\$795
Milled grain prods.....	\$15,135,125	\$13,626,833	\$89,451	\$18,043,620	\$4,350,703	\$133,621
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$229,273	\$46,248,002	\$11,151,384	\$342,486
Mixed freight.....	\$153,612,285	\$138,304,046	\$907,870	\$183,131,738	\$44,156,986	\$1,356,168
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$630,617	\$127,205,464	\$30,671,963	\$942,010
Natural sands.....	\$797,180	\$717,737	\$4,711	\$950,373	\$229,155	\$7,038
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$201,378	\$40,621,110	\$9,794,620	\$300,817
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$9,618	\$1,940,103	\$467,801	\$14,367
Other ag prods.....	\$14,674,093	\$13,211,746	\$86,726	\$17,493,992	\$4,218,176	\$129,550
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$281,880	\$56,859,633	\$13,710,076	\$421,070
Paper articles.....	\$9,692,071	\$8,726,207	\$57,281	\$11,554,582	\$2,786,057	\$85,567
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$145,206	\$29,290,360	\$7,062,534	\$216,908
Printed prods.....	\$12,248,381	\$11,027,768	\$72,390	\$14,602,134	\$3,520,887	\$108,135
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$93,134	\$18,786,678	\$4,529,871	\$139,123
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$110,911	\$22,372,566	\$5,394,505	\$165,678
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$4,698,648</b>	<b>\$947,791,988</b>	<b>\$228,532,959</b>	<b>\$7,018,801</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 11.2 - Doug Rem Value

**Table 53 Annual Commercial Vehicle Distribution, Portion of Denver**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	39	33	18	13
Estimated Annual CV Counts	59,885	53,917	14,111	12,059	6,406	4,601
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	148	127	67	48
Animal feed.....	986	887	232	198	105	76
Articles-base metal.....	1,183	1,065	279	238	127	91
Base metals.....	1,924	1,733	453	388	206	148
Basic chemicals.....	868	781	204	175	93	67
Building stone.....	402	362	95	81	43	31
Cereal grains.....	1,697	1,528	400	342	182	130
Chemical prods.....	713	642	168	144	76	55
Coal.....	64	57	15	13	7	5
Coal-n.e.c.....	1,185	1,067	279	239	127	91
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	69	59	31	23
Fuel oils.....	877	789	207	177	94	67
Furniture.....	282	254	66	57	30	22
Gasoline.....	699	629	165	141	75	54
Gravel.....	19,276	17,355	4,542	3,882	2,062	1,481
Live animals/fish.....	368	331	87	74	39	28
Logs.....	281	253	66	57	30	22
Machinery.....	398	358	94	80	43	31
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	5	5	2	2
Milled grain prods.....	677	609	159	136	72	52
Misc. mfg. prods.....	1,041	938	245	210	111	80
Mixed freight.....	3,898	3,509	918	785	417	299
Motorized vehicles.....	1,030	927	243	207	110	79
Natural sands.....	7,553	6,800	1,780	1,521	808	580
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	1,259	1,076	572	411
Nonmetallic minerals.....	1,198	1,079	282	241	128	92
Other ag prods.....	1,161	1,045	274	234	124	89
Other foodstuffs.....	2,622	2,360	618	528	280	201
Paper articles.....	439	395	103	88	47	34
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	21	18	10	7
Printed prods.....	91	82	21	18	10	7
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	10	9	5	3
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	601	513	273	196
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>14,111</b>	<b>12,059</b>	<b>6,406</b>	<b>4,601</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx|TABLE 10.1- Denver CV

**Table 54 Annual Commercial Goods Movement Value, Portion of Denver**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	39	33	18	13
Estimated Annual CV Counts	59,885	53,917	14,111	12,059	6,406	4,601
