Boulder City Council
STUDY SESSION

Tuesday
August 30, 2016
6-10 p.m.

6-8:30 p.m.
Update on Homelessness Issues, Strategy and Action Plan

(This material is not yet available.)

8:30-10 p.m.
Development-Related Impact Fees and Excise Taxes

Council Chambers
Municipal Building
1777 Broadway

Submit Written Comments to City Council, ATTN: Lynnette Beck, City Clerk, 1777 Broadway, P.O. Box 791, Boulder, CO 80306 or Fax to 303-441-4478 or E-mail: council@bouldercolorado.gov

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STUDY SESSION MEMORANDUM

TO: Members of City Council

FROM: Jane S. Brautigam, City Manager
David Gehr, Deputy City Attorney
Susan Richstone, Deputy Director of Planning
Chris Hagelin, Senior Transportation Planner
Kristin Hyser, Community Investment Program Manager
Devin Billingsley, Senior Budget Analyst
Lauren Holm, Associate Planner
Chris Meschuk, Project Manager

DATE: August 30, 2016

SUBJECT: Study Session on Development-Related Impact Fees and Excise Taxes

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EXECUTIVE SUMMARY

The purpose of this study session is to continue the discussion with council from the questions initially posed at the June 14 study session on the development-related impact fees and excise taxes project.

Staff seeks input on policy issues related to transportation rate structure and a draft of the economic impact report. This study session will also provide an update on the housing credits analysis project and prepare for the Sept. 20 public hearing.

Following the August council meeting, staff will prepare final fee and tax change scenarios for council consideration in a public hearing. Based on direction from council, changes to the impact fees and excise taxes ordinances will be drafted for final approval in the first quarter of 2017.

QUESTIONS FOR COUNCIL

The following questions are included to guide the discussion. Does council have any questions or feedback regarding:

1. The staff recommendation for a transportation rate structure?
2. The draft economic impact report?

BACKGROUND

The City Council directed staff to initiate this project in May 2015. Staff hired two consulting firms (TischlerBise and Keyser Marston Associates) in August 2015. City Council has held three study sessions on this project: a scoping and approach check-in on Oct. 13, 2015, a review and discussion of initial findings on April 12, 2016, and a discussion about narrowing the fee options on June 14, 2016.

June 14, 2016 Study Session

The key takeaways from the June 14, 2016 study session by component were:

Capital Facility Impact Fees

- City Council generally supported the incremental update to the existing impact fees as the option to proceed forward.

Multimodal Transportation:

- City Council asked staff to return with further analysis of Option C, the hybrid approach that adds a new Transportation Impact Fee to the current Transportation Development Excise Tax. Council eliminated Options A & B from further consideration.

Affordable Housing Linkage Fee:

- City Council generally supported the economic and market factors option 4, with three options, set at levels of $10, $20 and $35 for office. Council eliminated options 1, 2 and 3 from further consideration.
- City Council also requested information be provided to explore size thresholds to reflect the financial impact of fees on commercial structures of varying size.

Parkland Excise Tax

- City Council indicated support for suspending the parkland development excise tax, with either re-allocation of the existing revenue to transportation or just suspension.

ANALYSIS

Multimodal Transportation Rate Structure Options

As part of the literature review and best practices research for transportation impact fees and excise taxes, an emerging practice among communities is a tiered or varied rate structures and policies based on geographic location. The premise of this approach is that developments in certain areas have less of an impact and need for additional capital infrastructure investments compared to other areas. For example, a development in downtown Boulder may require less new capital transportation investments then a development on the eastern suburban fringe since the downtown has a more mature and complete multimodal transportation system.

Project staff and the consultants identified four possible ways to define a geographic component to the rate structure. Those options were included in the June 14 Study Session memo and are summarized below. At that study session, there was insufficient time to discuss the Multimodal Transportation Rate Structure options.

Geographic Rate Adjustment Options

To identify geographic areas which have rate adjustments, the following methods are being considered for use:

1. A quarter mile buffer around our high frequency transit corridors
2. The Transportation Master Plan's (TMP) new Neighborhood Access Tool
3. An approach based on existing parking and Transportation Demand Management (TDM) districts
4. Urban Core based on population and employment densities

A key consideration in how rate reductions are applied is the ease in which the policy can be analyzed and administered by applicants and the city's permitting staff. Maps/Illustrations of each of these options are included in **Attachment A.**

1. A quarter mile buffer around our high frequency transit corridors: The high frequency routes of the Community Transit Network could potentially serve as a good surrogate for multimodal level of service and represent corridors with high levels of infrastructure investment. Generally, a quarter mile around a transit route is considered the walk shed and developments located in that buffer area could qualify for reduced rates. Page 1 of **Attachment A** provides an illustration of what the buffer zones around the high frequency transit corridors could look like. It is important to note that we may want to exclude corridors, like East Arapahoe or North Broadway that are expected to go through significant changes related to possible future BRT service or the North Boulder Mobility Hub.
2. The TMP's Neighborhood Access Tool: This tool produces walk sheds based on a 15-minute walk to get to a variety of destinations. The number of destinations available by walking determines an access score. The 2015 TMP estimates that 26 percent of Boulder's population lives in a neighborhood with a score greater than 69, meaning that residents can walk to a grocery store, park, restaurant and a transit stop in less than 15 minutes. To use this tool to determine rate adjustments, staff may need to re-examine inputs and their weightings to better fit the context of both residential and commercial developments. Use of this option assumes that high walkability is related to more complete multimodal infrastructure and investments. Page 2 of **Attachment A** provides an illustration of how the Neighborhood Access Tool can be used to identify areas of high access scores.
3. Parking & TDM Districts: This option would use existing (and future) parking and TDM districts as a means to identify where developments could qualify for rate adjustments. Current districts in the city include CAGID, UHGID and Boulder Junction. All of these districts have paid and managed parking and provide Eco Passes to employees. In Boulder Junction, residents also receive Eco Passes and both

residents and employees also receive carshare and bikeshare benefits. One benefit of the districts is that they each have a mechanism to fund on-going programs like the Eco Pass. Since Boulder Junction is still in its early phases, it would be best to exclude it from the district approach at this time. Page 3 of **Attachment A** provides a map illustrating Boulder's existing Parking and TDM districts.

4. Urban Core based on population and employment densities: This option uses the employment and residential densities to identify areas urban core areas which generally have higher levels of multimodal access compared to more suburban areas. Page 4 of **Attachment A** provides an illustration of Boulder's urban core. This option is ends up being very similar to the first option which uses a buffer around CTN routes without the corridors extending from the core.

Policy Analysis

The key questions for council are, should the city use a geographic rate adjustment and if so, how should we determine the geographic boundaries? As stated, the premise behind geographic is that certain areas, like the urban core of a community, require less capital infrastructure investments associated with a new development or re-development compared to other areas with a less mature or complete system of transportation infrastructure.

To help meet the city's Climate Commitment and Transportation Master Plan goals, having lower fees and taxes in areas of the city with higher multimodal access and "complete streets" could encourage development there while discouraging development in locations characterized by higher vehicle use and transportation related emissions. The urban core also generally has a higher level of multimodal access and service. Furthermore, in Boulder's Access Districts there are mechanisms in place to provide funding for on-going multimodal TDM programs.

There are some equally compelling reasons for not having geographically based rate adjustments as well. The impact fee and excise tax analysis uses a next generation, plan based approach. In this approach, the purpose is to determine what new developments' share of planned capital improvement projects costs. Boulder is a mature community that is not significantly expanding vehicular infrastructure and is focused on increasing multimodal access, programs and services. The city also primarily relies on zoning powers to require new developments to add necessary capital infrastructure on or adjacent to their site.

Our mature transportation infrastructure also functions as a system, much like the city's stormwater and flood utility system. The future employees or residents of any development, no matter where it is located, will use the entire transportation and benefit from improvement made to the system as a whole. It could be argued that new developments or re-developments in the urban core already experience a financial benefit, because the transportation infrastructure is mostly complete and there are generally less requirements made using the city's zoning powers.

Currently the city does not have a geographical component to any of its other fees and taxes related to new development. How effectively a rate adjustment can be administered by staff also needs to be considered.

Recommendation: Staff recommends no tiered rates or credits for Multimodal Transportation fees/taxes.

While each of the above options could adequately service as a method for implementing rate adjustment or credits upon further consideration, staff is not recommending the use of rate adjustments or credits. The fundamental reason supporting this recommendation is that staff is using a plan-based approach to determine fee levels. In a plan-based approach, new growth is paying its share of planned capital improvements located throughout the city, as a part of an open system and network. The specific location of a new development does not change the need to collect new growth's share of those planned capital improvements. Furthermore, the city's zoning powers require capital infrastructure improvements directly related to or adjacent to its location as a part of the project approval.

Question for council:

Does council have any questions or feedback regarding the staff recommendation for excluding a geographic rate adjustment?

Economic Impact Analysis

Based on council feedback at the October 2015 study session and technical working group and public feedback, staff added the development of an economic impact analysis to the project scope.

Economic Impact Analysis (EIA) is a process to evaluate the economic benefit of an entity or industry/industries on a defined geographic location—either with regard to its presence, expansion, or contraction. The key components of any economic impact analysis are typically measured by increases in personal income, value added (or gross regional product), business output, and/or job creation. It identifies *direct impacts*, that is, the actual number of employees of the entity or industry as well as the jobs supported by the spending of the entity/industry itself. In addition, direct impacts can be generated through other spending such as from visitors. Direct effects are also measured in personal income, gross regional product, and business output.

An economic impact analysis also evaluates the "spin-off" or "multiplier" effects that direct spending has on the location in terms of jobs, labor income, and total economic output or activity through what is referred to as *indirect and induced effects*. That is, income received by suppliers of goods and services is then used to buy goods and services from other local companies (*indirect effects*). Additionally, household income is used in part to buy goods and services within the local region, which creates other

economic benefits (*induced effects*). In summary, the total effects are the result of direct impacts as well as the recirculation of income throughout the local economy.

The EIA prepared for the City of Boulder by TischlerBise is a projection of the *gross economic impact* from projected increase in development on the City (draft provided as **Attachment B**). The analysis models the impact from the new increase in development but does not make any assumptions about contractions, shifts, or displacements from one area of the economy to another due to new development or other economic forces.

