

**CITY OF BOULDER**  
**CITY COUNCIL MEETING**  
MUNICIPAL BUILDING, 1777 BROADWAY  
Boulder, Colorado 80302  
**Tuesday, September 20, 2016**  
**6 p.m.**

**AMENDED AGENDA**

**1. CALL TO ORDER AND ROLL CALL**

**A. Update on the Boulder Convention and Visitors Bureau**

**2. OPEN COMMENT and COUNCIL/STAFF RESPONSE** (limited to 45 min.)

Public may address any city business for which a public hearing is not scheduled later in the meeting (this includes the consent agenda and first readings). After all public hearings have taken place, any remaining speakers will be allowed to address Council. All speakers are limited to three minutes.

**3. CONSENT AGENDA** (to include first reading of ordinances) Vote to be taken on the motion at this time.

**A. Consideration of a motion to approve the July 19, 2016 City Council Meeting Minutes**

**B. Consideration of a motion to accept the Study Session Summary from August 30, 2016 regarding the Development-Related Impact Fees and Excise Taxes**

**C. Consideration of a motion to call the following Special Meetings:**

- **Wednesday, October 5, 2016, at 10 a.m.** to go into **Executive Session** to obtain and discuss legal advice including negotiation strategy, with respect to Boulder's electric utility
- **Thursday, October 13, 2016, at 6 p.m.** for a **Joint Meeting with Planning Board**
- **Thursday, October 20, 2016, at 6 p.m.** to go into **Executive Session** to obtain and discuss legal advice, including negotiation strategy, with respect to Boulder's electric utility

**D. Consideration of a motion to approve the Proposed Council Meeting Dates for 2017**

**E. Introduction, first reading and consideration of a motion to order published by title only Ordinance 8143 clarifying the roles of the Open Space Board of Trustees and City Council in requiring that any transfer of open space land to another department comply with the disposal requirements of Charter section 177**

**4. POTENTIAL CALL-UP CHECK IN**

Opportunity for Council to indicate possible interest in the call-up of an item listed under 8A. No Action will be taken by Council at this time.

**8A. Potential Call-Ups**

1. **1102 Pearl Street- Concept Plan**
2. **1815 Pearl Street- Site and Use Review**
3. **2180 Violet- Concept Plan**

**ORDER OF BUSINESS**

**5. PUBLIC HEARINGS**

Note: Any items removed from the Consent Agenda will be considered after any City scheduled Public Hearings

- A. **Second reading** and consideration of a motion to adopt **Ordinance 8141 designating the building and a portion of the property at 479 Arapahoe Ave., to be known as the Higman House**, as a local historic landmark per Section 9-11-5 of the Boulder Revised Code, 1981 (HIS2016-00122) Owner/Applicant: Applicant/Owner: Katherine Toan Merlin/Mark Gerwing
- B. **Second reading** and consideration of a motion to adopt **Ordinance 8142 designating the building and a portion of the property at 2949 Broadway., to be known as the Hulse House**, as a local historic landmark per Section 9-11-5 of the Boulder Revised Code, 1981 (HIS2015-00173) Owner/Applicant: ALR Investments/Michael Bosma

**6. MATTERS FROM THE CITY MANAGER**

- A. Request from **Ball Aerospace** to **allow submittal of appropriate applications that seek approval of a development plan that would include a new building in excess of the maximum allowed height limit**

**B. Direction on the Development-related Impact Fee and Excise Taxes project**

**7. MATTERS FROM THE CITY ATTORNEY**

- A. Update and request for **Council direction** regarding **implementation of Ordinance 8050 regulating Short-Term Rentals**

**8. MATTERS FROM MAYOR AND MEMBERS OF COUNCIL**

- A. Potential Call-ups
  1. **1102 Pearl Street- Concept Plan**
  2. **1815 Pearl Street- Site and Use Review**
  3. **2180 Violet- Concept Plan**
- B. Consideration of motions to **adopt Resolution 1192 in support of Amendment 70 and Resolution 1193 in opposition to Amendment 71**, both measures that will appear on the **November 2016 state ballot**
- C. Consideration of a motion regarding **2016 performance evaluations, and salary adjustments for the City Manager, City Attorney, and Municipal Judge**

**D. Request for Appointment of Two Member Subcommittee regarding Climate Change**

**9. PUBLIC COMMENT ON MATTERS**

Public comment on any motions made under Matters

**10. DECISION ON MOTIONS**

Action on motions made under Matters

**11. DEBRIEF**

Opportunity for Council to discuss how the meeting was conducted

**12. ADJOURNMENT**

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Anyone requiring special packet preparation such as Braille, large print, or tape recorded versions may contact the City Clerk's Office at 303-441-4222, 8 a.m. – 5 p.m. Monday through Friday. The Council Chambers is equipped with a T-Coil assisted listening loop and portable assisted listening devices. Individuals with hearing or speech loss may contact us using Relay Colorado 711 (711) or 1-(800)-659-3656. Please request special packet preparation no later than 48 hours prior to the meeting.

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**CITY OF BOULDER  
CITY COUNCIL AGENDA ITEM**

**MEETING DATE: Sept. 20, 2016**

**AGENDA TITLE:**

Direction on the Development-Related Impact Fee and Excise Taxes project

**PRESENTER/S**

Jane S. Brautigam, City Manager  
David Gehr, Deputy City Attorney  
Susan Richstone, Deputy Director for 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

**EXECUTIVE SUMMARY**

The purpose of this item is for council to discuss and provide direction on the three components of the Development-Related Impact Fees and Excise Taxes project. The three components are:

1. Capital Facility Impact Fees
2. Multimodal Transportation Tax/Fee
3. Affordable Housing Linkage Fee

The project began in May 2015 and is in the decision making phase. Two public sessions, six technical working group meetings, and four city council study sessions have been held on this topic.

Impact Fees and Excise Taxes are one-time payments used to fund capital infrastructure system improvements needed to accommodate new development. Studies to establish the proportionate share of the needed capital improvements must be developed to meet legal requirements.

Originally all three components were intended to be brought forward for decision making as a package. Based on direction from the Council Agenda Committee to discuss this project under Matters from the City Manager, and council member requests to discuss impact fee credits for affordable housing and further discuss the affordable housing linkage fee, rather than a public hearing at this time, staff is recommending to separate the components for decision making. As a result, this item is organized into three distinct sections. For each section, staff has provided analysis, suggested next steps, a recommendation and a question for council to respond to, as a framework for discussion and direction.

Staff is seeking direction at the Sept. 20 meeting for the following:

1. Affordable Housing Credits

At the Aug. 30 Study Session, council members requested that additional information on potential impact fee credits for affordable housing developments prior to making a decision on fee changes. The city currently does not waive or credit any impact fees, based on the premise that new residential development (including affordable housing) creates an incremental demand on infrastructure, and the fees are necessary to fund the improvements over time. The city does however have a Development Excise Tax waiver for affordable housing developments that provide in excess of the required 20 percent. Staff has outlined high level options in the memo, and is seeking direction on how to proceed. A key factor will be that substitute or alternate revenues to pay the fees on behalf of the affordable housing development will need to be identified. Staff is recommending that if a fee credit is desired, to model it after the current excise tax waiver, and to consider this in the context of the upcoming inclusionary housing ordinance update. A decision on credits would occur prior to the effective date of any fee changes. Staff has presented the following questions regarding this topic: Does council support the staff recommendation to explore a credit system as part of the inclusionary housing ordinance update? If a fee credit system is desired now, does council support a system modeled on the current excise tax waiver, or are there other options the council would like staff to evaluate?

2. Affordable Housing Linkage Fee

The city currently has a commercial linkage fee to fund affordable housing, at a rate of \$9.53/sq. ft. for office building types. Council direction in June was to update the fee based on economic and market factors. Council outlined three fee levels to consider, based on office building types at \$10/sq. ft., \$20/sq. ft. and \$35/sq. ft. Key economic factors include the development cost context, market adjustments to absorb fees and fee rates in other communities. The consultant on the project has analyzed these options further in the context of market and economic factors, which is included in **Attachment F**. Based on these factors and the analysis provided by Keyser Marston Associates, staff recommends narrowing the range to be considered for the linkage fee to at or below approximately five percent of total development cost, and to gather council feedback on potential fee

levels. This narrowing would result in fees at or below a rate of approximately \$15/sq. ft. for office uses (other uses are outlined in the analysis section). For the prototypical commercial development, this would be an increase of up to \$5.26/sq. ft. Staff is seeking direction from council on this narrowing and input on any additional analysis prior to a public hearing on Nov. 15, 2016. Staff has presented the following questions related to this topic: Does council agree with the staff recommendation to narrow the linkage fee options to at or below approximately five percent of total development cost, and to eliminate the \$35/sq. ft. option from further consideration? Does council have any additional feedback on the level at which the fee should be set? Does Council have any questions or comments regarding additional analysis before bringing this item forward for final direction at a public hearing on Nov. 15, 2016?

3. Capital Facility Impact Fees & Transportation Fee/Tax

The city has six existing capital facility impact fees, and a transportation excise tax. This update is an incremental update of the existing fees/tax, based on current master plans and capital plans of the city.

For capital facility impact fees, the change based on prototypical developments is a \$0.79/sq. ft. increase for residential, and a \$0.71/sq. ft. increase for non-residential. For the transportation component, council direction in June was to develop a hybrid approach using both the existing excise tax and a new impact fee to fund transportation improvements. With reallocation of the existing parkland excise tax and the new impact fee, the change based on prototypical developments is a \$0.12/sq. ft. increase for residential, and a \$0.24/sq. ft. increase for non-residential.

Staff is seeking council direction to proceed with drafting an ordinance to implement these recommended fees, with an effective date of Oct 1, 2017 in order to provide adequate time to address the issue of credits and for projects currently in the planning process to take the new fees into consideration. This ordinance would be considered at a public hearing on Nov. 15, 2016. Staff has presented the following questions related to this topic: Does council support staff bringing an ordinance forward on Nov. 15 to adopt new Capital Facility Impact Fees and Transportation Fees/Taxes as described in the analysis section with an effective date of Oct 1, 2017?

**STAFF RECOMMENDATION**

Staff is recommending council give the following direction regarding changes to the city's development-related impact fees and excise taxes:

1. Impact Fee Credits for Affordable Housing: Evaluate a credit system for impact fees related to affordable housing in conjunction with the inclusionary housing ordinance revisions, to be completed in the first half of 2017.
2. Affordable Housing Linkage Fee: Narrow the fee increase to a level at or below approximately five percent of development costs (approximately \$15/sq. ft. for office

uses), eliminate the \$35/sq. ft. option and hold the public hearing for final direction on Nov. 15, 2016, with an ordinance to follow at a later date.

3. Capital Facility Impact Fees and Transportation Fee/Tax: Bring forward ordinances to adopt new capital facility impact fees on Nov. 15, 2016 as proposed in the 2016 Capital Facility Development Impact Fee Study (**Attachment B**); a new transportation impact fee as proposed in the 2016 Transportation Impact Fee Study (**Attachment C**); a slight revision to the allocation of the Transportation Excise Tax to allocate the current Parkland Excise Tax to Transportation, based on the analysis in the 2016 Transportation Excise Tax Study (**Attachment D**), all as prepared by TischlerBise. Staff recommends the new fees become effective on Oct. 1, 2017.

## **PUBLIC FEEDBACK**

Recognizing the technical nature of the studies, this project has utilized several methods to gather public feedback. This has included a public introduction session, an information session, a technical working group and targeted outreach to interested community members and organizations.

### ***Intro Session***

A public introductory seminar was held on Feb. 1, 2016 and provided background information on impact fees, excise taxes, and shared examples of recent developments where fees and taxes were paid. The presentation also included a review of the project scope, purpose and timeline. The presentation was livestreamed online, and a [video of the presentation is available](#) as well as the [handout](#).

### ***Technical Working Group***

To assist the city and its consultants in developing recommendations for the studies and potential fee or tax changes, the city selected 13 individuals to join a working group to provide input and feedback on the work products being prepared for different components of the project. The selected members represent a diverse set of perspectives to assist in the project. The group was not expected to come to consensus or otherwise come to an agreement or resolution, or to provide a recommendation. The role of the group was to provide a diverse range of opinions and perspectives to assist the city staff and consultants in the project.

### ***Information Session***

A public information session was held on Aug. 31, 2016 to provide information on the project to date, findings from the studies, and final options as directed from Council. The information session included staff stations for Development Fees 101, Capital Facility Impact Fees, Transportation and Affordable Housing. A handout was available at each station.

### ***Targeted Outreach***

During the duration of the project the team maintained an interested community member email list, and presented to four community organizations and at two events about the project and topic.

The project has also been highlighted on Inside Boulder News on Channel 8 on several occasions.

## BACKGROUND

### *Project Information*

The City Council directed staff to initiate updates to the development impact fees and excise taxes in May 2015. Staff hired two consulting firms (TischlerBise and Keyser Marston Associates) in August 2015 to conduct studies in four focus areas (project components).

1. Update the 2009 Capital Facility Development Impact Fees
2. Update the Transportation Excise Tax to focus on multimodal improvements
3. Update the 2009 study on Affordable Housing Linkage fee
4. Conduct a study for private development to support public art

In the interim while the study is on-going, annual inflation updates have been factored into the annual budget process for the existing fees.