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$5,204,410	\$4,447,794	\$2,362,820	\$1,697,123
Animal feed.....	\$4,951,272	\$4,457,852	\$1,166,681	\$997,069	\$529,677	\$380,447
Articles-base metal.....	\$27,248,825	\$24,533,342	\$6,420,712	\$5,487,271	\$2,915,025	\$2,093,751
Base metals.....	\$26,495,981	\$23,855,523	\$6,243,318	\$5,335,666	\$2,834,487	\$2,035,904
Basic chemicals.....	\$11,911,431	\$10,724,397	\$2,806,722	\$2,398,681	\$1,274,261	\$915,253
Building stone.....	\$2,645,030	\$2,381,439	\$623,255	\$532,647	\$282,960	\$203,239
Cereal grains.....	\$9,517,883	\$8,569,378	\$2,242,724	\$1,916,677	\$1,018,204	\$731,337
Chemical prods.....	\$26,578,782	\$23,930,072	\$6,262,828	\$5,352,340	\$2,843,345	\$2,042,266
Coal.....	\$33,163	\$29,858	\$7,814	\$6,678	\$3,548	\$2,548
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$5,449,126	\$4,656,934	\$2,473,922	\$1,776,924
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$468,203	\$400,136	\$212,566	\$152,678
Fuel oils.....	\$11,591,664	\$10,436,496	\$2,731,374	\$2,334,288	\$1,240,053	\$890,683
Furniture.....	\$36,899,843	\$33,222,587	\$8,694,807	\$7,430,758	\$3,947,472	\$2,835,318
Gasoline.....	\$13,323,305	\$11,995,570	\$3,139,405	\$2,682,999	\$1,425,301	\$1,023,739
Gravel.....	\$2,482,542	\$2,235,144	\$584,968	\$499,925	\$265,577	\$190,754
Live animals/fish.....	\$15,951,854	\$14,362,171	\$3,758,777	\$3,212,327	\$1,706,497	\$1,225,712
Logs.....	\$434,749	\$391,424	\$102,441	\$87,548	\$46,509	\$33,405
Machinery.....	\$63,517,340	\$57,187,517	\$14,966,758	\$12,790,894	\$6,794,958	\$4,880,559
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$21,231	\$18,144	\$9,639	\$6,923
Milled grain prods.....	\$15,135,125	\$13,626,833	\$3,566,329	\$3,047,857	\$1,619,125	\$1,162,956
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$9,140,937	\$7,812,030	\$4,150,016	\$2,980,798
Mixed freight.....	\$153,612,285	\$138,304,046	\$36,196,066	\$30,933,891	\$16,433,136	\$11,803,295
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$25,142,214	\$21,487,045	\$11,414,650	\$8,198,708
Natural sands.....	\$797,180	\$717,737	\$187,842	\$160,533	\$85,281	\$61,254
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$8,028,780	\$6,861,558	\$3,645,093	\$2,618,131
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$383,462	\$327,715	\$174,093	\$125,044
Other ag prods.....	\$14,674,093	\$13,211,746	\$3,457,695	\$2,955,016	\$1,569,805	\$1,127,531
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$11,238,331	\$9,604,505	\$5,102,240	\$3,664,744
Paper articles.....	\$9,692,071	\$8,726,207	\$2,283,768	\$1,951,754	\$1,036,838	\$744,721
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$5,789,252	\$4,947,612	\$2,628,340	\$1,887,836
Printed prods.....	\$12,248,381	\$11,027,768	\$2,886,118	\$2,466,535	\$1,310,307	\$941,144
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$3,713,195	\$3,173,372	\$1,685,803	\$1,210,848
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$4,421,947	\$3,779,086	\$2,007,579	\$1,441,967
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$187,331,491</b>	<b>\$160,097,285</b>	<b>\$85,049,127</b>	<b>\$61,087,545</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 10.2 - Denver Value

**Table 55 Annual Commercial Vehicle Distribution, Commerce City**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	48	40	28	10
Estimated Annual CV Counts	59,885	53,917	17,686	14,695	10,212	3,603
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	186	154	107	38
Animal feed.....	986	887	291	242	168	59
Articles-base metal.....	1,183	1,065	350	290	202	71
Base metals.....	1,924	1,733	568	472	328	116