The draft analysis shows the combined 10-year economic impact of projected nonresidential growth in the City of Boulder results in over 11,000 jobs that can be attributed to projected growth at over $678 million in labor income and a total economic output of $1.8 billion over ten years. Of the over 11,000 jobs generated, 6,350 jobs reflect the projected increase in at-place jobs in the City with over 5,000 jobs attributed to indirect and induced economic impacts. Likewise, the impact to the local economy is approximately 60 to 65 percent from direct effects and the remainder from spin-off effects.

Construction activity will also lead to economic impacts. For construction impacts, TischlerBise modeled the *annual impacts* based on assumptions for future residential and nonresidential development activity. Average annual residential and nonresidential development is projected to generate the following annual economic impacts:

- 1,697 jobs
- $84 million in labor income
- $118 million in net private sector value
- $239 million in annual economic output

This report will be finalized prior to the September 20 city council public hearing.

Question for council:

Does council have any questions or feedback regarding the draft Economic Impact Analysis?

Affordable Housing Credits/Fee waivers

At the April 12 study session, several council members questioned whether affordable housing should be credited development excise taxes and impact fees, in order to reduce the overall development costs for an affordable housing project. Currently, there is no credit mechanism for impact fees in the city's regulations; however, a credit for affordable housing is authorized by the state impact fee statute.

For the development excise tax, the city code provides a waiver of the development excise tax for new housing developments that provide on-site permanently affordable units in excess of the required 20 percent. If that occurs, for every unit in excess of the

required 20 percent, that additional unit plus one of the required 20 percent is granted a waiver of the development excise tax.

When the impact fees were created and converted from excise taxes in 2009, the council discussed whether an affordable housing credit should be included, and concluded to not allow for any credits. Because impact fees must be based on a demonstrated need and can only be proportional to the additional demand created by that new development, that capital improvement is still necessary to address the demand created by the new development. As a result, a grant system or funding from another revenue source such as the general fund or other departmental capital funds and sales tax would have to be used to offset the expense.

As the city is evaluating the allowance of credits and waivers for fees charged to affordable housing projects, the Colorado legislature passed legislation and the Governor signed in May 2016 a law exempting housing authorities from payment of any taxes or fees to the state or any municipalities. The City Attorney's office is currently assessing the application and impacts of this new law.

Staff recommends to continue the exploration of fee credits and waivers for affordable housing as one component of this until additional analysis is completed on the new state law and fee credits and waivers can be considered with any potential other financial waivers for affordable housing.

NEXT STEPS

Based on the feedback from city council, staff and the consultants will finalize the economic impact analysis report and continue to develop final drafts of the reports and create final fee and tax change scenarios for council consideration. A public information session is scheduled for August 31, 2016.

Final options and recommendations will be presented to council on September 20 for a public hearing and decision. At this meeting council will receive:

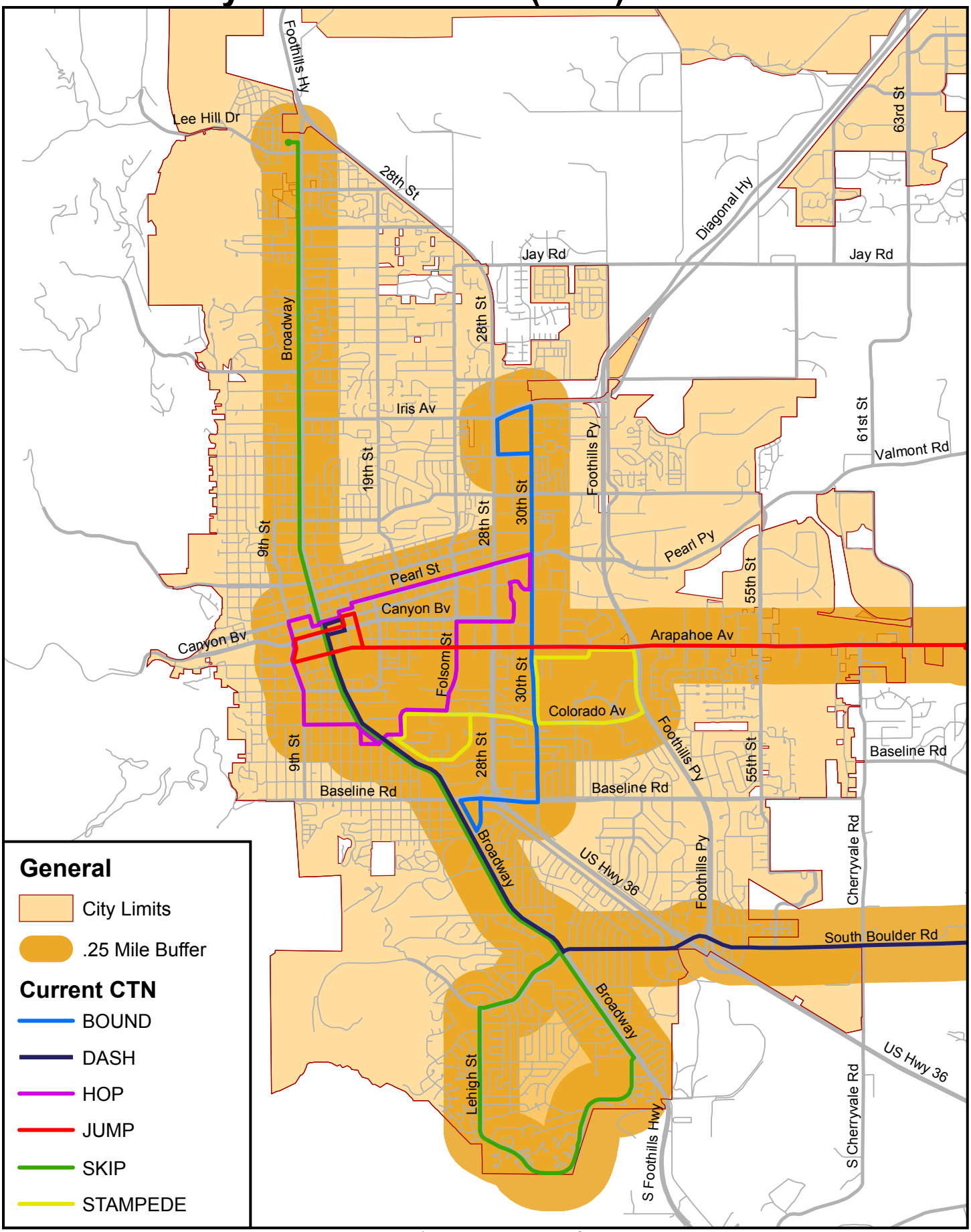
- A staff memorandum outlining up to 6 scenarios for fee changes across the impact fees and excise taxes, as well as options for phasing and implementation.
- Staff recommendations on a scenario
- Comparative charts showing up to 6 fee scenarios applied to a sample development project, in comparison to surrounding communities.
- Final fee and tax studies
- Economic Impact Report

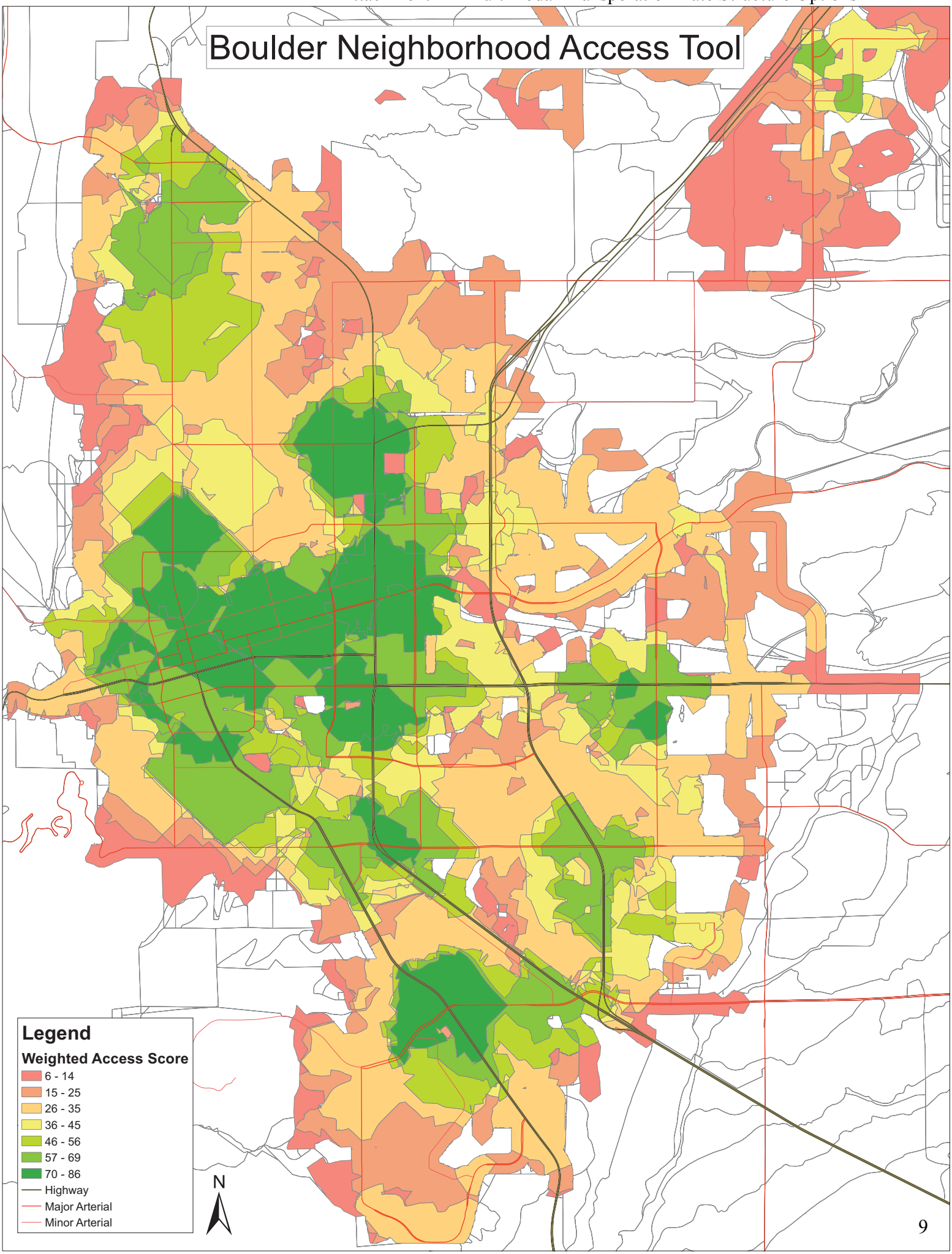
Based on council's direction, changes to the impact fees and excise taxes ordinances will be drafted for final approval in the first quarter of 2017, with a potential phase in or other implementation actions based on council direction.