City Council has held four study sessions on this project:

- [Oct. 13, 2015](#) – council discussed the project scope and approach.
- [April 12, 2016](#) – council reviewed and discussed initial findings and technical working group feedback. The public art component was moved out of this project and into the Community Cultural Plan implementation.
- [June 14, 2016](#) – council discussed and narrowed the fee options.
- [Aug. 30, 2016](#) – council discussed transportation rate structures and affordable housing credits.

For the City of Boulder, sales taxes and property taxes are used to primarily support operations and capital maintenance. Impact Fees and Excise Taxes are the mechanism or tool that the city uses to implement the longstanding community policy that growth pay its share of incremental impact on city infrastructure. As shown in the graphic to the right, impact fees must be based on a study that establishes the proportionate share to meet the rational nexus legal requirements.

### Studies and Reports

To establish legally supportable fees and taxes, the city conducts studies to establish the connection between the need and the fee levels.

#### Updating the studies

Typically, impact fee studies look out five to ten years, with the expectation that fees will be periodically updated (e.g., every 6 - 10 years).



**Gather background data** - including capital infrastructure needs based on departmental master plans and facility plans.



**Update demographic data** - including population and employment numbers based on BVCP projections.



**Calculate the fees/taxes** using accepted allocation methodology to determine appropriate fee levels.

At the Aug. 30 Study Session, several council members expressed an interest in understanding a per sq. ft. benefit analysis of new development that could directly relate to the impact fee studies which establish the per sq. ft. fees to support the incremental demand on city infrastructure.

The consultants on the project have advised staff that a fiscal impact analysis could help understand the revenue to the city from new development, and where that revenue is used

in city operations and capital infrastructure. Such an analysis would require an in-depth study of the city's revenue and expenditures, and would include a large number of assumptions. While the conclusions of such a fiscal impact analysis may provide an understanding of the revenues and expenditures of the city organization, the feedback from TischlerBise to conduct such a study to "determine the dollar benefit per sq. ft. to then potentially offset the impact fees is not advisable. For capital facility impact fees, that approach would be counter to impact fee requirements." Impact fee studies have strict legal requirements for the process of establishing a maximum supportable fee.

For the affordable housing linkage fee, because these fees go to supporting affordable housing developments, and have no relation to city operations or capital infrastructure, a fiscal impact analysis will not provide any logical connection from the nexus analysis maximums to the fee level to be set by council. The purpose of the linkage fee is to mitigate the impact of the development of new workplace buildings (such as office, retail, hotel, industrial), the employees that work in them, and the resulting demand for affordable housing.

## **ANALYSIS**

### **Introduction**

This analysis portion is organized into three distinct sections. For each section, staff has provided analysis, suggested next steps, a recommendation, and a question for council to respond to, as a framework for clear discussion and direction.

The consulting firms of TischlerBise and Keyser Marston Associates have prepared studies necessary to meet the rational nexus legally required to adopt impact fees. These studies result in a maximum fee level that could be charged, and the city can set the fees or taxes at any rate at or below the legally defensible maximum established in the study.

To assist in putting the proposed fees and taxes in context, prototypical residential and non-residential developments were selected, and the fees were calculated for those projects. The table in **Attachment A** shows the fees for these prototypical projects, as well as comparative charts of Boulder and surrounding communities.

The residential prototype is a 3-unit townhome building totaling 3,655 sq. ft., with a total development cost of \$1,200,000. The commercial prototype is a 61,466 sq. ft. office building, with a small retail and restaurant space, and a total development cost of \$18,500,000.

## **1. AFFORDABLE HOUSING CREDITS/FEE & TAX SUBSIDY**

At the Aug. 30 Study Session, council requested to proceed with exploring a credit or waiver system for affordable housing developments, prior to adoption of any fee change ordinances. In the following section, staff has provided some high level options for

council consideration, outlining the current waiver for development excise taxes, the approaches to a credit for impact fees, and a recommendation of options and next steps. Based on council direction, additional analysis will be performed.

The city currently has a waiver for the Development Excise Tax if certain conditions are met. The waiver occurs when a residential development constructs on-site permanently affordable housing above the required 20 percent. When that occurs, for every unit constructed above 20 percent, that unit is credited all Development Excise Taxes, and a credit is issued for an additional unit under 20 percent. In other words, once a development goes above 20 percent, it is a two for one credit. This is an outright waiver; the taxes are not paid for by an alternate funding source such as the affordable housing fund or the general fund.

There are various approaches to establishing a credit/fee waiver program, but there are two key issues to address:

1. What types of projects would be eligible?
2. Who pays for the credit?

The legal foundation for impact fees is that they must be proportionate and reasonably related to the capital facility service demands of new development, and represent new growth's proportionate share of capital facility needs. The Colorado Impact Fee Statutes allow for a waiver of impact fees without substitute revenues. However, the incremental demand on city infrastructure still occurs, therefore a direct waiver of the fee is not fiscally responsible. Consistent with the longstanding community policy that growth pay its share of incremental impacts, the current capital facility impact fees are based on the proportionate share for new development to pay for the construction of the needed capital infrastructure. If a straight waiver is provided; either 1) there will not be enough funding to construct the needed improvements, resulting in a need for other city revenues to cover the growth share, or 2) the improvements will not be constructed, resulting in a lower level of service for the community over time.

In 2009 when the city created the current impact fees, the council discussed this issue, and concluded that because the various city departments with capital infrastructure have a real impact related to affordable housing, no exemption from the fees was created.

Currently when a project is built with affordable housing units above the 20 percent, the affordable housing developer is eligible to pursue funding from the city through the Affordable Housing Fund. Any city funds provided to subsidize the development costs of the project are used to cover the cost required to bring a market rate unit down to an affordable value, i.e. "buy down the affordability". Therefore, impact fees, are in part already covered, by the city's Affordable Housing Fund and cash in-lieu from other projects.

### **What types of projects would be eligible**

Staff has been exploring these credits with the assumption they will only apply to permanently affordable housing. With that assumption, the following options exist for what types of units could be eligible for a credit:

1. Any permanently affordable housing unit (including the required 20%)
2. All units receiving city subsidy (above 20%)
3. Units above and beyond the minimum 20%, similar to what is currently in place for excise taxes.

### **Who Pays for the credit**

As described above, the incremental demand placed on city facilities and infrastructure remains regardless of whether an affordable housing development pays the fees or not. Therefore, responsible fiscal planning leads to a payment of the fees from substitute revenues. There are two options that exist for payment of these fees from substitute sources:

1. The Affordable Housing Fund
2. The General Fund

Based on the proposed impact fees and excise taxes, and assuming a prototypical affordable housing unit being 1,000 square feet, the cost per unit to pay the impact fees and excise taxes from a substitute funding source would be approximately \$8,000. While the number of affordable housing units constructed per year varies, the range of subsidy could range from \$500,000 to \$3,400,000 per year, based on what types of projects are eligible. A funding source for the credits would need to be identified as a part of the 2018 budget.

### **Next Steps**

Based on direction from council, staff will proceed with either of the following options:

- 1) Wait for and include this impact fee discussion in the updating of the Inclusionary Housing Ordinance. There is currently a process underway to review and update the Inclusionary Housing ordinance. This process will be completed next year and will include the input of the community. Through this process of updating Inclusionary Housing, many factors will be addressed, including work from the Middle Income Working Group, a review of approaches to increased on-site affordable housing and the balancing of the most effective approaches to obtaining affordable housing through various funding mechanisms. In this option, the review of, if and how, to waive certain fees could be addressed within the context of the wider affordable housing strategy. It is expected that this work and recommendation would be completed early in 2017.
- 2) Further develop a credit system, consistent with the existing method used in the Development Excise Tax. Additional information would be presented on Nov. 15 at the public hearing.

### **Staff Recommendation**

Staff recommends to include this analysis as a part of the update of the Inclusionary Housing ordinance, as the issues are so inter-related and these fees are a part of the larger context of the affordable housing strategy. Staff is recommending that the effective date of the fee changes be on Oct. 1, 2017, to allow time for this analysis to be complete and any credit system to be established prior to the fee changes becoming effective.

If a fee credit is desired now, staff suggests modeling it after the current excise tax waiver system, which provides an incentive to construct on-site units above 20 percent.

### **Council Question**

Does council support the staff recommendation to explore a credit system as part of the inclusionary housing ordinance update? If a fee credit system is desired now, does council support a system modeled on the current excise tax waiver, or are there other options the council would like staff to evaluate?

## **2. AFFORDABLE HOUSING LINKAGE FEE**

The jobs-housing nexus study completed by Keyser Marston Associates (**Attachment E**) has established that the maximum impact fee that could be charged for new non-residential development to mitigate the its impacts on the need for affordable housing are quite significant and not recommended. This is common in linkage fee nexus analyses and therefore setting the fee is a policy decision that takes into consideration a variety of factors. At the June 14, 2016 study session, council feedback was to set the updated fee based on market and economic factors, and to bring forward options for office building type fee levels of \$10, \$20 and \$35/sq. ft.

Keyser Marston Associates has provided additional market and economic analysis of the three fee levels (**Attachment F**). Key findings in that analysis include:

- Cities with exceptionally strong real estate markets have adopted linkage fees representing up to approximately five percent of development costs.
- A five percent of development cost rate structure would be in the range of \$10-15/sq. ft. for office (if uniform across the city), \$7-\$10/sq. ft. for retail, hotel, and flex commercial and \$3-5/sq. ft. for warehouse.
- Option 3 (\$35/sq. ft. would exceed all other currently adopted linkage fee programs that Keyser Marston Associates is aware of.

When the three fee options are applied to various non-residential development building types, it results in the following findings for cost per sq. ft. and percent of development cost:

**Proposed Fees as % of Development Costs**

Building Type	Flex Commercial (R&D / Light Industrial)	Hotel	Retail	Office	Office - Higher Density (Downtown and Vicinity)
Total Development Cost (\$/SF)	\$206	\$248	\$268	\$301	\$489
Affordable Housing Fees (\$/SF)					
Option 1	\$7	\$7	\$7	\$10	\$10
Option 2	\$12	\$12	\$12	\$20	\$20
Option 3	\$20	\$20	\$20	\$35	\$35
Other Impact Fees, Permit Fees and Taxes (\$/SF) <sup>(1)</sup>	\$7	\$8	\$9	\$10	\$13
Affordable Housing Fees as % of Development Cost					
Option 1	3%	3%	3%	3%	2%
Option 2	6%	5%	4%	7%	4%
Option 3	10%	8%	7%	12%	7%
Affordable Housing + Other Fees and Taxes as % of Development Cost					
Option 1	7%	6%	6%	7%	5%
Option 2	9%	8%	8%	10%	7%
Option 3	13%	11%	11%	15%	10%

(1) Reflects proposed capital and transportation impact fees using fees levels identified in the TischlerBise draft studies. Sales tax, permitting fees, and plant investment fees are approximated at 1.7% of cost based on a City-prepared analysis for office.

Based on the market and economic factors, and recommendations of Keyser Marston Associates, staff believes that Option 3 - \$35/sq. ft. for office building types is beyond what the market and economics of commercial development can support. To achieve the desire to continue to fund affordable housing in the community, in balance with the economic and market factors (such as land values, commercial rents and practices of high fee communities with a linkage fee), staff recommends further exploration of a fee at or below approximately five percent of development cost.

**Next Steps**

Staff believes that Keyser Marston Associates has provided adequate market and economic analysis to allow council to set the affordable housing linkage fee and that no additional analysis is needed. If council agrees, staff will prepare an agenda item for final direction on the commercial linkage fee, for consideration at a public hearing on Nov. 15, 2016. If council believes additional analysis is needed prior to the public hearing and final direction, a schedule for completion of such analysis and a discussion with council will need to be determined following the Sept. 20 meeting.

**Recommendation**

Staff recommends to narrow the fee increase to a level at or below approximately five percent of development costs (approximately \$15/sq. ft. for office uses), eliminate the \$35/sq. ft. option and hold the public hearing for final direction on Nov. 15, 2016, with

an ordinance to follow at a later date. At the public hearing, staff will provide a specific recommendation based on the discussion at the Sept. 20 meeting.

### **Council Question**

Does council agree with the staff recommendation to narrow the linkage fee options to at or below approximately five percent of total development cost, and to eliminate the \$35/sq. ft. option from further consideration? Does council have any additional feedback on the level at which the fee should be set? Does Council have any questions or comments regarding additional analysis before bringing this item forward for final direction at a public hearing on Nov. 15, 2016?

## **3. CAPITAL FACILITY IMPACT FEES & TRANSPORTATION FEE/TAX**

### **Capital Facility Impact Fees**

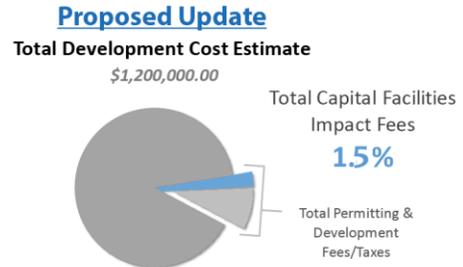
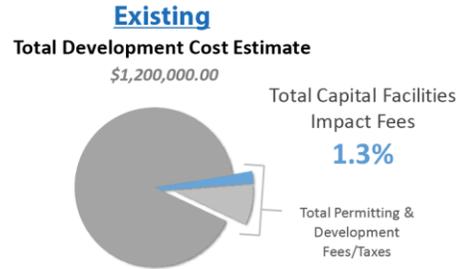
The city has six impact fees for capital facilities:

- *Library Impact Fee* – funds library facilities and materials in the library’s collections; charged on residential development.
- *Parks & Recreation Impact Fee* - funds outdoor parks, recreation center and pool facilities and support facilities; charged on residential development.
- *Human Services Impact Fee* - funds senior center facilities and the Children, Youth and Family Center facility; charged on residential development.
- *Municipal Facilities Impact Fee* – funds municipal building space; charged on residential and non-residential development.
- *Police Impact Fee* - funds police station facilities and communication center space; charged on residential and non-residential development.
- *Fire Impact Fee* - funds fire station facilities, land and fire apparatus; charged on residential and non-residential development.