Basic chemicals.....	868	781	256	213	148	52
Building stone.....	402	362	119	99	69	24
Cereal grains.....	1,697	1,528	501	417	289	102
Chemical prods.....	713	642	211	175	122	43
Coal.....	64	57	19	16	11	4
Coal-n.e.c.....	1,185	1,067	350	291	202	71
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	87	72	50	18
Fuel oils.....	877	789	259	215	150	53
Furniture.....	282	254	83	69	48	17
Gasoline.....	699	629	206	172	119	42
Gravel.....	19,276	17,355	5,693	4,730	3,287	1,160
Live animals/fish.....	368	331	109	90	63	22
Logs.....	281	253	83	69	48	17
Machinery.....	398	358	118	98	68	24
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	7	6	4	1
Milled grain prods.....	677	609	200	166	115	41
Misc. mfg. prods.....	1,041	938	308	256	178	63
Mixed freight.....	3,898	3,509	1,151	956	665	235
Motorized vehicles.....	1,030	927	304	253	176	62
Natural sands.....	7,553	6,800	2,231	1,853	1,288	454
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	1,579	1,312	911	322
Nonmetallic minerals.....	1,198	1,079	354	294	204	72
Other ag prods.....	1,161	1,045	343	285	198	70
Other foodstuffs.....	2,622	2,360	774	643	447	158
Paper articles.....	439	395	130	108	75	26
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	26	22	15	5
Printed prods.....	91	82	27	22	15	5
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	13	11	7	3
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	753	626	435	153
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>17,686</b>	<b>14,695</b>	<b>10,212</b>	<b>3,603</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE9.1- Commerce CV

**Table 56 Annual Commercial Goods Movement Value, Commerce City**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	48	40	28	10
Estimated Annual CV Counts	59,885	53,917	17,686	14,695	10,212	3,603
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$6,523,095	\$5,419,678	\$3,766,408	\$1,328,954
Animal feed.....	\$4,951,272	\$4,457,852	\$1,462,293	\$1,214,938	\$844,322	\$297,914
Articles-base metal.....	\$27,248,825	\$24,533,342	\$8,047,582	\$6,686,290	\$4,646,640	\$1,639,539
Base metals.....	\$26,495,981	\$23,855,523	\$7,825,240	\$6,501,558	\$4,518,260	\$1,594,241
Basic chemicals.....	\$11,911,431	\$10,724,397	\$3,517,885	\$2,922,815	\$2,031,212	\$716,701
Building stone.....	\$2,645,030	\$2,381,439	\$781,175	\$649,035	\$451,047	\$159,149
Cereal grains.....	\$9,517,883	\$8,569,378	\$2,810,982	\$2,335,489	\$1,623,049	\$572,683
Chemical prods.....	\$26,578,782	\$23,930,072	\$7,849,694	\$6,521,875	\$4,532,380	\$1,599,223
Coal.....	\$33,163	\$29,858	\$9,794	\$8,137	\$5,655	\$1,995
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$6,829,817	\$5,674,517	\$3,943,508	\$1,391,443
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$586,835	\$487,569	\$338,836	\$119,556
Fuel oils.....	\$11,591,664	\$10,436,496	\$3,423,446	\$2,844,351	\$1,976,683	\$697,461
Furniture.....	\$36,899,843	\$33,222,587	\$10,897,883	\$9,054,447	\$6,292,392	\$2,220,233
Gasoline.....	\$13,323,305	\$11,995,570	\$3,934,863	\$3,269,260	\$2,271,973	\$801,652
Gravel.....	\$2,482,542	\$2,235,144	\$733,186	\$609,164	\$423,338	\$149,372
Live animals/fish.....	\$15,951,854	\$14,362,171	\$4,711,170	\$3,914,250	\$2,720,210	\$959,810
Logs.....	\$434,749	\$391,424	\$128,398	\$106,678	\$74,136	\$26,159
Machinery.....	\$63,517,340	\$57,187,517	\$18,759,011	\$15,585,823	\$10,831,374	\$3,821,785
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$26,610	\$22,109	\$15,365	\$5,421
Milled grain prods.....	\$15,135,125	\$13,626,833	\$4,469,960	\$3,713,842	\$2,580,936	\$910,668
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$11,457,054	\$9,519,031	\$6,615,254	\$2,334,153