ATTACHMENTS

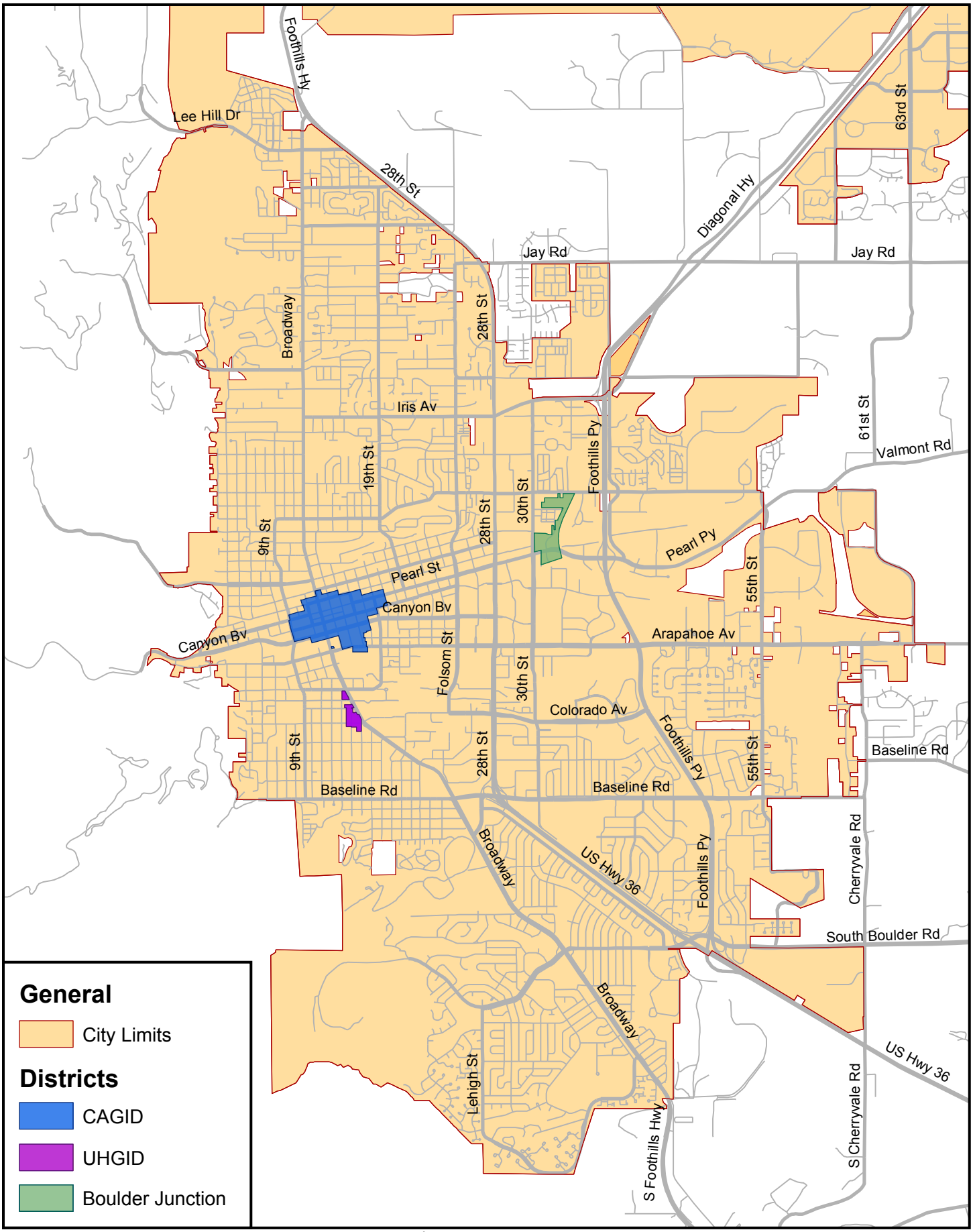
A – Multimodal Transportation Rate Structure Options
B – Draft Economic Impact Analysis

Community Transit Network (CTN) w/ .25 Mile Buffer

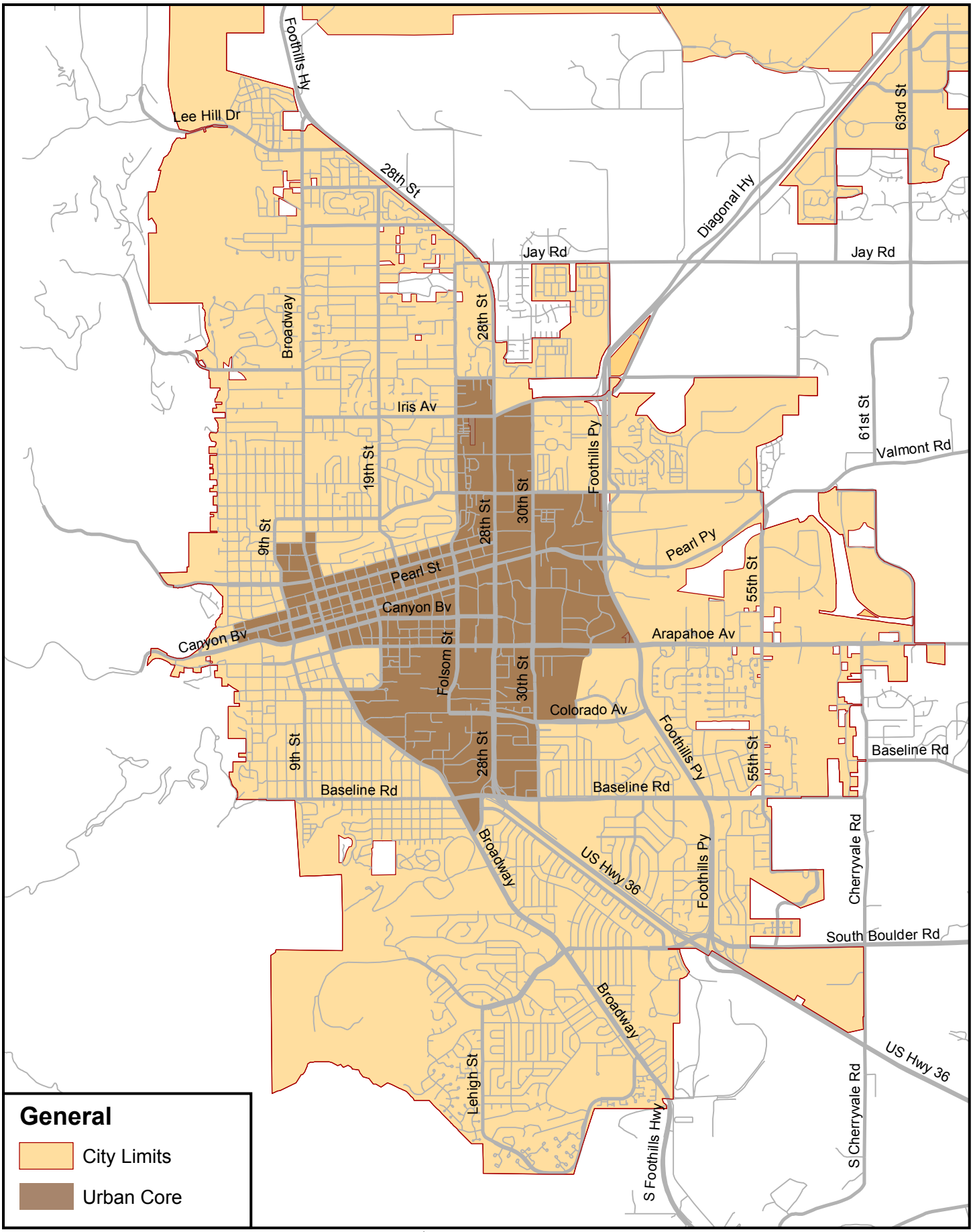



Boulder Neighborhood Access Tool
Legend
Weighted Access Score
6 - 14
15 - 25
26 - 35
36 - 45
46 - 56
57 - 69
70 - 86
Highway
Major Arterial
Minor Arterial
N

Boulder Parking and Transportation Demand Management (TDM) Districts



Urban Core of Boulder Map



DRAFT

Economic Impact Analysis

Growth in City of Boulder

Prepared for:

City of Boulder, Colorado

July 21, 2016

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Economic Impact Analysis
City of Boulder, Colorado

CONTENTS

EXECUTIVE SUMMARY **1**
Summary of Findings 2
Figure 1. 10-Year Projected Economic Impacts from Nonresidential Growth *2*
Figure 2. Summary of Temporary Annual Economic Impacts from All Construction *3*
Economic Impact Analysis Summary 4
General Approach and Methodology 5
Summary of Recent Trends in City of Boulder 6
Figure 3. At-Place Employment in City of Boulder, 2014 ..... *7*
Figure 4. Total Wages by Major Industry Category in City of Boulder, 2014 ..... *7*
Figure 5. Summary of Past Employment Growth in City of Boulder *8*
Figure 6. City of Boulder Growth Projections (Long-Term: 10- and 25-Year) *9*
Figure 7. Retail / Restaurant / Services 10-Year Projected Growth *10*
Figure 8. Office / Institutional 10-Year Projected Growth *11*
Figure 9. Industrial 10-Year Projected Growth *12*
Long-Term Economic Impact of Future Growth 13
Figure 10. 10-Year Projected Economic Impacts from Retail/Restaurant/Services Growth *14*
Figure 11. 10-Year Projected Economic Impacts from Office/Institutional Growth *15*
Figure 12. 10-Year Projected Economic Impacts from Industrial Growth *16*
Figure 13. 10-Year Projected Economic Impacts from Nonresidential Growth *17*
Temporary Economic Impacts from Development 18
Figure 14. Summary of Residential Construction Values *19*
Figure 15. Summary of Nonresidential Construction Values *20*
Figure 16. Projected Residential Construction Investment *21*
Figure 17. Projected Nonresidential Construction Investment *22*
Figure 18. Summary of Temporary Annual Economic Impacts from Residential Construction *23*
Figure 19. Summary of Temporary Annual Economic Impacts from Nonresidential Construction *23*
Figure 20. Summary of Temporary Annual Economic Impacts from All Construction *24*
APPENDIX 25
Construction Values 25
Figure 21. Residential Construction Value Detail *25*
Figure 22. Nonresidential Construction Value Detail *26*
IMPLAN Definitions 27

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Executive Summary

The City of Boulder retained TischlerBise to prepare an Economic Impact Analysis of new development in the City of Boulder. This analysis is being conducted in conjunction with the Impact Fee Study (currently ongoing in 2016).