The study completed by TischlerBise (**Attachment B**) has established that an incremental update to the fee levels is necessary based on current capital needs and levels of service. When the fees are applied to prototypical developments it results in the following findings on a per square foot basis, and the context of the fees as a percent of total development costs:

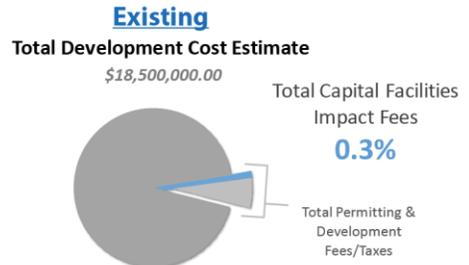
	RESIDENTIAL		
	Current	Proposed	Increase
<b>Capital Facility Impact Fees</b>	<b>\$3.89</b>	<b>\$4.68</b>	<b>\$ 0.79</b>
Parks & Recreation Impact Fee	\$2.62	\$3.25	\$ 0.63
Library Impact Fee	\$0.38	\$0.52	\$ 0.14
Fire Impact Fee	\$0.29	\$0.24	\$ (0.05)
Police Impact Fee	\$0.25	\$0.26	\$ 0.02
Municipal Facilities Impact Fee	\$0.23	\$0.32	\$ 0.08
Human Service Impact Fee	\$0.12	\$0.10	\$ (0.02)

\*Note: The proposed fees have been applied to the prototypical development and are shown here as a cost per square foot factor.



	NON-RESIDENTIAL		
	Current	Proposed	Increase
<b>Capital Facility Impact Fees</b>	<b>\$0.99</b>	<b>\$1.70</b>	<b>\$ 0.71</b>
Parks & Recreation Impact Fee	n/a	n/a	n/a
Library Impact Fee	n/a	n/a	n/a
Fire Impact Fee	\$0.60	\$0.85	\$ 0.26
Police Impact Fee	\$0.19	\$0.31	\$ 0.12
Municipal Facilities Impact Fee	\$0.21	\$0.54	\$ 0.33
Human Service Impact Fee	n/a	n/a	n/a

\*Note: The proposed fees have been applied to the prototypical development and are shown here as a cost per square foot factor.



Staff is recommending adoption of the new fees as proposed in the 2016 Capital Facility Development Impact Fee Study (**Attachment B**).

### Transportation Excise Tax & Impact Fee

1. The city currently has a development excise tax that funds two categories of capital infrastructure:
  - a. *Park Land* – funds park land purchases; charged on residential development.
  - b. *Transportation* – funds transportation system capital improvements and enhancements such as road improvements, intersections, bike lanes, underpasses, and pedestrian enhancements; charged on residential and non-residential development.

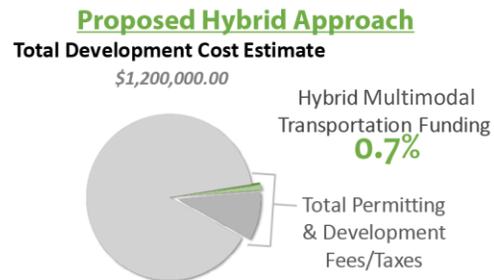
The studies completed by TischlerBise (**Attachments C & D**) have established that the growth share of transportation planned capital improvements is greater than the current development excise tax. Based on feedback from council, a hybrid approach was developed where transportation improvements are split by type, and allocated either to the existing Transportation Excise Tax, or a new Transportation Impact Fee.

Staff is recommending re-allocation of the parkland component of the Development Excise Tax to transportation. This will result in no change in total DET's for a residential development. The addition of a small Impact Fee to both residential and non-residential development is proposed.

When the fees are applied to prototypical developments it results in the following findings on a per square foot basis, and the context of the fees as a percent of total development costs:

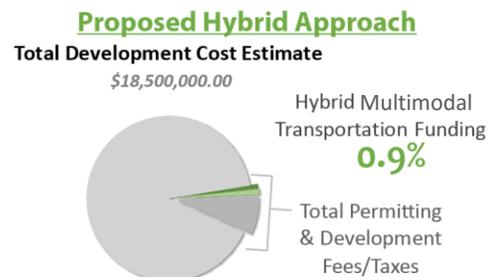
	RESIDENTIAL		
	Current	Proposed	Increase
<b>Transportation</b>	<b>\$ 1.89</b>	<b>\$ 2.02</b>	<b>\$ 0.12</b>
Parkland Excise Tax	\$0.62	\$ -	<b>\$(0.62)</b>
Transportation Excise Tax	\$1.28	\$1.89	<b>\$ 0.62</b>
Transportation Impact Fee	\$ -	\$0.12	<b>\$ 0.12</b>

\*Note: The proposed fees have been applied to the prototypical development and are shown here as a cost per square foot factor.



	NON-RESIDENTIAL		
	Current	Proposed	Increase
<b>Transportation</b>	<b>\$ 2.48</b>	<b>\$ 2.72</b>	<b>\$ 0.24</b>
Parkland Excise Tax	n/a	n/a	n/a
Transportation Excise Tax	\$2.48	\$2.48	\$ -
Transportation Impact Fee	\$ -	\$0.24	<b>\$ 0.24</b>

\*Note: The proposed fees have been applied to the prototypical development and are shown here as a cost per square foot factor.



Staff is recommending adoption of a new transportation impact fee as proposed in the 2016 Transportation Impact Fee Study (**Attachment C**), and a slight revision to the allocation of the Transportation Excise Tax to allocate the current Parkland Excise Tax to Transportation, based on the analysis in the 2016 Transportation Excise Tax Study (Attachment D).

**Phasing**

Staff recommends that the ordinance implementing the capital facility impact fees and transportation fee/tax be phased, with an effective date of Oct. 1, 2017. This timeframe will allow time for the affordable housing credits conversation and inclusionary housing ordinance update to be complete. In addition, this will allow for developments already in the development review process to plan for these fee changes.

**Next Steps**

If council agrees with the recommendations above, staff proposes to bring forward an ordinance for council consideration at a public hearing on Nov. 15, 2016.

**Council Question**

Does council support staff bringing an ordinance forward on Nov. 15 to adopt new Capital Facility Impact Fees and Transportation Fees/Taxes as described above with an effective date of Oct 1, 2017?

**ATTACHMENTS**

- Attachment A: Final Fee Options Development Scenarios Matrix & Comparative Charts
- Attachment B: 2016 Capital Facility Development Impact Fee Study
- Attachment C: 2016 Transportation Development Impact Fee Study
- Attachment D: 2016 Transportation Development Excise Tax Study
- Attachment E: 2016 Jobs Housing Nexus Analysis Study
- Attachment F: Keyser Marston Memorandum on fee options and context materials

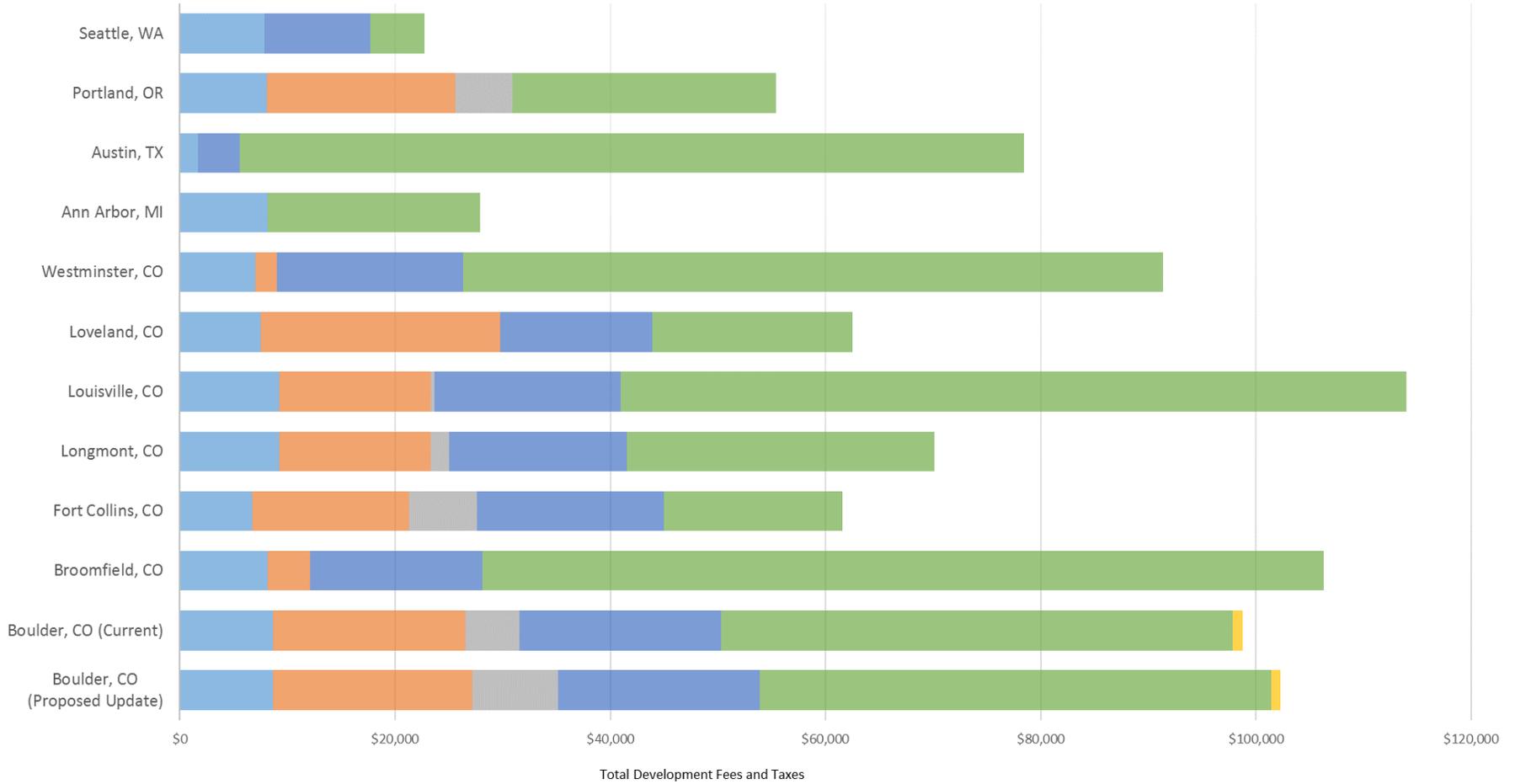
	RESIDENTIAL		NON-RESIDENTIAL			
	Current	Proposed	Current	Option 1	Option 2	Option 3
<b>Permit Fees</b>	\$ 8,658.85	\$ 8,658.85	\$ 55,869.97	\$ 55,869.97	\$ 55,869.97	\$ 55,869.97
<b>Capital Facility Impact Fees</b>	\$ 15,414.00	\$ 18,561.00	\$ 61,072.62	\$ 104,492.00	\$ 104,492.00	\$ 104,492.00
<i>Percent Change</i>		20%		71%	71%	71%
<i>% of Development Cost</i>	1.3%	1.5%	0.3%	0.6%	0.6%	0.6%
Parks & Recreation Impact Fee	\$ 10,386.00	\$ 12,870.00	n/a	n/a	n/a	n/a
Library Impact Fee	\$ 1,512.00	\$ 2,058.00	n/a	n/a	n/a	n/a
Fire Impact Fee	\$ 1,131.00	\$ 933.00	\$ 36,719.78	\$ 52,517.00	\$ 52,517.00	\$ 52,517.00
Police Impact Fee	\$ 972.00	\$ 1,047.00	\$ 11,666.26	\$ 18,796.00	\$ 18,796.00	\$ 18,796.00
Municipal Facilities Impact Fee	\$ 924.00	\$ 1,257.00	\$ 12,686.58	\$ 33,179.00	\$ 33,179.00	\$ 33,179.00
Human Service Impact Fee	\$ 489.00	\$ 396.00	n/a	n/a	n/a	n/a
<b>Transportation</b>	\$ 7,500.27	\$ 7,992.27	\$ 152,435.68	\$ 167,101.48	\$ 167,101.48	\$ 167,101.48
<i>Percent Change</i>		7%		10%	10%	10%
<i>% of Development Cost</i>	0.6%	0.7%	0.8%	0.9%	0.9%	0.9%
Parkland Excise Tax	\$ 2,440.47	\$ -	n/a	n/a	n/a	n/a
Transportation Excise Tax	\$ 5,059.80	\$ 7,500.27	\$ 152,435.68	\$ 152,435.68	\$ 152,435.68	\$ 152,435.68
Transportation Impact Fee	n/a	\$ 492.00	n/a	\$ 14,665.80	\$ 14,665.80	\$ 14,665.80
<b>Affordable Housing</b>	\$ 912.00	\$ 912.00	\$ 576,293.00	\$ 599,908.00	\$ 1,199,816.00	\$ 2,104,054.00
<i>Percent Change</i>		0%		4%	108%	265%
<i>% of Development Cost</i>	0.1%	0.1%	3.1%	3.2%	6.5%	11.4%
Housing Excise Tax	\$ 912.00	\$ 912.00	n/a	n/a	n/a	n/a
Affordable Housing Linkage Fee	n/a	n/a	\$ 576,293.00	\$ 599,908.00	\$ 1,199,816.00	\$ 2,104,054.00
<b>Plant Investment Fees</b>	\$ 47,549.00	\$ 47,549.00	\$ 63,791.00	\$ 63,791.00	\$ 63,791.00	\$ 63,791.00
<b>Sales &amp; Use Tax</b>	\$ 18,718.00	\$ 18,718.00	\$ 196,487.00	\$ 196,487.00	\$ 196,487.00	\$ 196,487.00
<b>Total Permitting and Development Fees/Taxes</b>	\$ 98,752.12	\$ 102,391.12	\$ 1,105,949.27	\$ 1,187,649.45	\$ 1,787,557.45	\$ 2,691,795.45
<i>Percent Change</i>		4%		7%	62%	143%
<b>\$/Gross Square Foot</b>	\$ 24.91	\$ 25.82	\$ 17.99	\$ 19.32	\$ 29.08	\$ 43.79
<i>Net Increase/Sq. Ft.</i>		\$ 0.92		\$ 1.33	\$ 11.09	\$ 25.80
<b>Total Development Cost Estimate</b>	\$ 1,200,000	\$ 1,200,000	\$ 18,500,000	\$ 18,500,000	\$ 18,500,000	\$ 18,500,000
<i>Total as % of Development Cost</i>	8.2%	8.5%	6.0%	6.4%	9.7%	14.6%
<b>Estimated Market Changes Sufficient to Absorb Increased Fees (based on KMA analysis)</b>						
Change in Land Values (@-1.4% for Res, -2% for Non-Res for each \$1/SF Fee Increase)	0.0%	-1.3%	0.0%	-2.7%	-22.2%	-51.6%
Change in Commercial Market Rents (@+0.3% for each \$1/SF Increase)	n/a	n/a	n/a	0.4%	3.3%	7.7%