Mixed freight.....	\$153,612,285	\$138,304,046	\$45,367,368	\$37,693,232	\$26,194,927	\$9,242,723
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$31,512,709	\$26,182,164	\$18,195,305	\$6,420,105
Natural sands.....	\$797,180	\$717,737	\$235,437	\$195,611	\$135,940	\$47,966
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$10,063,099	\$8,360,872	\$5,810,391	\$2,050,162
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$480,623	\$399,323	\$277,510	\$97,918
Other ag prods.....	\$14,674,093	\$13,211,746	\$4,333,800	\$3,600,715	\$2,502,318	\$882,928
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$14,085,881	\$11,703,178	\$8,133,128	\$2,869,726
Paper articles.....	\$9,692,071	\$8,726,207	\$2,862,426	\$2,378,231	\$1,652,752	\$583,164
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$7,256,124	\$6,028,711	\$4,189,655	\$1,478,295
Printed prods.....	\$12,248,381	\$11,027,768	\$3,617,398	\$3,005,496	\$2,088,670	\$736,975
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$4,654,038	\$3,866,783	\$2,687,222	\$948,170
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$5,542,373	\$4,604,851	\$3,200,143	\$1,129,151
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$234,797,247</b>	<b>\$195,080,023</b>	<b>\$135,570,941</b>	<b>\$47,835,395</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 9.2 - Commerce Value

**Table 57 Annual Commercial Vehicle Distribution, Broomfield**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	10	0	0	2
Estimated Annual CV Counts	59,885	53,917	3,577	72	19	648
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	38	1	0	7
Animal feed.....	986	887	59	1	0	11
Articles-base metal.....	1,183	1,065	71	1	0	13
Base metals.....	1,924	1,733	115	2	1	21
Basic chemicals.....	868	781	52	1	0	9
Building stone.....	402	362	24	0	0	4
Cereal grains.....	1,697	1,528	101	2	1	18
Chemical prods.....	713	642	43	1	0	8
Coal.....	64	57	4	0	0	1
Coal-n.e.c.....	1,185	1,067	71	1	0	13
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	18	0	0	3
Fuel oils.....	877	789	52	1	0	9
Furniture.....	282	254	17	0	0	3
Gasoline.....	699	629	42	1	0	8
Gravel.....	19,276	17,355	1,151	23	6	209
Live animals/fish.....	368	331	22	0	0	4
Logs.....	281	253	17	0	0	3
Machinery.....	398	358	24	0	0	4
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	1	0	0	0
Milled grain prods.....	677	609	40	1	0	7
Misc. mfg. prods.....	1,041	938	62	1	0	11
Mixed freight.....	3,898	3,509	233	5	1	42
Motorized vehicles.....	1,030	927	62	1	0	11
Natural sands.....	7,553	6,800	451	9	2	82
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	319	6	2	58
Nonmetallic minerals.....	1,198	1,079	72	1	0	13
Other ag prods.....	1,161	1,045	69	1	0	13
Other foodstuffs.....	2,622	2,360	157	3	1	28
Paper articles.....	439	395	26	1	0	5
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	5	0	0	1
Printed prods.....	91	82	5	0	0	1
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	3	0	0	0
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	152	3	1	28
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>3,577</b>	<b>72</b>	<b>19</b>	<b>648</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx|TABLE 8.1- Broomfield CV



**Table 58 Annual Commercial Goods Movement Value, Broomfield**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	10	0	0	2
Estimated Annual CV Counts	59,885	53,917	3,577	72	19	648
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$1,319,337	\$26,382	\$7,187	\$238,979
Animal feed.....	\$4,951,272	\$4,457,852	\$295,758	\$5,914	\$1,611	\$53,572
Articles-base metal.....	\$27,248,825	\$24,533,342	\$1,627,674	\$32,548	\$8,866	\$294,830
Base metals.....	\$26,495,981	\$23,855,523	\$1,582,704	\$31,648	\$8,621	\$286,684