Economic Impact Analysis (EIA) is a process to evaluate the economic benefit of an entity or industry/industries on a defined geographic location—either with regard to its presence, expansion, or contraction. The key components of any economic impact analysis are typically measured by increases in personal income, value added (or gross regional product), business output, and/or job creation. It identifies **direct impacts**, that is, the actual number of employees of the entity or industry as well as the jobs supported by the spending of the entity/industry itself. In addition, direct impacts can be generated through other spending such as from visitors. Direct effects are also measured in personal income, gross regional product, and business output.

An economic impact analysis also evaluates the "spin-off" or "multiplier" effects that direct spending has on the location in terms of jobs, labor income, and total economic output or activity through what is referred to as **indirect and induced effects**.

Summary of Findings

The City of Boulder is expected to add approximately 7,000 jobs over the next ten years of which 6,350 are expected to be at-place jobs (with the remaining being self-employed jobs). With this direct growth, additional economic impacts are anticipated given the local economy. The combined 10-year economic impact of projected nonresidential growth in the City of Boulder is summarized below. As shown, over 11,000 jobs can be attributed to projected growth at over $678 million and a total economic output of $1.8 billion over ten years.

Figure 1. 10-Year Projected Economic Impacts from Nonresidential Growth

Economic Impact of Combined Nonresidential Growth

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	6,350	$446,029,929	$636,556,355	$1,157,415,366
Indirect Effect	2,396	$121,738,987	$195,342,305	$351,696,979
Induced Effect	2,639	$110,766,122	$195,327,795	$338,216,603
Total Effect	**11,385**	**$678,535,038**	**$1,027,226,454**	**$1,847,328,949**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Construction activity will also lead to economic impacts. For construction impacts, we model **annual impacts** based on assumptions for future residential and nonresidential development activity. Below is a summary of the annual economic impacts from new construction.

Figure 2. Summary of Temporary Annual Economic Impacts from All Construction

Economic Impact of Annual Residential and Nonresidential Construction

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	993	$53,320,840	$65,789,619	$150,568,920
Indirect Effect	374	$16,878,525	$27,716,406	$46,489,486
Induced Effect	330	$13,825,951	$24,370,307	$42,195,263
Total Effect	**1,697**	**$84,025,315**	**$117,876,332**	**$239,253,669**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Average annual residential and nonresidential development is projected to generate the following economic impacts:

- 1,697 jobs
- $84 million in labor income
- $118 million in net private sector value
- $239 million in annual economic output

Economic Impact Analysis Summary

Overview of Economic Impact Analysis: Why Look at Economic Impacts?

Economic Impact Analysis (EIA) is a process to evaluate the economic benefit of an entity or industry/industries on a defined geographic location—either with regard to its presence, expansion, or contraction. The key components of any economic impact analysis are typically measured by increases in personal income, value added (or gross regional product), business output, and/or job creation. It identifies **direct impacts**, that is, the actual number of employees of the entity or industry as well as the jobs supported by the spending of the entity/industry itself. In addition, direct impacts can be generated through other spending such as from visitors. Direct effects are also measured in personal income, gross regional product, and business output.

An economic impact analysis also evaluates the "spin-off" or "multiplier" effects that direct spending has on the location in terms of jobs, labor income, and total economic output or activity through what is referred to as **indirect and induced effects**. That is, income received by suppliers of goods and services is then used to buy goods and services from other local companies (**indirect effects**). Additionally, household income is used in part to buy goods and services within the local region, which creates other economic benefits (**induced effects**). In summary, the total effects are the result of direct impacts as well as the recirculation of income throughout the local economy. ***The main objective is to quantify the impacts of the economic driver to determine the benefits that are realized in an area that would not otherwise occur.***

An economic impact analysis is place-specific. That is, the results will vary depending on the region being evaluated. The general concept is that money circulates in the economy until they are "leaked out" of the area under study. Therefore, the larger the geographic area is, the greater the likelihood for the impacts to be captured.

The EIA for the City of Boulder is a projection of the **gross economic impact** from projected increase in development on the City. The analysis models the impact from the new increase in development but does not make any assumptions about contractions, shifts, or displacements from one area of the economy to another due to new development or other economic forces.

It is important to distinguish an economic impact analysis from a fiscal impact analysis. Where a fiscal impact analysis projects cash flow to the public sector, an economic impact analysis focuses on the cash flow to the private sector, measured in income, jobs, output, and indirect impacts.

- In general, a fiscal impact evaluation analyzes revenue generation and operating and capital costs to a jurisdiction associated with the provision of public services and facilities to serve new development—residential, commercial, industrial, or other. Fiscal analysis enables local governments to estimate the difference between the costs of providing services to development and the taxes, user fees, and other revenues that will be collected by the government as a result of new development. It can be used to evaluate the short-, medium-, and long-term fiscal effects of future growth; the level of subsidy for or contribution of an individual project (such as a request for rezoning); a change in land-use policies (such as increasing or decreasing allowable densities for development); or of a proposed annexation.

- An impact fee study identifies the cost to a local government for capital improvements to serve new growth.

General Approach and Methodology

The general approach for the Economic Impact Analysis (EIA) is as follows:

- TischlerBise conducted interviews and collected data from the City of Boulder and other sources as well as conducted primary and secondary research. Our work on the Development Impact Fees informed our understanding of current development and projected growth in the City.

- This information was synthesized and analyzed to reveal trends and economic impacts on the Boulder region.[1]
- The analysis of the Boulder economy was used to identify potential growth in specific industry subsectors and applied to job projection assumptions from the Boulder Valley Comprehensive Plan update. These projections were modeled using IMPLAN to project potential economic impacts from future growth. In addition to long-term economic impacts from employment growth, short-term economic impacts from construction activity are modeled as well using the IMPLAN model. IMPLAN is an input-output model, which tracks the interdependence among various producing and consuming sectors of an economy. IMPLAN is one of several commercial models used for economic impact analysis (others include REMI and RIMS II).

Summary of Recent Trends in City of Boulder

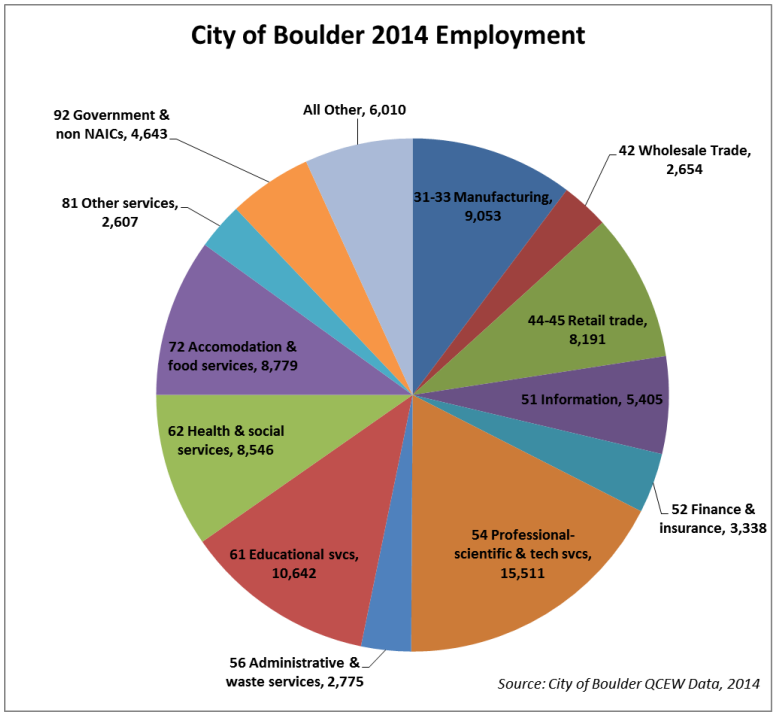
This section includes a brief overview of recent trends and current conditions in the City of Boulder economy. Several organizations track and study the Boulder economy and provide excellent resources.[2] The goal of this report is to quantify the potential economic impact of new development therefore an extensive evaluation of the Boulder economy is beyond the scope of this assignment. However, to make assumptions about potential future growth, an examination of recent trends was warranted and summarized below.

The City of Boulder has almost 100,000 jobs currently included self-employed positions. For at-place employment, the City has almost 90,000 jobs spread across several major industries. A summary of 2014 annual employment by industry category is shown below in Figure 3 followed by a summary of total wages by industry in 2014.

[1] The area of study is Boulder County due to data available from IMPLAN.

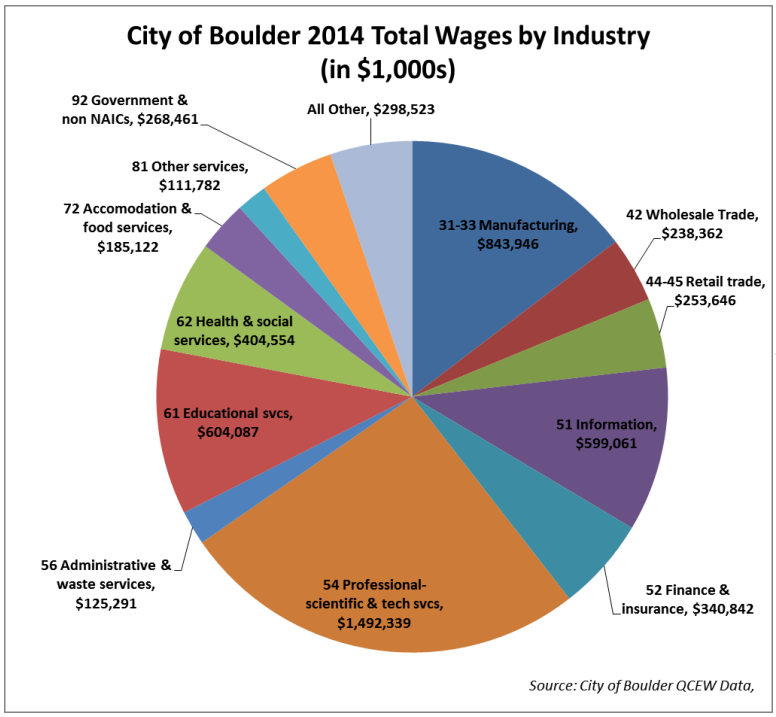
[2] See City of Boulder Economic Vitality (https://bouldercolorado.gov/business/economic-vitality); Boulder Economic Council (http://boulderecomomiccouncil.org/); Boulder Convention and Visitors Bureau (see especially: http://www.bouldercoloradousa.com/cvb/economic-impact-of-tourism/).