**Residential Scenario**  
 3,965 sq. ft building  
 Units: 3 (Townhomes)  
 (Unit 1: 3 bed, 2.5 bath; Unit 2: 2 bed, 2.5 bath; unit 3: 3 bed, 2.5 bath)  
 Total Valuation (Sq. Ft Costs): \$443,601.60  
 Total Valuation (Applicant value): \$772,682.93  
 Electrical: \$32,000; Mechanical: \$30,000; Plumbing: \$42,000  
 Sprinklers: 4"; Water 1"; Irrigation: 1"

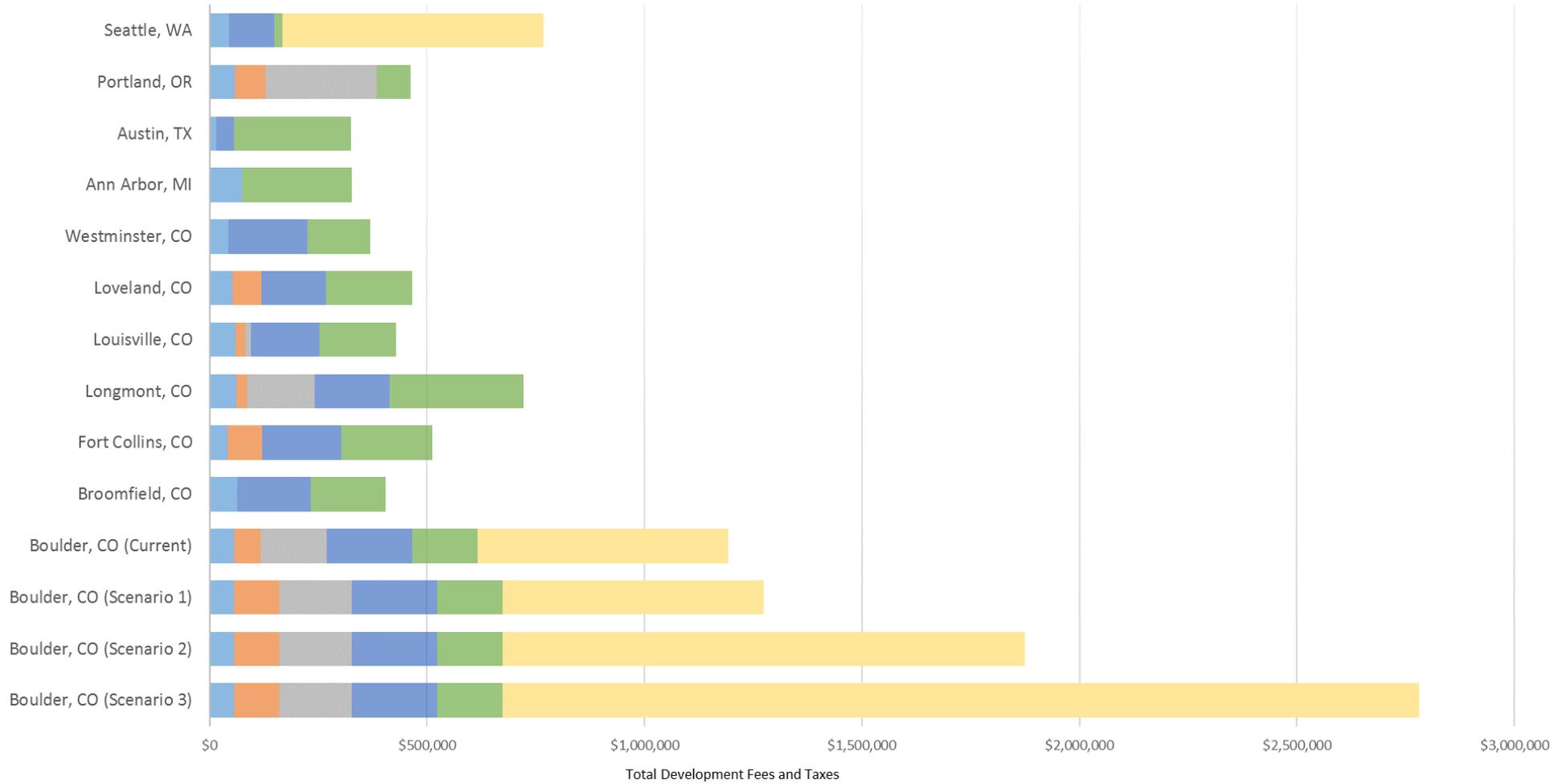
**Non-Residential Scenario**  
 3 story office building, with surface parking  
 124,882 sq. ft. lot  
 61,466 sq. ft. building  
 57,778 sq ft occupancy B, Office - Professional  
 1,844 sq ft occupancy A-2, Restaurant  
 1,844 sq ft occupancy M, Commercial/Retail  
 Total Valuation (Sq. Ft Costs): \$7,778,672.10  
 Total Valuation (Applicant value): \$8,110,910.00

Electrical: \$380,000  
 Mechanical: \$605,000  
 Plumbing: \$190,000  
 Sprinklers: 6"  
 Water 4"  
 Sewer 6"  
 Irrigation: 1"  
 Impervious Area: 96,485

### RESIDENTIAL COMPARATIVE ANALYSIS



### COMMERCIAL COMPARATIVE ANALYSIS





**DRAFT #3**

# **2016 Capital Facility Development Impact Fee Study**

Prepared for:  
City of Boulder, Colorado

September 20, 2016



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**Capital Facility  
Development Impact Fee Study  
City of Boulder, Colorado**

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## Executive Summary

The City of Boulder retained TischlerBise to prepare an Impact Fee Study for various infrastructure categories. This report updates the Development Impact Fee Study prepared in 2009 and adopted by the City of Boulder in 2010.

Impact fees are one-time payments used to fund system improvements needed to accommodate development. This report documents the data, methodology, and results of the impact fee calculations. The methods used to calculate impact fees in this study are intended to satisfy all legal requirements governing such fees, including provisions of the U. S. Constitution and the Colorado Development Impact Fee Act. The following infrastructure categories have been developed with methodologies that meet the requirements to be adopted as impact fees.

- Library
- Parks and Recreation
- Human Services
- Municipal Facilities
- Police
- Fire

## Impact Fee Summary

As documented in this report, impact fees for the City of Boulder are proportionate and reasonably related to the capital facility service demands of new development. The written analysis of each impact fee methodology, establish that impact fees are necessary to achieve an equitable allocation of costs in comparison to the benefits received. Impact fee methodologies also identify the extent to which newly developed properties are entitled to various types of credits to avoid potential double payment of capital costs. An impact fee represents new growth's proportionate share of capital facility needs. By law, impact fees can only be used for *capital* improvements, not operating or maintenance costs. Furthermore, impact fee revenues can only be used for capital improvements that expand capacity.

Impact fees are subject to legal standards, which require fulfillment of three key elements: need, benefit, and proportionality.

- First, to justify a fee for public facilities, it must be demonstrated that new development will create a **need** for capital improvements.
- Second, new development must derive a **benefit** from the payment of the fees (i.e., in the form of public facilities constructed within a reasonable timeframe).
- Third, the fee paid by a particular type of development should not exceed its **proportionate** share of the capital cost for system improvements.

TischlerBise documented appropriate demand indicators by type of development. Specific capital costs have been identified using local data and costs. This report includes summary tables indicating the specific factors used to derive the impact fees. These factors are referred to as level of service, or infrastructure standards.

### ***Methodologies and Approach***

There are three basic *methods* used to calculate impact fees.

- The **incremental expansion method** documents the current level of service for each type of public facility, in both quantitative and qualitative measures. The intent is to use revenue collected to expand or provide additional facilities, as needed to accommodate new development, based on the current cost to provide capital improvements.
- The **plan-based method** is commonly used for public facilities that have adopted plans or engineering studies to guide capital improvements, such as utility systems.
- A third approach, known as the **cost recovery method**, is based on the rationale that new development is paying for its share of the useful life and remaining unused capacity of an existing facility.

A summary is provided in Figure 1 showing the methodologies, infrastructure components, and allocations used to calculate impact fees for the City of Boulder.

Figure 1. Summary of Proposed Fee Methods and Infrastructure Components

Fee Category	Components	Methodology	Cost Allocation
Library	<ul style="list-style-type: none"> <li>▪ Facilities</li> <li>▪ Collection Materials</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> <li>▪ Incremental</li> </ul>	100% Residential
Parks and Recreation	<ul style="list-style-type: none"> <li>▪ Outdoor Park Improvements</li> <li>▪ Recreation Facilities and Pools</li> <li>▪ Parks and Rec Admin &amp; Support Facilities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> <li>▪ Incremental</li> <li>▪ Incremental</li> </ul>	100% Residential
Human Services	<ul style="list-style-type: none"> <li>▪ Human Services Facilities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> </ul>	100% Residential
Municipal Facilities	<ul style="list-style-type: none"> <li>▪ Office Buildings</li> <li>▪ Land</li> <li>▪ Municipal Court</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> <li>▪ Cost Recovery</li> <li>▪ Plan-Based</li> </ul>	Functional Population
Police	<ul style="list-style-type: none"> <li>▪ Station Space</li> <li>▪ Communications Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> <li>▪ Incremental</li> </ul>	Functional Population
Fire	<ul style="list-style-type: none"> <li>▪ Station Space</li> <li>▪ Storage Facility</li> <li>▪ Apparatus</li> <li>▪ Land</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incremental</li> <li>▪ Plan-Based</li> <li>▪ Incremental</li> <li>▪ Incremental</li> </ul>	Calls for Service

### Credits

A general requirement common to impact fee methodologies is the evaluation of *credits*. Two types of credits should be considered, **future revenue credits** and **site-specific credits**. Revenue credits may be necessary to avoid potential double payment situations arising from a one-time impact fee plus the payment of other revenues (e.g., property taxes) that may also fund growth-related capital improvements. Because new development may provide front-end funding of infrastructure, there is a potential for double payment of capital costs due to future payments on debt for public facilities. This type of credit is not necessary for any of the impact fees calculated herein.