Basic chemicals.....	\$11,911,431	\$10,724,397	\$711,514	\$14,228	\$3,876	\$128,881
Building stone.....	\$2,645,030	\$2,381,439	\$157,998	\$3,159	\$861	\$28,619
Cereal grains.....	\$9,517,883	\$8,569,378	\$568,539	\$11,369	\$3,097	\$102,983
Chemical prods.....	\$26,578,782	\$23,930,072	\$1,587,650	\$31,747	\$8,648	\$287,580
Coal.....	\$33,163	\$29,858	\$1,981	\$40	\$11	\$359
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$1,381,374	\$27,622	\$7,524	\$250,216
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$118,691	\$2,373	\$647	\$21,499
Fuel oils.....	\$11,591,664	\$10,436,496	\$692,414	\$13,846	\$3,772	\$125,421
Furniture.....	\$36,899,843	\$33,222,587	\$2,204,166	\$44,075	\$12,006	\$399,253
Gasoline.....	\$13,323,305	\$11,995,570	\$795,851	\$15,914	\$4,335	\$144,157
Gravel.....	\$2,482,542	\$2,235,144	\$148,292	\$2,965	\$808	\$26,861
Live animals/fish.....	\$15,951,854	\$14,362,171	\$952,864	\$19,054	\$5,190	\$172,598
Logs.....	\$434,749	\$391,424	\$25,969	\$519	\$141	\$4,704
Machinery.....	\$63,517,340	\$57,187,517	\$3,794,129	\$75,869	\$20,667	\$687,252
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$5,382	\$108	\$29	\$975
Milled grain prods.....	\$15,135,125	\$13,626,833	\$904,078	\$18,078	\$4,925	\$163,761
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$2,317,262	\$46,337	\$12,622	\$419,739
Mixed freight.....	\$153,612,285	\$138,304,046	\$9,175,837	\$183,483	\$49,982	\$1,662,071
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$6,373,645	\$127,450	\$34,718	\$1,154,494
Natural sands.....	\$797,180	\$717,737	\$47,619	\$952	\$259	\$8,625
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$2,035,325	\$40,699	\$11,087	\$368,670
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$97,209	\$1,944	\$530	\$17,608
Other ag prods.....	\$14,674,093	\$13,211,746	\$876,539	\$17,528	\$4,775	\$158,772
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$2,848,959	\$56,969	\$15,519	\$516,048
Paper articles.....	\$9,692,071	\$8,726,207	\$578,944	\$11,577	\$3,154	\$104,867
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$1,467,597	\$29,347	\$7,994	\$265,834
Printed prods.....	\$12,248,381	\$11,027,768	\$731,642	\$14,630	\$3,985	\$132,526
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$941,309	\$18,823	\$5,127	\$170,505
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$1,120,980	\$22,416	\$6,106	\$203,049
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$47,489,228</b>	<b>\$949,612</b>	<b>\$258,679</b>	<b>\$8,601,992</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 8.2 - Broomfield Value

**Table 59 Annual Commercial Vehicle Distribution, Brighton**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	57	17	13	8
Estimated Annual CV Counts	59,885	53,917	20,893	6,255	4,899	2,935
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	220	66	52	31
Animal feed.....	986	887	344	103	81	48
Articles-base metal.....	1,183	1,065	413	124	97	58
Base metals.....	1,924	1,733	671	201	157	94
Basic chemicals.....	868	781	303	91	71	43
Building stone.....	402	362	140	42	33	20
Cereal grains.....	1,697	1,528	592	177	139	83
Chemical prods.....	713	642	249	75	58	35
Coal.....	64	57	22	7	5	3
Coal-n.e.c.....	1,185	1,067	414	124	97	58
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	102	31	24	14
Fuel oils.....	877	789	306	92	72	43
Furniture.....	282	254	98	29	23	14
Gasoline.....	699	629	244	73	57	34
Gravel.....	19,276	17,355	6,725	2,014	1,577	945
Live animals/fish.....	368	331	128	38	30	18
Logs.....	281	253	98	29	23	14
Machinery.....	398	358	139	42	33	20
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	8	2	2	1