Figure 3. At-Place Employment in City of Boulder, 2014



Total Estimated At-Place Jobs in 2014 = ~88,000

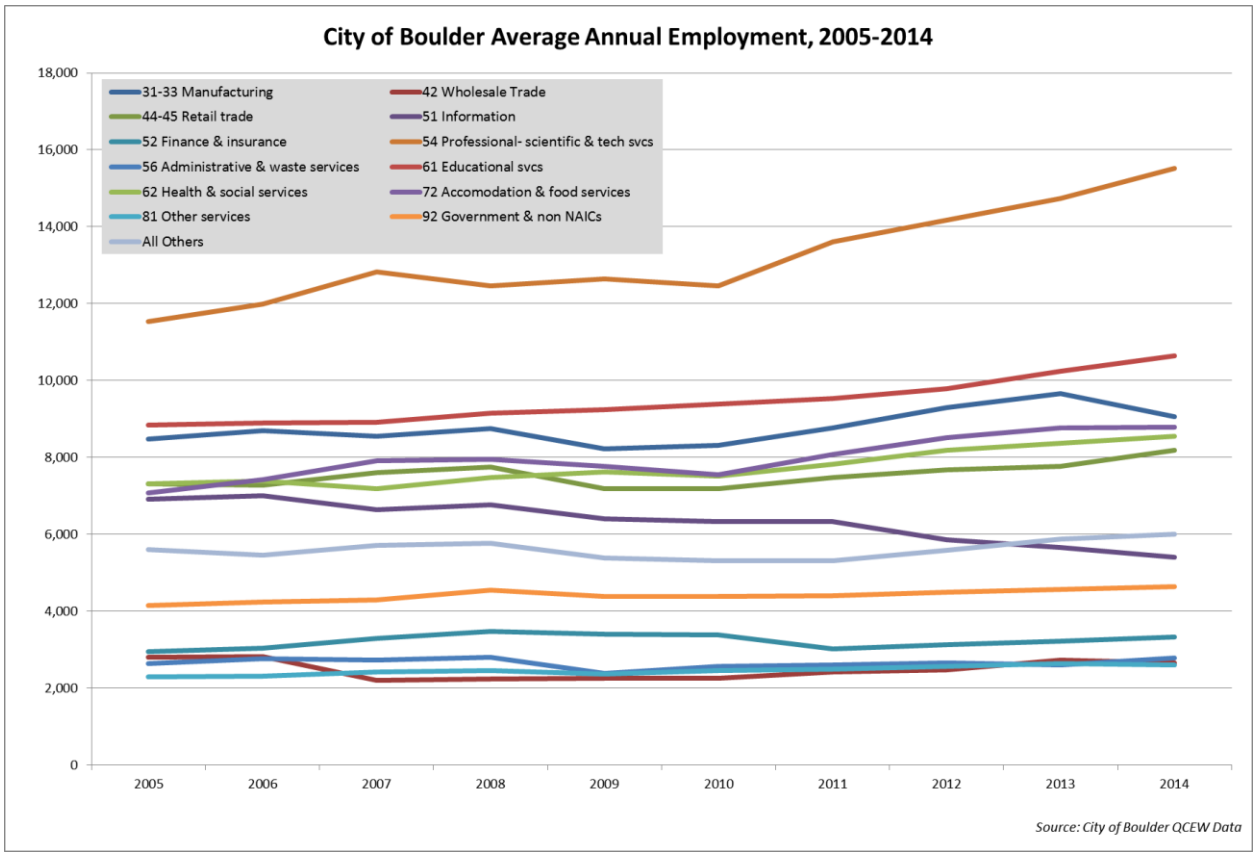
Figure 4. Total Wages by Major Industry Category in City of Boulder, 2014



Total Wages in 2014 = $5.8 billion

The City has experienced relatively consistent employment growth over the last 10 years with the exception of 2009 and 2010, during the height of the recession. However, the number of at-place jobs has rebounded and surpasses pre-recession figures. A summary of 10-year growth in employment is shown below in Figure 5.

Figure 5. Summary of Past Employment Growth in City of Boulder



To evaluate the economic impacts from future growth and development, TischlerBise utilized the growth projections that have been developed as part of the Comprehensive Plan update and subsequently used in the Development Impact Fee studies. A summary of growth projections are provided below in Figure 6.

Figure 6. City of Boulder Growth Projections (Long-Term: 10- and 25-Year)

			Projections ===>			5-Year Intervals				
		2015	2016	2017	2018	2019	2020	2025	10-Year	25-Year
		Base Yr	1	2	3	4	5	10	Net Increase	Net Increase
Cumulative Jobs										
Total Employment		98,510	99,187	99,871	100,561	101,255	101,954	105,523	7,013	18,500
Annual Net Increase in Jobs			*677*	*685*	*689*	*694*	*699*	*724*		
	% of Total									
Retail / Restaurant / Services	22%	21,482	21,630	21,779	21,930	22,081	22,233	23,012	1,529	4,034
Office / Institutional	54%	53,268	53,634	54,004	54,377	54,753	55,131	57,061	3,792	10,003
Industrial	15%	14,451	14,551	14,651	14,752	14,854	14,957	15,480	1,029	2,714
Total (At Place Jobs)		89,202	89,815	90,435	91,059	91,688	92,321	95,553	6,351	16,752
Self-Employed Estimate	9%	9,308	9,372	9,437	9,502	9,567	9,633	9,971	663	1,748
Total Jobs		98,510	99,187	99,871	100,561	101,255	101,954	105,523	7,013	18,500
								6,351		
Annual Net Increase in Jobs^										
Retail / Restaurant / Services			148	149	150	151	152	158	1,529	4,034
Office / Institutional			366	370	373	375	378	391	3,792	10,003
Industrial			99	100	101	102	103	106	1,029	2,714
Total (At Place Jobs)			613	620	624	629	633	655	6,351	16,752
Self-Employed Estimate			64	65	65	66	66	68	663	1,748
Total Jobs			677	685	689	694	699	724	7,013	18,500
Nonresidential Square Footage	*Jobs/1000sf*									
Retail / Restaurant / Services	2.51	8,565,611	8,624,414	8,683,890	8,743,783	8,804,095	8,864,830	9,174,939	609,328	1,607,273
Office / Institutional	3.59	14,848,416	14,950,360	15,053,473	15,157,308	15,261,869	15,367,162	15,904,789	1,056,373	2,786,479
Industrial	1.06	13,576,996	13,670,663	13,765,405	13,860,809	13,956,881	14,053,626	14,547,603	970,607	2,560,247
Total Nonresidential Square Footage		36,991,023	37,245,437	37,502,768	37,761,900	38,022,846	38,285,618	39,627,331	2,636,308	6,953,998
Annual Net Increase in Nonres Sq. Ft.			*254,414*	*257,331*	*259,132*	*260,946*	*262,773*	*272,099*		
Population		104,808	105,566	106,324	107,082	107,840	108,598	112,388	7,580	18,192
Jobs to Population Ratio		0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.93	1.02
Annual Nonresidential Square Footage										
Retail / Restaurant / Services			58,803	59,477	59,893	60,312	60,734	62,890	609,328	1,607,273
Office / Institutional			101,944	103,113	103,835	104,561	105,293	109,031	1,056,373	2,786,479
Industrial			93,667	94,741	95,404	96,072	96,745	100,178	970,607	2,560,247
Annual Net Increase in Nonres Sq. Ft.			*254,414*	*257,331*	*259,132*	*260,946*	*262,773*	*272,099*	2,636,308	6,953,998
Nonresidential Construction Values (New Constructi	*per sq. ft.**									*Avg Annual (2016-2020)*
Retail / Restaurant / Services Construction Value	*$134*		$7,879,544	$7,969,872	$8,025,661	$8,081,841	$8,138,414	$8,427,274	*$81,649,952*	*$215,374,567*	*$8,019,066*
Office / Institutional Construction Value	*$145*		$14,781,905	$14,951,358	$15,056,018	$15,161,410	$15,267,540	$15,809,437	*$153,174,062*	*$404,039,397*	*$15,043,646*
Industrial Construction Value	*$171*		$16,017,127	$16,200,740	$16,314,145	$16,428,344	$16,543,343	$17,130,523	*$165,973,762*	*$437,802,184*	*$16,300,740*
Total Value			*$38,678,576*	*$39,121,971*	*$39,395,824*	*$39,671,595*	*$39,949,296*	*$41,367,234*	*$400,797,776*	*$1,057,216,148*	*$39,363,452*

** Based on 3-year trend, approximately 60% of new nonresidential construction includes Tenant Finish*
Source: 2015 BVCP Trends Report; TischlerBise analysis

TischlerBise used these projections as the foundation / control totals for general industry categories of Retail / Restaurant/ Services; Office / Institutional; and Industrial as shown above in Figure 6. For the EIA, the categories are broken down further by industry sector, which are then used in the IMPLAN model. A ten-year time period is used to project economic impacts from projected growth.

The following series of figures are the data used to model the economic impacts of new development and industry growth in the City of Boulder over the next 10 years. The "net increase in employment" is the input to the IMPLAN model, which then generates the direct, indirect, and induced economic impacts. Those results are provided in the next section.