The second type of credit is a **site-specific credit** for system improvements that have been included in the impact fee calculations. Policies and procedures related to site-specific credits for system improvements should be addressed in the ordinance that establishes the development fees. However, the general concept is that developers may be eligible for site-specific credits only if they provide system improvements that have been included in the impact fee calculations. Project

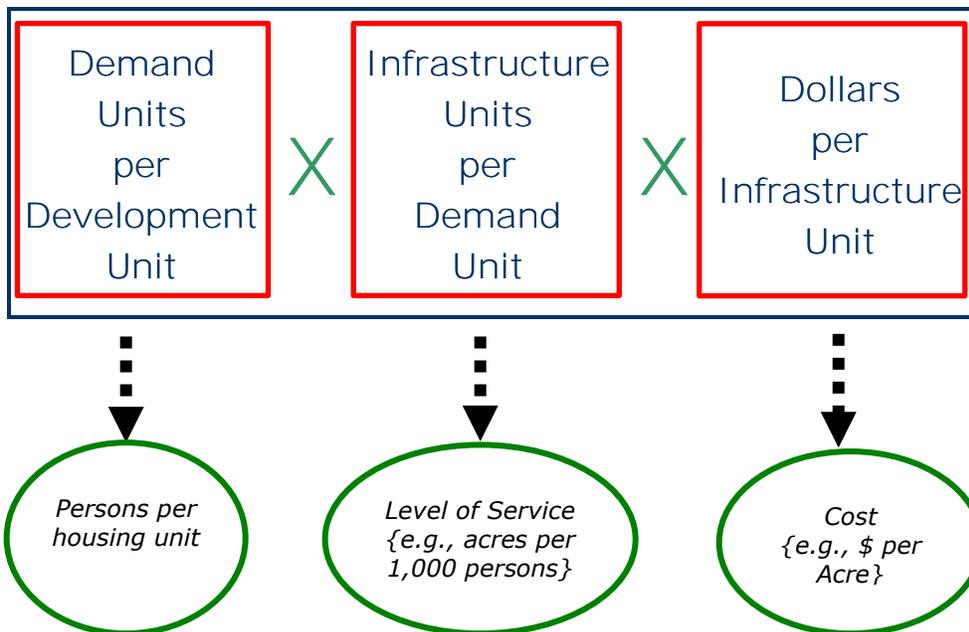
improvements normally required as part of the development approval process are not eligible for credits against impact fees.

**Generic Impact Fee Calculation**

In contrast to development exactions, which are typically referred to as project-level improvements, impact fees fund growth-related infrastructure that will benefit multiple development projects, or the entire jurisdiction (often referred to as “system-level” improvements). The basic steps in a generic impact fee formula are illustrated in Figure 2. The first step (see the left box) is to determine an appropriate demand indicator, or service unit, for the particular type of infrastructure. The demand/service indicator measures the number of demand or service units for each unit of development.

For example, an appropriate indicator of the demand for parks is population growth and the increase in population can be estimated from the average number of persons per occupied housing unit. The second step in the generic impact fee formula is shown in the middle box below. Infrastructure units per demand unit are typically called Level-Of-Service (LOS) standards. In keeping with the park example, a common LOS standard is park acreage per thousand people. The third step in the generic impact fee formula, as illustrated in the right box, is the cost of various infrastructure units. To complete the park example, this part of the formula would establish the cost per acre for land acquisition and/or development.

**Figure 2. Generic Impact Fee Formula**



## Maximum Allowable Impact Fees by Type of Land Use

The impact fees calculated for the City of Boulder represent the highest amount feasible for each type of applicable land use, or *maximum allowable* amounts, which represents new growth's proportionate share of the cost for the appropriate capital facilities. Figure 3 provides the schedule of *maximum allowable impact fees* by type of land use. For residential impact, fees will be imposed according to square feet of finished floor area. For nonresidential development, fees will be assessed per square feet of floor area or unique demand indicators such as the number of rooms in a hotel. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures and/or a decrease in the City's level of service standards.

**Figure 3. Summary of Maximum Allowable Impact Fees**

RESIDENTIAL IMPACT FEES		MAXIMUM ALLOWABLE IMPACT FEES Per Development Unit						
Square Feet	Development Unit	Library	Parks & Recreation	Human Services	Municipal Facilities	Police	Fire	TOTAL
600	Dwelling Unit	\$424	\$2,656	\$81	\$259	\$216	\$193	\$3,829
800	Dwelling Unit	\$533	\$3,337	\$102	\$326	\$271	\$242	\$4,811
1,000	Dwelling Unit	\$617	\$3,859	\$119	\$377	\$314	\$280	\$5,566
1,200	Dwelling Unit	\$686	\$4,290	\$132	\$419	\$349	\$311	\$6,187
1,400	Dwelling Unit	\$744	\$4,653	\$143	\$455	\$379	\$338	\$6,712
1,600	Dwelling Unit	\$794	\$4,971	\$153	\$486	\$405	\$361	\$7,170
1,800	Dwelling Unit	\$842	\$5,266	\$162	\$515	\$429	\$382	\$7,596
2,000	Dwelling Unit	\$878	\$5,493	\$169	\$537	\$447	\$399	\$7,923
2,200	Dwelling Unit	\$914	\$5,720	\$176	\$559	\$466	\$415	\$8,250
2,400	Dwelling Unit	\$947	\$5,924	\$182	\$579	\$482	\$430	\$8,544
2,600	Dwelling Unit	\$980	\$6,129	\$189	\$599	\$499	\$445	\$8,841
2,800	Dwelling Unit	\$1,009	\$6,310	\$194	\$617	\$514	\$458	\$9,102
3,000	Dwelling Unit	\$1,034	\$6,469	\$199	\$632	\$527	\$470	\$9,331
3,200	Dwelling Unit	\$1,056	\$6,606	\$203	\$646	\$538	\$480	\$9,529
3,400	Dwelling Unit	\$1,081	\$6,764	\$208	\$661	\$551	\$491	\$9,756
3600+	Dwelling Unit	\$1,103	\$6,901	\$212	\$674	\$562	\$501	\$9,953

NONRESIDENTIAL IMPACT FEES		MAXIMUM ALLOWABLE IMPACT FEES Per Development Unit						
Land Use	Development Unit	Library	Parks & Recreation	Human Services	Municipal Facilities	Police	Fire	TOTAL
Retail / Restaurant / Service	Square Feet of Floor Area	\$0	\$0	\$0	\$0.38	\$0.71	\$0.61	\$1.70
Office	Square Feet of Floor Area	\$0	\$0	\$0	\$0.55	\$0.28	\$0.87	\$1.70
Light Industrial	Square Feet of Floor Area	\$0	\$0	\$0	\$0.35	\$0.17	\$0.56	\$1.08
Warehousing	Square Feet of Floor Area	\$0	\$0	\$0	\$0.14	\$0.09	\$0.22	\$0.45
Institutional	Square Feet of Floor Area	\$0	\$0	\$0	\$0.12	\$0.23	\$0.19	\$0.54
Hospital	Square Feet of Floor Area	\$0	\$0	\$0	\$0.45	\$0.33	\$0.71	\$1.49
Nursing Home/Assisted Living	Bed	\$0	\$0	\$0	\$130.00	\$69.00	\$204.00	\$403.00
Nursing Home/Assisted Living*	Square Feet of Floor Area	\$0	\$0	\$0	\$0.32	\$0.17	\$0.13	\$0.62
Lodging	Room	\$0	\$0	\$0	\$88.00	\$208.00	\$139.00	\$435.00
Lodging**	Square Feet of Floor Area	\$0	\$0	\$0	\$0.14	\$0.34	\$0.06	\$0.54

\* For illustration and comparison with per square foot impact fees, assumes an average of 400 sq. ft. per bed

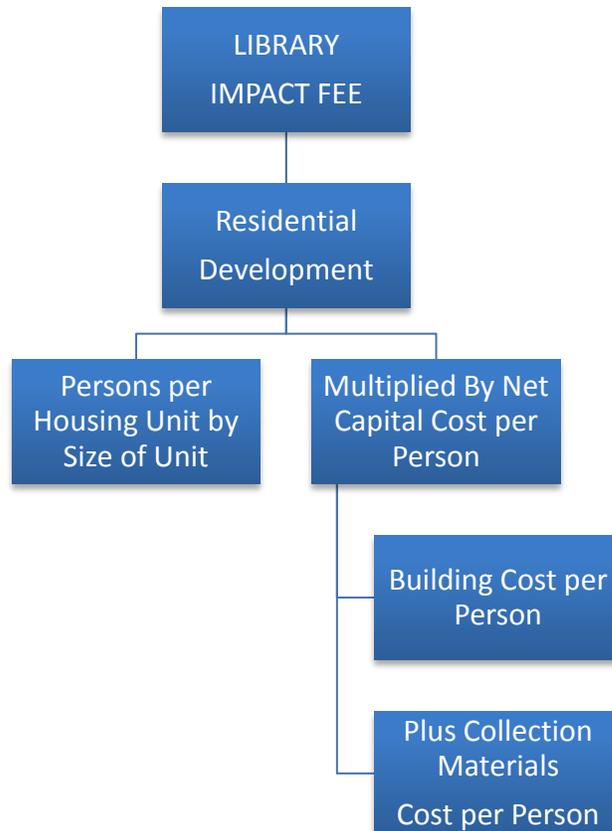
\*\* For illustration and comparison with per square foot impact fees, assumes an average of 600 sq. ft. per room

## Library Impact Fees

### Methodology

The Library impact fee calculation uses the incremental expansion methodology. Components of the Library fee include costs for Library buildings and materials included in the Library's collections. The Library system current consists of a Main Library and four branch locations. It is anticipated that the City will expand facilities in the future to serve growth to maintain current levels of service. An incremental approach is also used for collection materials. All costs are allocated 100 percent to residential development. Figure 4 diagrams the general methodology used to calculate the Library Impact Fee. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the impact fee components. The impact fee is derived from the product of persons per housing unit (by type of unit) multiplied by the net capital cost per person. The boxes in the next level down indicate detail on the components included in the fee.

Figure 4. Library Impact Fee Methodology Chart



## Library Level of Service Standards and Costs

### **Library Buildings Incremental Cost Component**

The City of Boulder Library System consists of a Main Library and four branch locations. Total library system square footage totals 109,123 square feet. As noted above, the City anticipates expanding the Library System in the future to serve new growth. Therefore an incremental methodology is used where current levels of service and current cost per capita are used.

Figure 5 provides levels of service and costs for the City of Boulder Library System. Current replacement costs for buildings (including contents, equipment, and miscellaneous improvements) are from the City of Boulder 2015 property schedule. To reflect total replacement costs for Library facilities, 30 percent is added to the construction cost to reflect “soft” costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). According to information provided by the City, the Library System has replacement value of \$27,149,229 reflecting facilities owned by the City. The replacement cost per square foot is \$269 resulting in a cost per person of \$280 (1.04 sq. ft. per person x \$269 = \$280).

**Figure 5. Library Buildings Level of Service Standards and Cost Factors**

Facility Name	Location	Current Square Feet	Current Replacement Cost (Building Costs)*	Current Replacement Cost (Soft Costs)**	Total Costs	Cost/SF***
Main Library	1001 Arapahoe Ave.	84,760	\$18,191,871	\$5,457,561	\$23,649,433	\$279
Meadows Branch	4800 Baseline Road	7,812	leased	na	na	na
Reynolds Branch	3595 Table Mesa Drive	10,371	\$1,732,088	\$519,626	\$2,251,714	\$217
Carnegie Branch	1125 Pine	5,610	\$960,063	\$288,019	\$1,248,082	\$222
North Boulder Corner Branch	4600 Broadway	570	leased	na	na	na
<b>TOTAL</b>		<b>109,123</b>	<b>\$20,884,022</b>	<b>\$6,265,207</b>	<b>\$27,149,229</b>	
<b>TOTAL City Owned</b>		<b>100,741</b>	<b>\$20,884,022</b>	<b>\$6,265,207</b>	<b>\$27,149,229</b>	<b>\$269</b>

Cost per Square Foot=> \$269

BASED ON TOTAL SPACE (CITY OWNED AND LEASED)	
Total Square Feet	109,123
Population in 2015	104,808
Square Feet per Person	1.04
Total Cost per Sq. Ft.	\$269
Cost per Person	\$280

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).  
 \*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.  
 \*\*\* Average cost per square foot is average of City owned facilities.  
 Sources: City of Boulder Property Schedule, 2015; City of Boulder Facilities and Asset Management.

**Library Collection Materials Incremental Expansion**

The Library System’s collection includes adult and juvenile books, electronic/audio books, music CDs, DVDs, periodicals, and an eBook Database. The total number of current units is 522,815 with a total replacement value of approximately \$8.7 million. Based on the current estimated City population of 104,808, this equates to a level of service of \$83 per person. Figure 6 provides detail on the current inventory and average unit costs for each type of material. Unit costs were provided to TischlerBise by City staff.

**Figure 6. Library Collection Materials Level of Service Standards**

Type of Material	# of units	Unit Price	Current Value
Books	487,221	\$16	\$7,795,536
Audio Books	8,225	\$40	\$329,000
Music CDs	9,575	\$16	\$153,200
DVDs	17,474	\$22	\$384,428
Periodicals: magazines	320	\$60	\$19,200
Periodicals: newspapers	33	\$460	\$15,180
eBook Database	1	\$195,938	\$195,938
<b>TOTAL</b>	<b>522,815</b>		<b>\$8,681,364</b>

<b>Total Units</b>	<b>522,815</b>
<b>Total Cost</b>	<b>\$8,681,364</b>
<b>Population in 2015</b>	<b>104,808</b>
<b>Units per Person</b>	<b>4.99</b>
<b>Cost per Person</b>	<b>\$83</b>

Source: City of Boulder Library Department.

**Credit Evaluation**

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The City does not have any outstanding debt for Library facilities, therefore a credit is not necessary.

## Library Input Factors and Maximum Supportable Impact Fees

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Infrastructure standards used to calculate the Library impact fees are shown in the boxed area at the top of Figure 7. Impact fees for Libraries are based on household sizes for all types of units by square footage per unit. Level of service standards are based on costs per person for Library buildings and collection materials as described in the previous sections and summarized below. Each cost component of the impact fee is shown as a cost per person.

The bottom portion of Figure 7 shows maximum supportable impact fees for Libraries. The amounts are calculated by multiplying the persons per housing unit for each size of housing unit by the net capital cost per person.