Milled grain prods.....	677	609	236	71	55	33
Misc. mfg. prods.....	1,041	938	363	109	85	51
Mixed freight.....	3,898	3,509	1,360	407	319	191
Motorized vehicles.....	1,030	927	359	108	84	50
Natural sands.....	7,553	6,800	2,635	789	618	370
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	1,865	558	437	262
Nonmetallic minerals.....	1,198	1,079	418	125	98	59
Other ag prods.....	1,161	1,045	405	121	95	57
Other foodstuffs.....	2,622	2,360	915	274	214	128
Paper articles.....	439	395	153	46	36	21
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	31	9	7	4
Printed prods.....	91	82	32	9	7	4
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	15	5	4	2
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	890	266	209	125
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>20,893</b>	<b>6,255</b>	<b>4,899</b>	<b>2,935</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 7.1- Brighton CV

**Table 60 Annual Commercial Goods Movement Value, Brighton**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	57	17	13	8
Estimated Annual CV Counts	59,885	53,917	20,893	6,255	4,899	2,935
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$7,705,685	\$2,307,166	\$1,806,695	\$1,082,337
Animal feed.....	\$4,951,272	\$4,457,852	\$1,727,396	\$517,201	\$405,010	\$242,629
Articles-base metal.....	\$27,248,825	\$24,533,342	\$9,506,550	\$2,846,364	\$2,228,930	\$1,335,286
Base metals.....	\$26,495,981	\$23,855,523	\$9,243,898	\$2,767,724	\$2,167,348	\$1,298,394
Basic chemicals.....	\$11,911,431	\$10,724,397	\$4,155,651	\$1,244,247	\$974,345	\$583,701
Building stone.....	\$2,645,030	\$2,381,439	\$922,796	\$276,295	\$216,361	\$129,616
Cereal grains.....	\$9,517,883	\$8,569,378	\$3,320,592	\$994,221	\$778,555	\$466,409
Chemical prods.....	\$26,578,782	\$23,930,072	\$9,272,786	\$2,776,373	\$2,174,121	\$1,302,451
Coal.....	\$33,163	\$29,858	\$11,570	\$3,464	\$2,713	\$1,625
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$8,068,013	\$2,415,651	\$1,891,647	\$1,133,230
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$693,224	\$207,559	\$162,535	\$97,370
Fuel oils.....	\$11,591,664	\$10,436,496	\$4,044,091	\$1,210,845	\$948,188	\$568,031
Furniture.....	\$36,899,843	\$33,222,587	\$12,873,590	\$3,854,493	\$3,018,375	\$1,808,219
Gasoline.....	\$13,323,305	\$11,995,570	\$4,648,225	\$1,391,729	\$1,089,835	\$652,888
Gravel.....	\$2,482,542	\$2,235,144	\$866,107	\$259,322	\$203,070	\$121,653
Live animals/fish.....	\$15,951,854	\$14,362,171	\$5,565,271	\$1,666,303	\$1,304,848	\$781,695
Logs.....	\$434,749	\$391,424	\$151,675	\$45,413	\$35,562	\$21,304
Machinery.....	\$63,517,340	\$57,187,517	\$22,159,883	\$6,634,910	\$5,195,664	\$3,112,567
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$31,434	\$9,412	\$7,370	\$4,415
Milled grain prods.....	\$15,135,125	\$13,626,833	\$5,280,331	\$1,580,989	\$1,238,040	\$741,673
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$13,534,134	\$4,052,267	\$3,173,248	\$1,900,998
Mixed freight.....	\$153,612,285	\$138,304,046	\$53,592,141	\$16,046,070	\$12,565,353	\$7,527,528
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$37,225,733	\$11,145,790	\$8,728,042	\$5,228,710
Natural sands.....	\$797,180	\$717,737	\$278,120	\$83,272	\$65,209	\$39,065
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$11,887,466	\$3,559,237	\$2,787,166	\$1,669,708
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$567,757	\$169,993	\$133,118	\$79,747
Other ag prods.....	\$14,674,093	\$13,211,746	\$5,119,487	\$1,532,830	\$1,200,328	\$719,081
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$16,639,549	\$4,982,062	\$3,901,352	\$2,337,184