Figure 7. Retail / Restaurant / Services 10-Year Projected Growth

Retail / Restaurant / Services

			Base Year Employment	10-Year Projected Employment Growth	Net Increase in Employment	
					Input for IMPLAN	
	MODELED		21,482	23,012	1,529	
3 Digit NAICS	*IMPLAN Sector*	*%^*				*IMPLAN Sector Description*
441	396	4%	942	1,009	67	Retail - Motor vehicle and parts dealers
443	398	2%	378	405	27	Retail - Electronics and appliance stores
445	400	11%	2,289	2,451	163	Retail - Food and beverage stores
451	404	4%	894	958	64	Retail - Sporting goods, hobby, musical instrument and book stores
452	405	2%	514	551	37	Retail - General merchandise stores
454	407	3%	544	583	39	Retail - Nonstore retailers
713	497	5%	1,072	1,149	76	Fitness and recreational sports centers
721	499	4%	825	883	59	Hotels and motels, including casino hotels
722	501	22%	4,648	4,979	331	Full-service restaurants
722	502	9%	1,851	1,983	132	Limited-service restaurants
722	503	6%	1,318	1,412	94	All other food and drinking places
812	509	2%	509	545	36	Personal care services
453	406	2%	480	514	34	Retail - Miscellaneous store retailers
448	403	3%	626	671	45	Retail - Clothing and clothing accessories stores
444	399	3%	569	609	40	Retail - Building material and garden equipment and supplies stores
811	504	2%	500	535	36	Automotive repair and maintenance, except car washes
446	401	2%	403	432	29	Retail - Health and personal care stores
442	397	1%	254	272	18	Retail - Furniture and home furnishings stores
711	488	1%	185	198	13	Performing arts companies
711	491	1%	183	196	13	Promoters of performing arts and sports and agents for public figures
Misc	406	12%	2,499	2,677	178	Retail - Miscellaneous store retailers
	Total	**100%**	**21,482**	**23,012**	**1,529**	

^ Share by sector is based on current share by IMPLAN sector code as well as 5-year trend of growth/decline in each industry.
Source: QCEW Data for City of Boulder; TischlerBise analysis.

Figure 8. Office / Institutional 10-Year Projected Growth

Office / Institutional

3 Digit NAICS	MODELED IMPLAN Sector	%^	Base Year Employment	10-Year Projected Employment Growth	Net Increase in Employment	IMPLAN Sector Description
					Input for IMPLAN	
			53,268	57,061	3,792	
511	422	7%	3,512	3,762	250	Software publishers
511	417	1%	294	315	21	Newspaper publishers
511	421	0%	248	265	18	Greeting card publishing
511	418	0%	239	257	17	Periodical publishers
518	430	0%	209	224	15	Data processing, hosting, and related services
519	432	1%	272	291	19	Internet publishing and broadcasting and web search portals
522	433	1%	730	782	52	Monetary authorities and depository credit intermediation
522	434	1%	700	750	50	Nondepository credit intermediation and related activities
523	436	1%	765	819	54	Other financial investment activities
523	435	1%	386	413	27	Securities and commodity contracts intermediation and brokerage
524	438	0%	252	270	18	Insurance agencies, brokerages, and related activities
541	456	6%	3,026	3,242	215	Scientific research and development services
541	452	5%	2,678	2,868	191	Computer systems design services
541	451	5%	2,573	2,756	183	Custom computer programming services
541	449	4%	2,199	2,356	157	Architectural, engineering, and related services
541	454	2%	1,141	1,222	81	Management consulting services
541	460	2%	827	886	59	Marketing research and all other miscellaneous professional, scientific, and technical services
541	447	2%	811	869	58	Legal services
541	457	1%	554	594	39	Advertising, public relations, and related services
541	455	1%	316	339	23	Environmental and other technical consulting services
541	459	0%	203	217	14	Veterinary services
551	461	1%	588	629	42	Management of companies and enterprises
561	464	2%	1,154	1,236	82	Employment services
561	468	1%	303	325	22	Services to buildings
611	473	18%	9,638	10,324	686	Junior colleges, colleges, universities, and professional schools
611	474	1%	416	446	30	Other educational services
611	472	1%	278	298	20	Elementary and secondary schools
621	475	2%	1,268	1,358	90	Offices of physicians
621	477	2%	1,037	1,111	74	Offices of other health practitioners
621	476	1%	595	637	42	Offices of dentists
621	478	1%	485	520	35	Outpatient care centers
622	482	4%	1,929	2,066	137	Hospitals
623	483	2%	1,067	1,143	76	Nursing and community care facilities
624	487	1%	460	493	33	Child day care services
921	533	7%	3,827	4,099	272	* Employment and payroll of local govt, non-education
Misc	465	16%	8,287	8,877	590	Business support services
	Total	**100%**	**53,268**	**57,061**	**3,792**	

^ Share by sector is based on current share by IMPLAN sector code as well as 5-year trend of growth/decline in each industry.
Source: QCEW Data for City of Boulder; TischlerBise analysis.

Figure 9. Industrial 10-Year Projected Growth

Industrial

					Input for IMPLAN	
			Base Year Employment	10-Year Projected Employment Growth	Net Increase in Employment	
	MODELED		14,451	15,480	1,029	
3 Digit NAICS	*IMPLAN Sector*	*%^*				*IMPLAN Sector Description*
236	61	1.2%	177	190	13	Construction of other new residential structures
238	57	4.5%	650	696	46	Construction of new commercial structures, including farm structures
311	80	0.8%	118	127	8	Frozen specialties manufacturing
311	94	0.7%	102	110	7	Bread and bakery product, except frozen, manufacturing
311	78	0.4%	61	65	4	Confectionery manufacturing from purchased chocolate
312	108	1.5%	224	310	86	Breweries
312	106	0.3%	38	77	40	Bottled and canned soft drinks & water
312	109	0.1%	19	46	28	Wineries
323	154	1.3%	193	206	14	Printing
325	173	2.9%	413	443	29	Medicinal and botanical manufacturing
326	193	0.4%	63	68	4	Urethane and other foam product (except polystyrene) manufacturing
332	249	1.3%	187	200	13	Machine shops
333	272	2.1%	309	331	22	Optical instrument and lens manufacturing
334	305	1.2%	168	180	12	Broadcast and wireless communications equipment manufacturing
334	306	1.3%	186	199	13	Other communications equipment manufacturing
334	309	2.8%	411	440	29	Semiconductor and related device manufacturing
334	313	0.5%	75	81	5	Other electronic component manufacturing
334	314	12.9%	1,863	1,996	133	Electromedical and electrotherapeutic apparatus manufacturing
334	315	11.2%	1,613	1,727	115	Search, detection, and navigation instruments manufacturing
334	317	6.1%	888	951	63	Industrial process variable instruments manufacturing
334	318	0.8%	117	125	8	Totalizing fluid meter and counting device manufacturing
334	319	0.8%	112	120	8	Electricity and signal testing instruments manufacturing
334	320	1.3%	188	202	13	Analytical laboratory instrument manufacturing
334	324	0.9%	127	136	9	Software and other prerecorded and record reproducing
335	325	0.4%	53	57	4	Electric lamp bulb and part manufacturing
336	359	0.5%	73	78	5	Other aircraft parts and auxiliary equipment manufacturing
339	380	0.5%	69	74	5	Surgical appliance and supplies manufacturing
339	386	0.6%	86	92	6	Doll, toy, and game manufacturing
339	394	8.6%	1,240	1,295	55	All other miscellaneous manufacturing
339	385	0.2%	26	28	2	Sporting and athletic goods manufacturing
425	395	25.9%	3,741	3,907	166	Wholesale trade
484	411	1.2%	176	188	13	Truck transportation
485	412	2.9%	426	456	30	Transit and ground passenger transportation
491	518	0.3%	49	53	4	Postal service
492	415	1.5%	211	226	15	Couriers and messengers
		100%	14,451	15,480	1,029	

^ Share by sector is based on current share by IMPLAN sector code as well as 5-year trend of growth/decline in each industry.

Source: QCEW Data for City of Boulder; TischlerBise analysis.

Long-Term Economic Impact of Future Growth

To examine the potential projected long-term economic impacts of growth in the above industries, we modeled the change in employment in each of the IMPLAN sectors identified. Total economic impact includes: direct, indirect, and induced impacts.

- Economic impact analysis identifies **direct** impacts, that is, the actual number of employees in the industry as well as the jobs supported by the spending of the businesses in the industry itself.
- The jobs and economic activity generated by industry spending for payroll, purchasing, and construction are not limited to the direct impacts cited above. Some spending by businesses is used to buy goods and services from other local companies; and the latter companies in turn buy goods and services from still other local businesses. The economic impact analysis also evaluates these "spin-off" or "multiplier" effects that direct spending has on the location in terms of jobs, labor income, and total economic output or activity.
    - Income received by suppliers of goods and services is then used to buy goods and services from other local companies (**indirect** effect).
    - Additionally, household income is used in part to buy goods and services within the local region, which creates other economic benefits (**induced** effect).
- In summary, the total effects are the result of direct impacts as well as the recirculation of income throughout the local economy.

Based on potential changes to the Boulder economy in the industries identified above, the following economic impacts are projected to occur. Results are reported in the following categories:

- **Jobs:**
    - *Direct*: Represents the number of direct jobs projected plus those jobs estimated as a result of direct spending within each industry. The analysis includes estimated jobs created from new development—direct jobs created from the industry, direct jobs as a result of construction spending;
    - *Indirect and Induced:* Represents the number of indirect and induced jobs projected due to a change in direct employment.
- **Labor Income:**

- Income consists of wages and salaries paid to employees (direct and indirect) as well as income generated from other direct impacts.

- **Value Added:**
  - Measure of full wage and corporate profit effect from direct, indirect, and induced effects.

- **Output:**
  - Value of gross economic activity projected for direct, indirect, and induced economic activity.

Economic Impact of Retail / Restaurant / Services Development

Given the projected growth in Retail/Restaurant/Services in the City of Boulder over the next ten years as detailed in Figure 7, the total economic impact supported by this growth is projected at approximately $162 million. Almost 2,000 jobs are attributed to this growth, which reflects the direct growth from retail employment as well as additional jobs supported by indirect and induced economic activity. Total labor income over the 10-year period is projected at approximately $63 million. A summary of projected 10-year cumulative economic impacts from future retail development is shown below in Figure 10.

Figure 10. 10-Year Projected Economic Impacts from Retail/Restaurant/Services Growth

Economic Impact of Retail Growth

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	1,531	$44,183,108	$63,140,967	$100,579,521
Indirect Effect	219	$8,653,301	$16,476,484	$29,992,784
Induced Effect	246	$10,329,984	$18,214,342	$31,538,278
Total Effect	**1,997**	**$63,166,393**	**$97,831,792**	**$162,110,582**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Economic Impact of Office / Institutional Development

Given the projected growth in Office/Institutional uses in the City of Boulder over the next ten years as detailed in Figure 8, the total economic impact supported by this growth is projected at over $1 billion. Approximately 7,000 jobs are attributed to this growth over 10 years, which reflects the direct growth from office and institutional employment as well as additional jobs supported by indirect and induced economic activity. Total labor income over the 10-year period is projected at approximately $440 million. The summary of projected 10-year cumulative economic impacts from future office and institutional growth is shown below in Figure 11.