For example, the impact fee for a dwelling unit of 600 square feet or less is calculated by multiplying the persons per housing unit of 1.17 by the net capital cost of \$363 for an impact fee amount of \$424 per unit. (Detail on number of persons by square feet of finished floor area is provided in the Appendix.)

**Figure 7. Library Input Factors and Maximum Supportable Impact Fees**

<i>Level Of Service</i>	<i>Factors</i>
Building Cost	<b><i>Per Person</i></b> \$280
Collection Cost	\$83
Debt Service Credit	\$0
Net Capital Cost	<b>\$363</b>

<i>Square Feet</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Impact Fee per Housing Unit</i>
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b><i>Residential (by square feet of finished living space)</i></b>			
600	Dwelling Unit	1.17	\$424
800	Dwelling Unit	1.47	\$533
1,000	Dwelling Unit	1.70	\$617
1,200	Dwelling Unit	1.89	\$686
1,400	Dwelling Unit	2.05	\$744
1,600	Dwelling Unit	2.19	\$794
1,800	Dwelling Unit	2.32	\$842
2,000	Dwelling Unit	2.42	\$878
2,200	Dwelling Unit	2.52	\$914
2,400	Dwelling Unit	2.61	\$947
2,600	Dwelling Unit	2.70	\$980
2,800	Dwelling Unit	2.78	\$1,009
3,000	Dwelling Unit	2.85	\$1,034
3,200	Dwelling Unit	2.91	\$1,056
3,400	Dwelling Unit	2.98	\$1,081
3600+	Dwelling Unit	3.04	\$1,103

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the Library category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>1</sup> Figure 8 compares the draft calculated cost to the current schedule for the Library category.

**Figure 8. Library Fee Comparison: Current Cost per Person to Updated Cost per Person**

	<i>Cost per Person (2016)</i>	<b>Current City of Boulder Impact Fee Cost per Person<sup>^</sup></b>	<b>Increase / Decrease</b>
Library	\$363	<b>\$215</b>	<b>\$148</b>

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>1</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

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The revenue projection shown in Figure 9 is calculated based on the preliminary calculated 2016 Library Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 9. Projected Library Impact Fee Revenue**

		<i>Residential</i>
	<i>Fee (Wtd Avg)</i>	\$776 per housing unit
		<i>Housing Units</i>
<i>Year</i>		
Base	2015	45,740
Year 1	2016	46,012
Year 2	2017	46,288
Year 3	2018	46,566
Year 4	2019	46,846
Year 5	2020	47,127
Year 6	2021	47,409
Year 7	2022	47,694
Year 8	2023	47,980
Year 9	2024	48,268
Year 10	2025	48,557
	<i>Ten-Yr Increase</i>	2,817
	Projected Revenue =>	<b>\$2,186,294</b>

## Parks and Recreation Impact Fees

### Methodology

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The City of Boulder Parks and Recreation Impact Fee is derived using an incremental expansion methodology. Parks and Recreation impact fees should only be assessed on residential development. Three main components are included in the fee calculation: Outdoor Park Improvements, Recreation Facilities and Pools, and Administrative/Support Facilities. Outdoor Park Improvements include facilities that are community-level facilities serving the entire city, including larger Neighborhood Parks with athletic fields or other improvements that draw users throughout Boulder. Also included in the Outdoor Park Improvement component are Community Parks and Recreation Facilities both of which serve a citywide service area.

Additional land for parks is not included in the impact fee calculation because the City has an inventory of parkland on which it intends to make improvements with impact fees. According to the *2014 Boulder Parks and Recreation Department Master Plan*, “the community is well poised to meet future needs” [for parkland] and that “it is anticipated that there will not be any additional requirements to acquire new lands.”<sup>2</sup> However, it is assumed that BRPD will develop existing undeveloped park lands to balance recreation needs and “maintaining a balance of developed and natural areas in urban parks.”<sup>3</sup>

A second major component included in the fee calculation is Recreation Facilities and Pools. The City’s Recreation facilities serve a citywide population and the City expects to expand those types of facilities as well. The third and final component is Parks and Recreation Administrative / Support Facilities.

All facility costs are allocated 100 percent to residential development. Smaller-scale recreation amenities are excluded because they serve more limited areas, which would require implementation of multiple service areas and are not recommended due to higher administrative costs and limited revenue generated by sub-areas.

Figure 10 diagrams the general methodology used to calculate the Parks and Recreation Impact Fee. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the

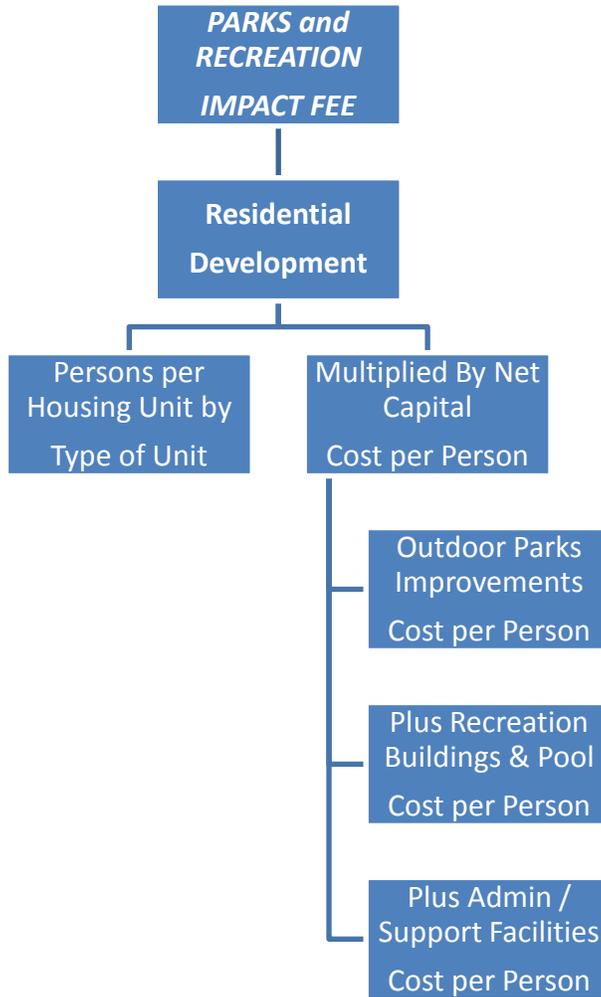
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<sup>2</sup> Boulder Parks and Recreation Department Master Plan, p. 42.

<sup>3</sup> Ibid.

impact fee components. The impact fee is derived from the product of persons per housing unit (by type) multiplied by the net capital cost per person. The boxes in the next level down indicate detail on the components.

Figure 10. Parks and Recreation Impact Fee Methodology Chart



## Parks & Recreation Level of Service Standards and Costs

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### *Outdoor Park Improvements*

The Outdoor Park component of the Parks and Recreation impact fees are based on the City's current inventory of existing citywide parks. The demand base for the City's park facilities is population. Levels of service are based on the current amount of infrastructure provided for the existing population. Outdoor Park Improvements include facilities that are community-level facilities serving the entire City, such as Recreation Facilities, Community, and larger Neighborhood Parks with athletic fields or other recreational amenities that draw from a citywide service area.

The Park impact fee component is based on the incremental expansion methodology, consistent with the City's plans to make improvements to undeveloped parks. Natural lands and smaller more limited neighborhood parks are excluded from the impact fees. Figure 13 provides an inventory of Outdoor Park improvements with current unit prices.

Park improvements have an average total cost of approximately \$309,000 per acre. On a per capita basis, park improvements cost \$1,669 for each additional resident in Boulder. City staff provided unit prices for each type of improvement. Miscellaneous costs equal \$250,000 per acre (included in the \$309,074 per acre cost), which include such items as lighting, paving (parking lots, sidewalks), site work, irrigation, and landscaping.

**Figure 11. Outdoor Park Improvements Level of Service Standards and Cost Factors**

Site	Park Type	Total Acres	City Owned Improved Acres	Baseball Fields		Softball Fields		Multi-Use Fields			Courts					Other Amenities				
				Premier	General	Premier	General	Premier	Turf Fields	General	Tennis Courts	Sand Volleyball	Basketball	Handball	Roller SportRink	Picnic Shelters	Restrooms	Playgrounds	Dog Parks	
Arapahoe Ridge Park*	Neighborhood Park	7.6	7.6		1.0							2.0					1		1	
Aurora 7 Park*	Neighborhood Park	7.9	7.9		3.0															
Chautauqua	Neighborhood Park	12.5	12.5									1.0					1	1	1	
Crestview	Neighborhood Park	7.8	7.8														1		1	
Eaton	Neighborhood Park	25.3	0.3														1			
Elks	Neighborhood Park	8.6	8.6														1		1	
Howard Heuston Park	Neighborhood Park	7.6	7.6											1.0					1	1
Martin	Neighborhood Park	9.6	9.6		1.0					1.0		2.0					1	1	1	
North Boulder	Neighborhood Park	13.4	13.4		2.0					1.0				1.0			1	1	1	
Park East	Neighborhood Park	4.5	4.5											1.0			1		1	
Scott Carpenter	Neighborhood Park	18.9	18.9	1.0											1	1	1	1		
Tantra Park	Neighborhood Park	21.7	21.7							1.0							1		1	
Tom Watson Park**	Neighborhood Park	31.4	31.4		4.0					1.0	4.0	2.0	1.0	1.0			1	1	1	
East Boulder Community Park	Community Park	53.6	40.6						2.0	1.0	5.0	4.0	2.0	4.0			5	1	1	2
East Boulder Community Center	Recreation Facilities	3.0	3.0																	
Foothills Community Park	Community Park	65.7	46.7							3.0			1.0			2	8	1	3	3
North Boulder Recreation Center	Recreation Facilities	1.5	1.5																	
Harlow Platts Community Park	Community Park	51.3	38.3							1.0	4.0	4.0				1	2	1	1	
South Boulder Recreation Center	Recreation Facilities	0.6	0.6							1.0										
Valmont City Park South	City Park	83.1	40.0							1.0										
Valmont City Park North	City Park	47.0	45.0																	
Boulder Reservoir Regional Park	Recreation Facilities	116.0	116.0									15.0					4	1	1	2
East Mapleton Ballfields	Recreation Facilities	8.3	8.3				3.0										1	1	1	
Gerald Stazio	Recreation Facilities	42.8	30.0				7.0										1	2	1	
Pleasantview Fields	Recreation Facilities	53.8	43.0					10.0									2	1		
Spruce Pool	Recreation Facilities	1.2	1.2																1	
Subtotal Neighborhood Parks		176.8	151.8																	
Subtotal Community Parks		170.6	125.6																	
Subtotal City Parks		130.1	85.0																	
Subtotal Recreation Facilities		227.2	203.6																	
<b>TOTALS</b>		<b>704.7</b>	<b>566.0</b>	<b>1.0</b>	<b>11.0</b>	<b>10.0</b>	<b>0.0</b>	<b>10.0</b>	<b>2.0</b>	<b>11.0</b>	<b>18.0</b>	<b>25.0</b>	<b>7.0</b>	<b>5.0</b>	<b>4.0</b>	<b>35.0</b>	<b>15.0</b>	<b>19.0</b>	<b>8.0</b>	

Unit Price ==>	\$250,000	\$810,880	\$222,600	\$810,880	\$810,880	\$426,250	\$1,535,000	\$185,250	\$70,000	\$10,000	\$45,000	\$30,000	\$55,000	\$80,000	\$150,000	\$193,500	\$222,000
Total Value ==>	\$141,500,000	\$810,880	\$2,448,600	\$8,108,800	\$0	\$4,262,500	\$3,070,000	\$2,037,750	\$1,260,000	\$250,000	\$315,000	\$150,000	\$220,000	\$2,800,000	\$2,250,000	\$3,676,500	\$1,776,000

TOTAL AMENITY VALUE	\$33,436,030
AMENITY VALUE PER ACRE	\$59,074

<b>SUMMARY</b>			
Population in 2015	104,808		
		<b>Total</b>	<b>Improved</b>
Acres***		704.7	566.0
Level of Service: Acres per 1,000 Population		6.7	5.4
Value of Improvements/Assets	\$33,436,030		
Other Site Improvements****	\$141,500,000		
<b>Total Improvements</b>	<b>\$174,936,030</b>		
<b>Cost per Improved Acre</b>	<b>\$309,074</b>		
<b>Cost per Capita</b>	<b>\$1,669</b>		

\* Owned by City but jointly used with Boulder Valley School District

\*\* Not owned by the City; City has a 99-year lease on it and therefore included in current level of service.

\*\*\* Does not reflect total Park inventory; reflects only those types of parks that include system-level improvements on which the development impact fees are based

\*\*\*\* Estimated @ \$250,000 per acre for design, permitting, and construction (other than amenities).

**Recreation Buildings and Pools**

The Recreation Buildings and Pools component of the Parks and Recreation impact fee is based on the current square footage and current value of recreational facilities serving the City. As shown in Figure 12, total square footage for the City’s recreational facilities is 182,509 square feet. The incremental expansion approach is used as the City plans to maintain the current level of service to accommodate new development.

Current replacement costs for buildings (including contents, equipment, and miscellaneous improvements) are from the City of Boulder 2015 property schedule and City of Boulder Facility Study (for specified properties). To reflect total replacement costs for Recreation Buildings and Pools, 30 percent is added to the building cost from the property schedule to reflect “soft” costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). Total estimated current value of these facilities is approximately \$57 million, or \$543 for each additional resident in Boulder.