Paper articles.....	\$9,692,071	\$8,726,207	\$3,381,362	\$1,012,417	\$792,803	\$474,945
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$8,571,606	\$2,566,432	\$2,009,721	\$1,203,964
Printed prods.....	\$12,248,381	\$11,027,768	\$4,273,206	\$1,279,444	\$1,001,907	\$600,213
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$5,497,782	\$1,646,096	\$1,289,024	\$772,216
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	\$18,766,277	\$16,896,123	\$6,547,165	\$1,960,292	\$1,535,065	\$919,612
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$277,364,275</b>	<b>\$83,045,882</b>	<b>\$65,031,549</b>	<b>\$38,958,462</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022- E-470 Economic Impact Study\Data\193022- Value of Commercial Freight.xlsx\TABLE 7.2 - Brighton Value

**Table 61 Annual Commercial Vehicle Distribution, Aurora**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	396	205	93	184
Estimated Annual CV Counts	59,885	53,917	144,488	74,931	34,125	67,227
<u>Estimated Distribution</u>						
Alcoholic beverages.....	630	567	1,519	788	359	707
Animal feed.....	986	887	2,378	1,233	562	1,106
Articles-base metal.....	1,183	1,065	2,855	1,481	674	1,328
Base metals.....	1,924	1,733	4,643	2,408	1,097	2,160
Basic chemicals.....	868	781	2,093	1,086	494	974
Building stone.....	402	362	970	503	229	451
Cereal grains.....	1,697	1,528	4,095	2,124	967	1,906
Chemical prods.....	713	642	1,721	893	407	801
Coal.....	64	57	153	80	36	71
Coal-n.e.c.....	1,185	1,067	2,860	1,483	675	1,331
Crude petroleum.....	0	0	0	0	0	0
Electronics.....	0	0	0	0	0	0
Fertilizers.....	294	264	708	367	167	330
Fuel oils.....	877	789	2,115	1,097	500	984
Furniture.....	282	254	680	353	161	316
Gasoline.....	699	629	1,686	875	398	785
Gravel.....	19,276	17,355	46,509	24,119	10,984	21,640
Live animals/fish.....	368	331	887	460	209	413
Logs.....	281	253	677	351	160	315
Machinery.....	398	358	960	498	227	447
Meat/seafood.....	0	0	0	0	0	0
Metallic ores.....	23	20	55	28	13	25
Milled grain prods.....	677	609	1,633	847	386	760
Misc. mfg. prods.....	1,041	938	2,512	1,303	593	1,169
Mixed freight.....	3,898	3,509	9,404	4,877	2,221	4,375
Motorized vehicles.....	1,030	927	2,486	1,289	587	1,156
Natural sands.....	7,553	6,800	18,223	9,450	4,304	8,479
Newsprint/paper.....	0	0	0	0	0	0
Nonmetal min. prods.....	5,345	4,812	12,896	6,688	3,046	6,000
Nonmetallic minerals.....	1,198	1,079	2,891	1,499	683	1,345
Other ag prods.....	1,161	1,045	2,801	1,453	662	1,303
Other foodstuffs.....	2,622	2,360	6,326	3,280	1,494	2,943
Paper articles.....	439	395	1,058	549	250	492
Pharmaceuticals.....	0	0	0	0	0	0
Plastics/rubber.....	0	0	0	0	0	0
Precision instruments.....	89	80	215	112	51	100
Printed prods.....	91	82	219	113	52	102
Textiles/leather.....	0	0	0	0	0	0
Tobacco prods.....	0	0	0	0	0	0
Transport equip.....	44	39	105	55	25	49
Waste/scrap.....	0	0	0	0	0	0
Wood prods.....	2,550	2,296	6,152	3,190	1,453	2,862
<b>Total</b>	<b>59,885</b>	<b>53,917</b>	<b>144,488</b>	<b>74,931</b>	<b>34,125</b>	<b>67,227</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\IDEN\193022-E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx\TABLE 16.1- Aurora Ttl CV

**Table 62 Annual Commercial Goods Movement Value, Aurora**

	Component 1 - Pass-through		Component 2 - Originating w/in		Component 3 - Originating outside	
	SB	NB	SB	NB	SB	NB
Daily Commercial Vehicle Counts	164	148	396	205	93	184
Estimated Annual CV Counts	59,885	53,917	144,488	74,931	34,125	67,227
<u>Estimated Distribution</u>						
Alcoholic beverages.....	\$22,086,967	\$19,885,889	\$53,290,429	\$27,636,328	\$12,586,123	\$24,794,821
Animal feed.....	\$4,951,272	\$4,457,852	\$11,946,203	\$6,195,281	\$2,821,452	\$5,558,296