Figure 11. 10-Year Projected Economic Impacts from Office/Institutional Growth

Economic Impact of Office Growth

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	3,792	$293,684,371	$392,667,967	$619,356,599
Indirect Effect	1,545	$74,706,135	$121,779,132	$217,106,994
Induced Effect	1,712	$71,846,846	$126,698,399	$219,382,983
Total Effect	**7,049**	**$440,237,352**	**$641,145,497**	**$1,055,846,577**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Economic Impact of Industrial Development

Given the projected growth in Industrial uses in the City of Boulder over the next ten years as detailed in Figure 9, the total economic impact supported by this growth is projected at approximately $630 million. Approximately 2,340 jobs are attributed to this growth over 10 years, which reflects the direct growth from industrial employment as well as additional jobs supported by indirect and induced economic activity. Total labor income over the 10-year period is projected at approximately $175 million. The summary of projected 10-year cumulative economic impacts from future industrial growth is shown below in Figure 12.

Figure 12. 10-Year Projected Economic Impacts from Industrial Growth

Economic Impact of Industrial Growth

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	1,027	$108,162,449	$180,747,421	$437,479,246
Indirect Effect	631	$38,379,550	$57,086,689	$104,597,201
Induced Effect	681	$28,589,292	$50,415,054	$87,295,343
Total Effect	**2,340**	**$175,131,292**	**$288,249,164**	**$629,371,790**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Combined Economic Impact of Retail, Office, and Industrial Growth

The combined 10-year economic impact of projected nonresidential growth in the City of Boulder is summarized below in Figure 13. As shown, over 11,000 jobs can be attributed to projected growth at over $678 million and a total economic output of $1.8 billion over ten years.

Figure 13. 10-Year Projected Economic Impacts from Nonresidential Growth

Economic Impact of Combined Nonresidential Growth

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	6,350	$446,029,929	$636,556,355	$1,157,415,366
Indirect Effect	2,396	$121,738,987	$195,342,305	$351,696,979
Induced Effect	2,639	$110,766,122	$195,327,795	$338,216,603
Total Effect	**11,385**	**$678,535,038**	**$1,027,226,454**	**$1,847,328,949**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Impacts of Residential Growth

It should be noted that the long term indirect and induced impacts from residential growth are embedded in the nonresidential projections—and likewise, the reported economic impacts from that nonresidential growth above. In other words, the growth projections used as the basis for this analysis are market based and reflect the overall impact and effects of residential growth in the City. That is, for example, residential growth will lead to additional retail development, which is captured already in the growth scenario.

Temporary Economic Impacts from Development

This section of the analysis documents the **short-term/temporary** economic impacts from private-sector residential and nonresidential development activity. This results in the same four economic impact measures of jobs, labor income, value added, and output but reflects short-term, temporary economic impacts supported by economic investment—as opposed to an aggregating effect over the growth period projection timeframe. Results are shown on an annual basis—and reflect the projected economic activity associated with residential and nonresidential construction in the City of Boulder each year.

For this analysis, TischlerBise utilized average construction costs from recent Boulder development projects by broad category of land uses (reflecting the City growth scenario). Construction values are then adjusted to development costs assuming that construction values reflect approximately 70 percent of development costs. The costs do not include the cost of land acquisition. From this assumption of development costs, TischlerBise used the IMPLAN model to identify direct, indirect, and induced economic impacts from private sector construction activity.

While there is additional economic activity generated from remodeling and rehabilitation activity, this is not a "growth-related" impact but rather investment on existing structures in the City. Eventually, today's growth will be tomorrow's remodeling/rehabilitation investment opportunity; but for this analysis, this economic activity is not modeled. (The majority of the expenditure in the Remodel/Finish category is for remodeling.)

Figure 14. Summary of Residential Construction Values

	TOTAL/WEIGHTED CONSTRUCTION VALUE (2013-2015)				
	Value	*Units*	*$/Unit*		
Single Family Dwelling, Detached	$121,671,168	223	$545,611		
Single Family Dwelling, Attached	$25,618,967	95	$269,673		
Two Family Buildings	$16,431,014	18	$912,834		
Three and Four Family Buildings	$552,296	4	$138,074		
Five or More Family Buildings	$276,155,147	1897	$145,575		
TOTAL	$440,428,592	2237	$196,884		
	Inflation Adj.				
Single Family Dwelling, Detached	$122,097,021	223	$547,520		
Single Family Dwelling, Attached	$25,734,481	95	$270,889		
Two Family Buildings	$16,501,109	18	$916,728		
Three and Four Family Buildings	$563,342	4	$140,836		
Five or More Family Buildings	$279,198,639	1897	$147,179		
TOTAL	$444,094,592	2237	$198,522		
				Rounded Average Per Unit	***Estd. Development Cost per Unit****
SFD	$122,097,021	223	$547,520	$550,000	$786,000
ATTACHED	$321,997,571	2014	$159,880	$160,000	$229,000
TOTAL	$444,094,592	2237	$198,522		

** Assumes construction value is 70% of development cost; land costs are not included.*

Source: City of Boulder, PMT Structural Permits Statistics (2013-2015); adjusted to 2015 dollars

Figure 15. Summary of Nonresidential Construction Values

	TOTAL/WEIGHTED CONSTRUCTION VALUE (2013-2015)				
	Total Value	*Total SF*	*$/SF*		
Retail	$164,361,052	1,229,004	$133.74		
Office/Instit	$134,723,223	930,526	$144.78		
Industrial	$27,740,978	164,138	$169.01		
Remodel/Finish	$257,226,266	2,810,064	$91.54		
Total	$584,051,519	5,133,732	$113.77		
	Inflation Adj.				
				Rounded $/SF	***Estd. Development Cost/SF****
Retail	$164,914,201	1,229,004	$134.19	$134	$191
Office/Instit	$135,025,816	930,526	$145.11	$145	$207
Industrial	$28,064,935	164,138	$170.98	$171	$244
Remodel/Finish	$258,725,360	2,810,064	$92.07	$92	
Total	$586,730,313	5,133,732	$114.29	$114	

** Assumes construction value is 70% of development cost; land costs are not included.*

Source: City of Boulder, Construction Permits data (2013-2015); adjusted to 2015 dollars

Given these averages, annual construction values are projected for residential and nonresidential development as shown below in the following figures. A five-year projection is used to derive the annual projection figures to model.

Figure 16. Projected Residential Construction Investment

		2015	2016	2017	2018	2019	2020	5-Year Net Increase	
			Projections ===>						
		Base Yr	*1*	*2*	*3*	*4*	*5*		
Cumulative Housing Units	*New %*								
Housing Units^		45,740	46,012	46,288	46,566	46,846	47,127	1,387	
Single Family Hsg Units	*20%*	24,242	24,297	24,352	24,407	24,463	24,520	277	
All Other Hsg Units	*80%*	21,498	21,716	21,937	22,159	22,382	22,607	1,109	
Annual Housing Units									
Annual Net Increase in Single Family Hsg Units			54	55	56	56	56	277	
Annual Net Increase in Multifamily Hsg Units			218	221	222	224	225	1,109	
Annual Net Increase in Housing Units			*272*	*276*	*278*	*279*	*281*	1,387	
Residential Construction Values		*per unit**							*Avg Annual (2016-2020)*
Single Family Unit Construction Value		*$786,000*	*$42,822,852*	*$43,396,076*	*$43,656,452*	*$43,918,391*	*$44,181,901*	*$217,975,671*	*$43,595,134*
Multifamily Unit Construction Value		*$229,000*	*$49,905,512*	*$50,573,543*	*$50,876,985*	*$51,182,247*	*$51,489,340*	*$254,027,627*	*$50,805,525*
Total Value			*$92,728,364*	*$93,969,619*	*$94,533,437*	*$95,100,637*	*$95,671,241*	*$472,003,298*	*$94,400,660*

^ Includes Colorado University group quarters population (in dormitories) and residential units (apartments)
** City of Boulder, PMT Structural Permits Statistics (2013-2015); adjusted to 2015 dollars*
Sources: 2015 BVCP Trends Report; City of Boulder Planning and Development Services; TischlerBise analysis

While construction fluctuates from year to year—particularly with multifamily development, for purposes of this analysis an average annual construction investment is assumed. As shown above, an average annual projection of $44 million is assumed for single family construction and $51 million for multifamily construction.

Figure 17. Projected Nonresidential Construction Investment

			Projections ===>					
		2015	2016	2017	2018	2019	2020	5-Year
		Base Yr	*1*	*2*	*3*	*4*	*5*	Net Increase
Nonresidential Square Footage	*Jobs/1000sf*							
Retail / Restaurant / Services	2.51	8,565,611	8,624,414	8,683,890	8,743,783	8,804,095	8,864,830	299,219
Office / Institutional	3.59	14,848,416	14,950,360	15,053,473	15,157,308	15,261,869	15,367,162	518,746
Industrial	1.06	13,576,996	13,670,663	13,765,405	13,860,809	13,956,881	14,053,626	476,630
Total Nonresidential Square Footage		36,991,023	37,245,437	37,502,768	37,761,900	38,022,846	38,285,618	1,294,595
Annual Net Increase in Nonres Sq. Ft.			*254,414*	*257,331*	*259,132*	*260,946*	*262,773*	
Annual Nonresidential Square Footage								
Retail / Restaurant / Services			58,803	59,477	59,893	60,312	60,734	299,219
Office / Institutional			101,944	103,113	103,835	104,561	105,293	518,746
Industrial			93,667	94,741	95,404	96,072	96,745	476,630
Annual Net Increase in Nonres Sq. Ft.			*254,414*	*257,331*	*259,132*	*260,946*	*262,773*	*1,294,595*
Nonresidential Construction Values (New Construction)	*per sq. ft.**							*Avg Annual (2016-2020)*
Retail / Restaurant / Services Construction Value	*$191*		$11,231,291	$11,360,042	$11,439,562	$11,519,639	$11,600,276	$57,150,809	*$11,430,162*
Office / Institutional Construction Value	*$207*		$21,102,443	$21,344,353	$21,493,763	$21,644,220	$21,795,729	$107,380,508	*$21,476,102*
Industrial Construction Value	*$244*		$22,854,847	$23,116,846	$23,278,664	$23,441,614	$23,605,706	$116,297,676	*$23,259,535*
Total Value			*$55,188,582*	*$55,821,240*	*$56,211,989*	*$56,605,473*	*$57,001,711*	*$280,828,994*	*$56,165,799*

** City of Boulder, PMT Structural Permits Statistics (2013-2015); adjusted to 2015 dollars*
Sources: 2015 BVCP Trends Report; City of Boulder Planning and Development Services; TischlerBise analysis

Construction also fluctuates greatly with nonresidential development, however for purposes of this analysis an average annual construction investment is assumed. As shown above, an average annual projection of $11 million for retail, $21 million for office and institutional uses, and $23 million for industrial uses.