**Figure 12. Recreation Buildings and Pools Level of Service Standards and Cost Factors**

Facility Name	Address	Current Square Feet	Year Built	Year Upgraded	Current Replacement Cost (Building Costs)*	Contents \$*	Misc \$*	Current Replacement Cost (Soft Costs)**	Total Costs***	Cost/SF
Salberg Studio	19TH & ELDER	4,054	1974, 1976	2001	\$464,486	\$28,676		\$139,346	\$632,507	\$156
South Boulder Recreation Center	1350 GILLASPIE	35,603	1973	1998	total value*** =====>				\$9,376,617	\$263
North Boulder Recreation Center	3170 BROADWAY	62,166	2002	na	total value*** =====>				\$21,337,047	\$343
East Boulder Community Ctr (77% of total)^	5660 SIOUX DR	42,417	1991	na	total value*** =====>				\$14,558,654	\$343
Pottery Lab	1010 AURORA	2,565	1924	2001	\$296,535	\$18,434	\$0	\$88,961	\$403,930	\$157
Spruce Pool Bath House/Filter	2102 Spruce Street	1,810	1961		\$298,098	\$0	\$0	\$89,429	\$387,527	\$214
Boulder Reservoir (all bldgs)	5151 NORTH 51ST	9,742	1971, 1984, 1986	na	total value*** =====>				\$3,014,557	\$309
Scott Carpenter Pool	30th & Arapahoe	10,550	1963		\$3,113,704			\$934,111	\$4,047,815	\$384
Spruce Pool	2040 21ST STREET	6,466	2001		\$1,269,708			\$380,912	\$1,650,620	\$255
Scott Carpenter Athletic Facilities	30TH & ARAPAHOE	7,136	1963, 1995, 2002	na	\$1,032,097	\$53,255	\$103,500	\$309,629	\$1,498,481	\$210
<b>TOTALS</b>		<b>182,509</b>			<b>\$6,474,628</b>	<b>\$100,365</b>	<b>\$103,500</b>	<b>\$1,942,388</b>	<b>\$56,907,757</b>	<b>\$312</b>

Total Square Feet	182,509
Population in 2015	104,808
Square Feet per Person	1.74
Total Cost per Sq. Ft.	\$312
Cost per Person	\$543

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).  
 \*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.  
 \*\*\* Source for properties with values included only in this column: Farnsworth Group/BUILDER, City of Boulder Facility Study (via City of Boulder Parks and Recreation)  
 ^ Facility also houses Senior Center; square footage and value shown is for Recreation Center portion.

**Parks and Recreation Administration and Support Facilities**

Also included in the fee calculation is a component for Administrative and Support Facilities based on the current square footage and current value of facilities serving the City. As shown in Figure 13, total square footage for the City’s Parks and Recreation support facilities is 68,325 square feet. The incremental expansion approach is used as the City plans to maintain the current level of service to accommodate new development.

Current replacement costs for buildings (including contents, equipment, and miscellaneous improvements) are from the City of Boulder 2015 property schedule. To reflect total replacement costs for Parks and Recreation Administrative and Support Facilities, 30 percent is added to the construction cost to reflect “soft” costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). Total estimated current value of these facilities is approximately \$6.1 million, or \$58 for each additional resident in Boulder.

**Figure 13. Administrative and Support Facilities Level of Service Standards and Cost Factors**

Facility Name	Address	Current Square Feet	Year Built	Year Upgraded	Current Replacement Cost (Building Costs)*	Contents \$	Misc \$	Current Replacement Cost (Soft Costs)**	Total Costs	Cost/SF
Iris Center	3198 BROADWAY	16,372	1957	2003	\$1,774,157	\$98,950	\$25,000	\$532,247	\$2,430,354	\$148
Park Operations Building	5200 PEARL ST	10,073	1989	na	\$941,422	\$74,761		\$282,427	\$1,298,611	\$129
Tantra Park Maintenance Shop	585 TANTRA DR	3,062	1984	na	\$242,918	\$37,893		\$72,875	\$353,686	\$116
Stazio Ballfields Maintenance Shop	2445 Stazio Drive	5,150	1997	na	\$356,808	\$0		\$107,042	\$463,850	\$90
Scott Carpenter Athletics Office	30TH & ARAPAHOE	1,052	1963	2003	\$134,137	\$0	\$0	\$40,241	\$174,378	\$166
Valmont Storage Building	5325 Valmont	30,434	1965	na	\$785,595	\$0		\$235,679	\$1,021,274	\$34
Foothills Maintenance Facility	800 Cherry Ave.	2,182	2000	na	\$301,955	\$0	\$0	\$90,587	\$392,542	\$180
<b>TOTALS</b>		<b>68,325</b>			<b>\$4,536,992</b>	<b>\$211,604</b>	<b>\$25,000</b>	<b>\$1,361,098</b>	<b>\$6,134,695</b>	<b>\$90</b>

Total Square Feet	<b>68,325</b>
Population in 2015	<b>104,808</b>
Square Feet per Person	<b>0.65</b>
Total Cost per Sq. Ft.	<b>\$90</b>
Cost per Person	<b>\$58</b>

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).  
 \*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.

**Credit Evaluation**

The City does not have any outstanding debt for Parks and Recreation facilities that will be retired with property taxes, therefore a credit is not necessary.

## Parks and Recreation Input Factors and Maximum Supportable Impact Fees

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Infrastructure standards used to calculate the Parks and Recreation impact fees are shown in the boxed area at the top of Figure 14. Impact fees for Parks and Recreation are based on household sizes for all types of units by square footage per unit. Level of service standards are based on costs per person for Parks and Recreation Facilities as described in the previous sections and summarized below. Each cost component of the impact fee is shown as a cost per person.

The bottom portion of Figure 14 shows maximum supportable impact fees for Parks and Recreation. The amounts are calculated by multiplying the persons per housing unit for each size of housing unit by the net capital cost per person.

For example, the impact fee for a dwelling unit of 600 square feet or less is calculated by multiplying the persons per housing unit of 1.17 by the net capital cost of \$2,270 for an impact fee amount of \$2,656 per unit. (Detail on number of persons by square feet of finished floor area is provided in the Appendix.)

**Figure 14. Parks and Recreation Input Factors and Maximum Supportable Impact Fees**

<i>Level Of Service</i>	<i>Factors</i>
Outdoor Park Improvements	<b><i>Per Person</i></b> \$1,669
Recreation Buildings & Pools	\$543
Park Offices and Support Facilities	\$58
Debt Service Credit	\$0
<b>Net Capital Cost</b>	<b>\$2,270</b>

<b>RESIDENTIAL IMPACT FEES</b>			
<i>Square Feet</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Impact Fee per Housing Unit</i>
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b><i>Residential (by square feet of finished living space)</i></b>			
600	Dwelling Unit	1.17	\$2,656
800	Dwelling Unit	1.47	\$3,337
1,000	Dwelling Unit	1.70	\$3,859
1,200	Dwelling Unit	1.89	\$4,290
1,400	Dwelling Unit	2.05	\$4,653
1,600	Dwelling Unit	2.19	\$4,971
1,800	Dwelling Unit	2.32	\$5,266
2,000	Dwelling Unit	2.42	\$5,493
2,200	Dwelling Unit	2.52	\$5,720
2,400	Dwelling Unit	2.61	\$5,924
2,600	Dwelling Unit	2.70	\$6,129
2,800	Dwelling Unit	2.78	\$6,310
3,000	Dwelling Unit	2.85	\$6,469
3,200	Dwelling Unit	2.91	\$6,606
3,400	Dwelling Unit	2.98	\$6,764
3600+	Dwelling Unit	3.04	\$6,901

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the Parks and Recreation category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>4</sup> Figure 15 compares the draft calculated cost to the current schedule for the Parks and Recreation category.

**Figure 15. Parks and Recreation Fee Comparison: Current Cost per Person to Updated Cost per Person**

	<b>Cost per Person (2016)</b>	<b>Current City of Boulder Impact Fee Cost per Person<sup>^</sup></b>	<b>Increase / Decrease</b>
Parks and Recreation	\$2,270	\$1,474	\$796

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>4</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

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The revenue projection shown in Figure 16 is calculated based on the preliminary calculated 2016 Parks and Recreation Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 16. Projected Parks and Recreation Impact Fee Revenue**

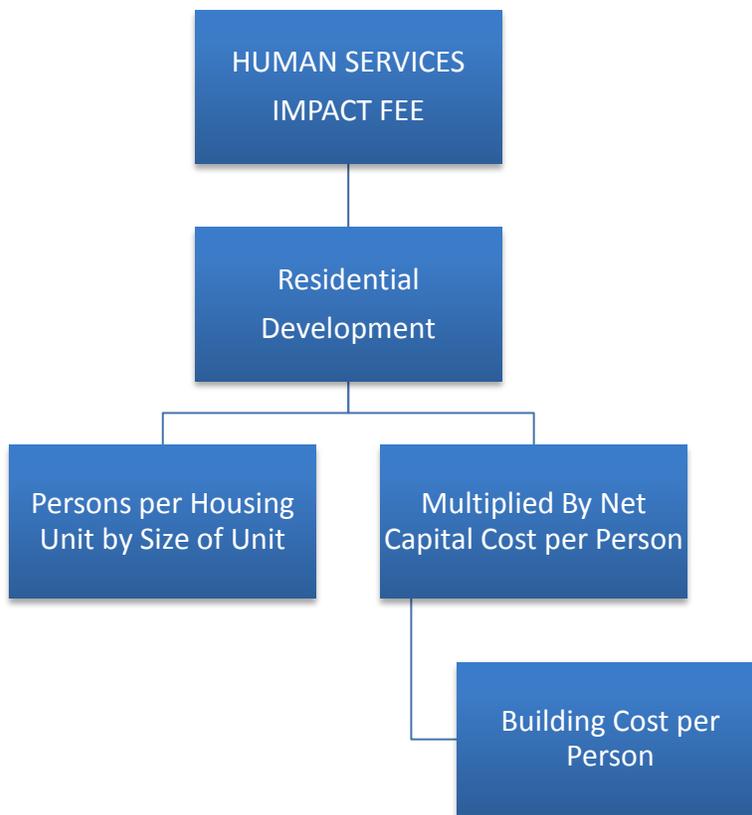
		<i>Residential</i>	
<i>Fee (Wtd Avg)</i>		\$4,858	
		per housing unit	
<i>Year</i>		<i>Housing Units</i>	
Base	2015	45,740	
Year 1	2016	46,012	
Year 2	2017	46,288	
Year 3	2018	46,566	
Year 4	2019	46,846	
Year 5	2020	47,127	
Year 6	2021	47,409	
Year 7	2022	47,694	
Year 8	2023	47,980	
Year 9	2024	48,268	
Year 10	2025	48,557	
<i>Ten-Yr Increase</i>		2,817	
Projected Revenue =>		<b>\$13,686,874</b>	

## Human Services Impact Fees

### Methodology

The Human Services impact fee calculation uses the incremental expansion methodology. Components of the Human Services fee include costs for Senior Centers and the Children, Youth and Family Center. All costs are allocated 100 percent to residential development. Figure 17 diagrams the general methodology used to calculate the Human Services Impact Fee. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the impact fee components. The impact fee is derived from the product of persons per housing unit by size of housing unit multiplied by the net capital cost per person. The boxes in the next level down indicate detail on the components included in the fee.

Figure 17. Human Services Impact Fee Methodology Chart



## Human Services Level of Service Standards and Costs

The incremental expansion methodology is used to calculate the Human Services impact fee. The first step of the analysis determines the current level of service (LOS) being provided to existing development. The second step involves determining the cost per person to provide the current LOS.

Figure 18 lists the current inventory of Human Services space in the City of Boulder. As shown, the City currently has Human Services space totaling 34,073 square feet. The current value for Human Services buildings and contents is from the City's 2015 Property Schedule. To reflect total replacement costs for Human Services facilities, 30 percent is added to the building cost to reflect "soft" costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). Total replacement costs for current facilities are estimated at \$7.2 million, or \$211 per square foot. To derive the cost per demand unit, the current level of service of .33 square feet per person is multiplied by the replacement cost per square foot of \$211, for a cost per demand unit of \$70 per person.

**Figure 18. Human Services Level of Service Standards and Cost Factors**

Facility	Location	Current Square Feet*	Current Replacement Cost (Hard Costs)*	Current Replacement Cost (Soft Costs)**	Total Costs	Cost/SF
West Senior Center	909 Arapahoe	16,188	\$2,494,628	\$748,388	\$3,243,016	\$200
Children, Youth & Family Center	2160 Spruce	5,215	\$846,048	\$253,814	\$1,099,862	\$211
East Senior Center (23%)	5660 Sioux Drive	12,670	\$2,192,671	\$657,801	\$2,850,473	\$225
<b>TOTAL</b>		<b>34,073</b>	<b>\$5,533,347</b>	<b>\$1,660,004</b>	<b>\$7,193,351</b>	<b>\$211</b>

Cost per Square Foot=> \$211

Total Square Feet	<b>34,073</b>
Population in 2015	<b>104,808</b>
Square Feet per Person	<b>0.33</b>
Total Cost	<b>\$211</b>
Cost per Person	<b>\$70</b>

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).

\*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.

Sources: City of Boulder Property Schedule, 2015; City of Boulder Facilities and Asset Management.