Articles-base metal.....	\$27,248,825	\$24,533,342	\$65,744,725	\$34,095,105	\$15,527,577	\$30,589,520
Base metals.....	\$26,495,981	\$23,855,523	\$63,928,299	\$33,153,110	\$15,098,573	\$29,744,378
Basic chemicals.....	\$11,911,431	\$10,724,397	\$28,739,359	\$14,904,184	\$6,787,656	\$13,371,768
Building stone.....	\$2,645,030	\$2,381,439	\$6,381,808	\$3,309,595	\$1,507,254	\$2,969,310
Cereal grains.....	\$9,517,883	\$8,569,378	\$22,964,316	\$11,909,256	\$5,423,708	\$10,684,772
Chemical prods.....	\$26,578,782	\$23,930,072	\$64,128,076	\$33,256,714	\$15,145,757	\$29,837,330
Coal.....	\$33,163	\$29,858	\$80,014	\$41,495	\$18,898	\$37,229
Coal-n.e.c.....	\$23,125,517	\$20,820,943	\$55,796,197	\$28,935,815	\$13,177,935	\$25,960,697
Crude petroleum.....	\$0	\$0	\$0	\$0	\$0	\$0
Electronics.....	\$0	\$0	\$0	\$0	\$0	\$0
Fertilizers.....	\$1,987,003	\$1,788,988	\$4,794,151	\$2,486,239	\$1,132,282	\$2,230,609
Fuel oils.....	\$11,591,664	\$10,436,496	\$27,967,840	\$14,504,075	\$6,605,439	\$13,012,798
Furniture.....	\$36,899,843	\$33,222,587	\$89,030,262	\$46,170,946	\$21,027,150	\$41,423,749
Gasoline.....	\$13,323,305	\$11,995,570	\$32,145,864	\$16,670,792	\$7,592,204	\$14,956,737
Gravel.....	\$2,482,542	\$2,235,144	\$5,989,763	\$3,106,281	\$1,414,661	\$2,786,900
Live animals/fish.....	\$15,951,854	\$14,362,171	\$38,487,907	\$19,959,765	\$9,090,067	\$17,907,545
Logs.....	\$434,749	\$391,424	\$1,048,944	\$543,980	\$247,739	\$488,050
Machinery.....	\$63,517,340	\$57,187,517	\$153,251,750	\$79,476,103	\$36,194,969	\$71,304,542
Meat/seafood.....	\$0	\$0	\$0	\$0	\$0	\$0
Metallic ores.....	\$90,101	\$81,122	\$217,391	\$112,739	\$51,343	\$101,147
Milled grain prods.....	\$15,135,125	\$13,626,833	\$36,517,341	\$18,937,832	\$8,624,659	\$16,990,685
Misc. mfg. prods.....	\$38,793,174	\$34,927,238	\$93,598,405	\$48,539,978	\$22,106,054	\$43,549,202
Mixed freight.....	\$153,612,285	\$138,304,046	\$370,628,736	\$192,207,447	\$87,535,024	\$172,445,093
Motorized vehicles.....	\$106,700,905	\$96,067,621	\$257,443,090	\$133,509,559	\$60,802,860	\$119,782,395
Natural sands.....	\$797,180	\$717,737	\$1,923,400	\$997,472	\$454,268	\$894,914
Newsprint/paper.....	\$0	\$0	\$0	\$0	\$0	\$0
Nonmetal min. prods.....	\$34,073,294	\$30,677,719	\$82,210,495	\$42,634,226	\$19,416,459	\$38,250,667
Nonmetallic minerals.....	\$1,627,373	\$1,465,197	\$3,926,453	\$2,036,252	\$927,349	\$1,826,889
Other ag prods.....	\$14,674,093	\$13,211,746	\$35,404,984	\$18,360,966	\$8,361,942	\$16,473,131
Other foodstuffs.....	\$47,694,290	\$42,941,313	\$115,074,613	\$59,677,503	\$27,178,300	\$53,541,591
Paper articles.....	\$9,692,071	\$8,726,207	\$23,384,587	\$12,127,208	\$5,522,967	\$10,880,315
Pharmaceuticals.....	\$0	\$0	\$0	\$0	\$0	\$0
Plastics/rubber.....	\$0	\$0	\$0	\$0	\$0	\$0
Precision instruments.....	\$24,568,976	\$22,120,553	\$59,278,907	\$30,741,943	\$14,000,481	\$27,581,123
Printed prods.....	\$12,248,381	\$11,027,768	\$29,552,336	\$15,325,792	\$6,979,665	\$13,750,027
Textiles/leather.....	\$0	\$0	\$0	\$0	\$0	\$0
Tobacco prods.....	\$0	\$0	\$0	\$0	\$0	\$0
Transport equip.....	\$15,758,408	\$14,188,003	\$38,021,169	\$19,717,715	\$8,979,833	\$17,690,382
Waste/scrap.....	\$0	\$0	\$0	\$0	\$0	\$0
Wood prods.....	<u>\$18,766,277</u>	<u>\$16,896,123</u>	<u>\$45,278,420</u>	<u>\$23,481,314</u>	<u>\$10,693,849</u>	<u>\$21,067,016</u>
<b>Total</b>	<b>\$795,015,081</b>	<b>\$715,787,818</b>	<b>\$1,918,176,234</b>	<b>\$994,763,011</b>	<b>\$453,034,498</b>	<b>\$892,483,627</b>

Source: Economic & Planning Systems

Z:\Shared\Projects\DEN\193022 - E-470 Economic Impact Study\Data\193022-Value of Commercial Freight.xlsx|TABLE 16.2 - Aurora TTI Value