Economic Impacts from Construction

Given the assumptions on average annual construction activity and investment as shown above, economic impacts can be projected. Using the IMPLAN model, the direct, indirect, and induced temporary economic impacts are projected from both residential and nonresidential construction activity. Results are shown in the following figures.

Figure 18. Summary of Temporary Annual Economic Impacts from Residential Construction

Economic Impact of Annual Residential Construction

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	574	$30,540,055	$38,214,175	$94,348,759
Indirect Effect	314	$12,913,169	$21,772,360	$36,225,178
Induced Effect	205	$8,574,758	$15,112,951	$26,166,539
Total Effect	**1,092**	**$52,027,981**	**$75,099,486**	**$156,740,476**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

On an average annual basis, **residential construction** is projected to generate approximately:

- 1,092 jobs
- $52 million in labor income
- $75 million in net private sector value
- $157 million in total economic output

Figure 19. Summary of Temporary Annual Economic Impacts from Nonresidential Construction

Economic Impact of Annual Nonresidential Construction

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	419	$22,780,785	$27,575,444	$56,220,161
Indirect Effect	60	$3,965,356	$5,944,046	$10,264,308
Induced Effect	125	$5,251,192	$9,257,356	$16,028,724
Total Effect	**605**	**$31,997,334**	**$42,776,846**	**$82,513,193**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

On an average annual basis, **nonresidential construction** is projected to generate approximately:

- 605 jobs
- $32 million in labor income
- $43 million in net private sector value
- $83 million in total economic output

A combined summary of economic impacts from construction activity is shown below.

Figure 20. Summary of Temporary Annual Economic Impacts from All Construction

Economic Impact of Annual Residential and Nonresidential Construction

Impact Type	*Employment*	*Labor Income*	*Total Value Added*	*Output*
Direct Effect	993	$53,320,840	$65,789,619	$150,568,920
Indirect Effect	374	$16,878,525	$27,716,406	$46,489,486
Induced Effect	330	$13,825,951	$24,370,307	$42,195,263
Total Effect	**1,697**	**$84,025,315**	**$117,876,332**	**$239,253,669**

Source: TischlerBise analysis using IMPLAN Model for Boulder County.

Appendix

Construction Values

Construction values establish the baseline to determine development costs, which are assumed to be 70 percent of construction values.

Figure 21. Residential Construction Value Detail

	2015			2014			2013			TOTAL/WEIGHTED			
	Value	Units	$/Unit	Value	Units	$/Unit	Value	Units	$/Unit	Value	Units	$/Unit	
Single Family Dwelling, Detached	$52,467,183	83	$632,135	$47,911,360	83	$577,245	$21,292,625	57	$373,555	$121,671,168	223	$545,611	
Single Family Dwelling, Attached	$13,360,759	52	$256,938	$6,482,485	24	$270,104	$5,775,723	19	$303,985	$25,618,967	95	$269,673	
Two Family Buildings	$3,625,054	6	$604,176	$9,301,188	4	$2,325,297	$3,504,772	8	$438,097	$16,431,014	18	$912,834	
Three and Four Family Buildings	$0		#DIV/0!	$0	0	#DIV/0!	$552,296	4	$138,074	$552,296	4	$138,074	
Five or More Family Buildings	$36,333,266	168	$216,269	$87,647,297	611	$143,449	$152,174,584	1118	$136,113	$276,155,147	1897	$145,575	
TOTAL	$105,786,262	309	$342,350	$151,342,330	722	$209,615	$183,300,000	1206	$151,990	$440,428,592	2237	$196,884	
Inflation Adj.	*1.00*			*1.00*			*1.02*						
Single Family Dwelling, Detached	$52,467,183	83	$632,135	$47,911,360	83	$577,245	$21,718,478	57	$381,026	$122,097,021	223	$547,520	
Single Family Dwelling, Attached	$13,360,759	52	$256,938	$6,482,485	24	$270,104	$5,891,237	19	$310,065	$25,734,481	95	$270,889	
Two Family Buildings	$3,625,054	6	$604,176	$9,301,188	4	$2,325,297	$3,574,867	8	$446,858	$16,501,109	18	$916,728	
Three and Four Family Buildings	$0	0	#DIV/0!	$0	0	#DIV/0!	$563,342	4	$140,835	$563,342	4	$140,836	
Five or More Family Buildings	$36,333,266	168	$216,269	$87,647,297	611	$143,449	$155,218,076	1118	$138,835	$279,198,639	1897	$147,179	
TOTAL	$105,786,262	309	$342,350	$151,342,330	722	$209,615	$186,966,000	1206	$155,030	$444,094,592	2237	$198,522	
													Rounded Average Per Unit
SFD	$52,467,183	83	$632,135	$47,911,360	83	$577,245	$21,718,478	57	$381,026	$122,097,021	223	$547,520	$550,000
ATTACHED	$53,319,079	226	$235,925	$103,430,970	639	$161,864	$165,247,523	1149	$143,819	$321,997,571	2014	$159,880	$160,000
TOTAL	$105,786,262	309	$342,350	$151,342,330	722	$209,615	$186,966,000	1206	$155,030	$444,094,592	2237	$198,522	

Source: City of Boulder, PMT Structural Permits Statistics (2013-2015); adjusted to 2015 dollars

Figure 22. Nonresidential Construction Value Detail

	2015					2014					2013					TOTAL/WEIGHTED				
	Sum of TOTAL PROJECT VALUE	*Sum of NEW SF*	*Sum of REMODEL SF*	*TotalSF*	*$/SF*	*Sum of TOTAL PROJECT VALUE*	*Sum of NEW SF*	*Sum of REMODEL SF*	*TotalSF*	*$/SF*	*Sum of TOTAL PROJECT VALUE*	*Sum of NEW SF*	*Sum of REMODEL SF*	*TotalSF*	*$/SF*	*Total Value*	*Total SF*	*$/SF*		
Retail	$90,263,106	584,911	22,520	607,431	$148.60	$46,440,502	376,042	5,798	381,840	$121.62	$27,657,444	133,729	106,004	239,733	$115.37	$164,361,052	1,229,004	$133.74		
Office/Instit	$67,553,599	535,587	2,575	538,162	$125.53	$52,039,955	267,547	8,553	276,100	$188.48	$15,129,669	112,574	3,690	116,264	$130.13	$134,723,223	930,526	$144.78		
Industrial	$11,514,829	72,819	0	72,819	$158.13	$28,300	170	0	170	$166.47	$16,197,849	91,149	0	91,149	$177.71	$27,740,978	164,138	$169.01		
Remodel/Finish	$109,893,227	512,526	582,643	1,095,169	$100.34	$72,378,323	169,279	695,961	865,240	$83.65	$74,954,716	326,833	522,822	849,655	$88.22	$257,226,266	2,810,064	$91.54		
Total	$279,224,761	1,705,843	607,738	2,313,581	$120.69	$170,887,080	813,038	710,312	1,523,350	$112.18	$133,939,678	664,285	632,516	1,296,801	$103.28	$584,051,519	5,133,732	$113.77		
Inflation Adj.	*1.00*					*1.00*					*1.02*									
																			Rounded $/SF	
Retail	$90,263,106	584,911	22,520	607,431	$148.60	$46,440,502	376,042	5,798	381,840	$121.62	$28,210,593	133,729	106,004	239,733	$117.68	$164,914,201	1,229,004	$134.19	$134.00	Retail
Office/Instit	$67,553,599	535,587	2,575	538,162	$125.53	$52,039,955	267,547	8,553	276,100	$188.48	$15,432,262	112,574	3,690	116,264	$132.73	$135,025,816	930,526	$145.11	$145.00	Office/Instit
Industrial	$11,514,829	72,819	0	72,819	$158.13	$28,300	170	0	170	$166.47	$16,521,806	91,149	0	91,149	$181.26	$28,064,935	164,138	$170.98	$171.00	Industrial
Remodel/Finish	$109,893,227	512,526	582,643	1,095,169	$100.34	$72,378,323	169,279	695,961	865,240	$83.65	$76,453,810	326,833	522,822	849,655	$89.98	$258,725,360	2,810,064	$92.07	$92.00	Remodel/Finish
		0	0	0			0	0	0			0	0	0						
Total	$279,224,761	1,705,843	607,738	2,313,581	$120.69	$170,887,080	813,038	710,312	1,523,350	$112.18	$136,618,472	664,285	632,516	1,296,801	$105.35	$586,730,313	5,133,732	$114.29	$114.00	

Source: City of Boulder, Construction Permits data (2013-2015); adjusted to 2015 dollars

IMPLAN Definitions

IMPLAN is an input-output model, which tracks the interdependence among various producing and consuming sectors of an economy. IMPLAN is one of several commercial models used for economic impact analysis (others include REMI and RIMS II). This section provides definitions for IMPLAN modeling terms, as provided by IMPLAN Corporation.[3]

Direct Effect

The set of expenditures applied to the predictive model (i.e., I/O multipliers) for impact analysis. It is a series (or single) of production changes or expenditures made by producers/consumers as a result of an activity or policy. These initial changes are determined by an analyst to be a result of this activity or policy. Applying these initial changes to the multipliers in an IMPLAN model will then display how the region will respond, economically to these initial changes.

Indirect Effect

The impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying Direct Effects to the Type I Multipliers.

Induced Effect

The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not a leakage to the regional economy. This money is recirculated through the household spending patterns causing further local economic activity.

Input- Output (I/O) Analysis

A type of applied economic analysis that tracks the interdependence among various producing and consuming sectors of an economy. More particularly, it measures the relationship between a given set of demands for final goods and services and the inputs required to satisfy those demands. (Bureau of Economic Analysis)

[3] Minnesota Implan Group (MIG), 2013.

Labor Income

All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.

Output

Output represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For Retail and wholesale trade, output = gross margin and not gross sales.

Value Added

The difference between an industry's, or an establishment's, total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus (formerly "other value added") (BEA).