## Credit Evaluation

The City does not have any outstanding debt for Human Service facilities, therefore a credit is not necessary.

## Human Facilities Input Factors and Maximum Supportable Impact Fees

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Infrastructure standards used to calculate the Human Services impact fees are shown in the boxed area at the top of Figure 19. Impact fees for Human Services are based on household sizes for all types of units by square footage per unit. Level of service standards are based on costs per person for Human Services buildings as described in the previous sections and summarized below. Each cost component of the impact fee is shown as a cost per person.

The bottom portion of Figure 19 shows maximum supportable impact fees for Human Services. The amounts are calculated by multiplying the persons per housing unit for each size of housing unit by the net capital cost per person.

For example, the impact fee for a dwelling unit of 600 square feet or less is calculated by multiplying the persons per housing unit of 1.17 by the net capital cost of \$70 for an impact fee amount of \$81 per unit. (Detail on number of persons by square feet of finished floor area is provided in the Appendix.)

**Figure 19. Human Services Input Factors and Maximum Supportable Impact Fees**

<i>Level Of Service</i>	<i>Factors</i>	
		<i>Per Person</i>
Human Services Buildings		\$70
Debt Service Cost		\$0
Net Capital Cost		\$70

<i>Square Feet</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Impact Fee per Housing Unit</i>
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b><i>Residential (by square feet of finished living space)</i></b>			
600	Dwelling Unit	1.17	\$81
800	Dwelling Unit	1.47	\$102
1,000	Dwelling Unit	1.70	\$119
1,200	Dwelling Unit	1.89	\$132
1,400	Dwelling Unit	2.05	\$143
1,600	Dwelling Unit	2.19	\$153
1,800	Dwelling Unit	2.32	\$162
2,000	Dwelling Unit	2.42	\$169
2,200	Dwelling Unit	2.52	\$176
2,400	Dwelling Unit	2.61	\$182
2,600	Dwelling Unit	2.70	\$189
2,800	Dwelling Unit	2.78	\$194
3,000	Dwelling Unit	2.85	\$199
3,200	Dwelling Unit	2.91	\$203
3,400	Dwelling Unit	2.98	\$208
3600+	Dwelling Unit	3.04	\$212

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the Human Services category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>5</sup> Figure 20 compares the draft calculated cost to the current schedule for the Human Services category.

**Figure 20. Human Services Fee Comparison: Current Cost per Person to Updated Cost per Person**

	<i>Cost per Person (2016)</i>	Current City of Boulder Impact Fee Cost per Person <sup>^</sup>	Increase / Decrease
Human Services	\$70	\$70	\$0

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>5</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

The revenue projection shown in Figure 21 is calculated based on the preliminary calculated 2016 Human Services Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 21. Projected Human Services Impact Fee Revenue**

		<i>Residential</i>
<i>Fee (Wtd Avg)</i>		\$149 per housing unit
<i>Year</i>		<i>Housing Units</i>
Base	2015	45,740
Year 1	2016	46,012
Year 2	2017	46,288
Year 3	2018	46,566
Year 4	2019	46,846
Year 5	2020	47,127
Year 6	2021	47,409
Year 7	2022	47,694
Year 8	2023	47,980
Year 9	2024	48,268
Year 10	2025	48,557
<i>Ten-Yr Increase</i>		2,817
Projected Revenue =>		<b>\$419,791</b>

## Municipal Facilities Impact Fees

### Methodology

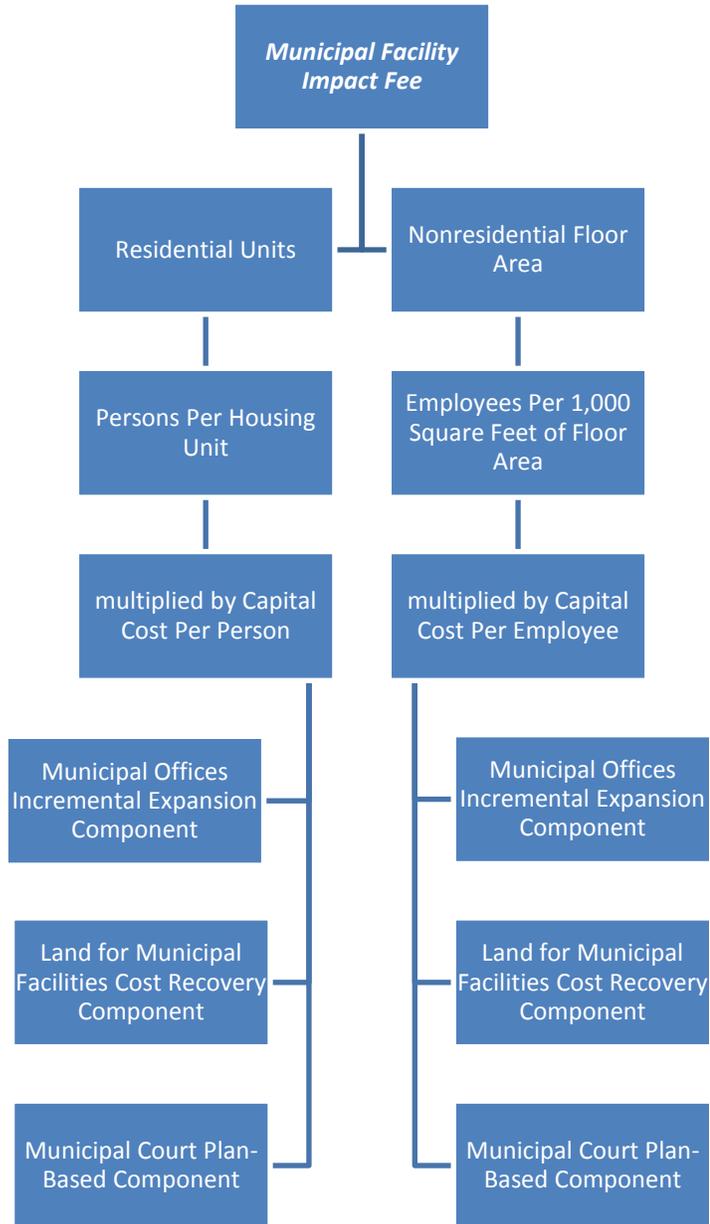
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The Municipal Facilities impact fees use all three methodologies

- Municipal Facility office buildings: Incremental expansion approach to allow for future expansion in City office space for general government purposes to accommodate growth.
- Land for Municipal Facilities: Cost recovery approach to capture growth's share of the cost of acquiring the Boulder Community Hospital site for use for future Municipal Facilities.
- Municipal Court Facility: Plan-based approach to capture growth's share of future facility.

As illustrated in Figure 22, capital costs are allocated to both residential and nonresidential development. Residential factors are calculated on a per person basis, and converted to an impact fee amount per housing unit using average persons per housing unit by size of the housing unit. Nonresidential development fees are based on a capital cost per employee, where such costs are typically multiplied by the number of employees per square foot of nonresidential floor area (or other appropriate development unit).

**Figure 22. Municipal Facilities Impact Fee Methodology Chart**



## Proportionate Share Factors

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The proportionate share factors shown in Figure 23 are used to allocate capital costs to residential and nonresidential development.

Functional population is similar to what the U.S. Census Bureau calls "daytime population" by accounting for people living and working in a jurisdiction. In addition to the Boulder-specific data, TischlerBise has relied on extensive public and private sector input to establish reasonable "weighting factors" to account for time spent at either residential or nonresidential development. These weighting factors are shown below with grey shading.

The functional population analysis starts with 2015 estimates of jobs and population in Boulder (see yellow highlighting), as documented in the draft Land Use Assumptions (see Appendix A). According to the *2013 Transportation Master Plan (TMP) State of the System* report (see page 3-13), approximately 10 percent of Boulder jobs are self-employed persons. The remaining 90 percent of jobs require "journey-to-work" travel. The 2014 Boulder Valley Employee Survey indicates Boulder residents held 38 percent of these jobs, with persons living outside of Boulder holding the remaining 62 percent of journey-to-work jobs. The functional population analysis assumes all workers spend ten hours per weekday (annualized average) at nonresidential locations.

Residents who work in Boulder are assigned 10 hours to nonresidential development (discussed above) and 14 hours to residential development. Residents who work outside Boulder are assigned 14 hours to residential development. Jobs held by non-residents are assigned 10 hours to nonresidential development. Residents who do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages) to account for time spent shopping, eating out, and other social/recreational activities.

Based on Boulder's 2015 functional population analysis, the cost allocation for residential development is 60 percent, while nonresidential development accounts for 40 percent of the demand for municipal facility infrastructure.

**Figure 23. Proportionate Share Factors for Municipal Facilities Impact Fees**

<b>Boulder Functional Population Analysis</b>				<i>Demand</i>	<i>Person</i>
<i>Service Units in 2015</i>				<i>Hours/Day</i>	<i>Hours</i>
<b>Nonresidential</b>					
	Jobs Located in City*	98,510			
	10% Self-employed	9,851		10	98,510
	Jobs Requiring Journey-To-Work	88,659			
	Jobs Held By Residents**	38%	33,690	10	336,900
	Jobs Held By Non-residents**	62%	54,969 <= 56% of jobs	10	549,690
	Non-working Residents	51,054		4	204,216
					<b>Nonresidential Subtotal</b> 1,189,316
					<b>Nonresidential Share =&gt;</b> 40%
<b>Residential</b>					
	Population*	104,808			
	Non-working Residents	51,054		20	1,021,080
	Resident Workers	53,754			
	81% Residents Working in City (includes self-employed)***		43,541 <= 44% of jobs	14	609,574
	19% Residents Working Outside City**	10,213		14	142,982
					<b>Residential Subtotal</b> 1,773,636
					<b>Residential Share =&gt;</b> 60%
					<b>TOTAL</b> 2,962,952

\* Boulder Land Use Assumptions, TischlerBise 03/25/16.  
 \*\* Percentages from 2014 Boulder Valley Employee Survey, Table 36, Question 32.  
 \*\*\* Percentages from 2014 Boulder Community Household Survey, Table 112, Question

## Municipal Facilities Level of Service Standards and Costs

### **Municipal Facility Office Buildings Component**

The incremental expansion methodology is used to calculate the Office Building component of the Municipal Facilities impact fee. The first step of the analysis determines the current Level of Service (LOS) being provided to existing development. The second step involves determining the cost per person and job to provide this LOS.

Figure 24 lists the current inventory of municipal government space in the City of Boulder. As shown, the City currently utilizes municipal facilities space totaling 108,319 square feet, including space that is owned and leased by the City of Boulder. Of that amount, 72,890 square feet is owned by the City.

Level of service (square feet per demand unit) is calculated by multiplying total square footage by proportionate share then dividing by applicable demand units. For Municipal Facilities, levels of service are:

- Residential: 108,319 sq. ft. x 60% proportionate share / 104,808 population = .62 sq. ft. per capita
- Nonresidential: 108,319 sq. ft. x 40% proportionate share / 98,510 jobs = .44 sq. ft. per job

The current value for general government buildings and contents is from the City’s 2015 Property Schedule. To reflect total replacement costs for general Municipal Facilities, 30 percent is added to the construction cost to reflect “soft” costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). According to information provided by the City, Municipal Facility space has a replacement value of approximately \$21 million, reflecting facilities owned by the City. The replacement cost per square foot is \$284 resulting in a cost per person of \$175 (.62 sq. ft. per person x \$284 = \$175) and a cost per job of \$124 (.44 sq. ft. per job x \$284 = \$124).

**Figure 24. Municipal Facilities Office Buildings Level of Service Standards and Cost Factors**

Building	Location	Current Square Feet*	Current Replacement Cost (Hard Costs)*	Current Replacement Cost (Soft Costs)**	Total Cost	Cost/SF
Municipal Building	1777 Broadway	23,657	\$5,701,947	\$1,710,584	\$7,412,531	\$313
Atrium	1300 Canyon Blvd	12,392	\$2,446,604	\$733,981	\$3,180,585	\$257
Park Central	1739 Broadway	20,910	\$4,920,672	\$1,476,202	\$6,396,874	\$306
New Britain	1101 Arapahoe Ave	13,851	\$2,438,570	\$731,571	\$3,170,141	\$229
Center Green Lease	3065 Center Green	31,000	leased	na	na	na
Risk Management	1301 Arapahoe Ave	2,080	\$393,392	\$118,018	\$511,410	\$246
1720 Building LLC	1720 14th Street	4,429	leased	na	na	na
<b>TOTAL</b>		<b>108,319</b>	<b>\$15,901,185</b>	<b>\$4,770,356</b>	<b>\$20,671,541</b>	
<b>TOTAL City Owned***</b>		<b>72,890</b>	<b>\$15,901,185</b>	<b>\$4,770,356</b>	<b>\$20,671,541</b>	<b>\$284</b>

Cost per Square Foot=> \$284

BASED ON TOTAL SPACE (CITY OWNED AND LEASED)

	Proportionate Share	2015 Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	60%	104,808 Population	0.62	\$175
Nonresidential	40%	98,510 Jobs	0.44	\$124

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).  
 \*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.  
 \*\*\* Average cost per square foot is average of City owned facilities.  
 Sources: City of Boulder Property Schedule, 2015; City of Boulder Facilities and Asset Management.

**Land Component**

The cost recovery methodology is used to calculate the Land component of the Municipal Facilities impact fee. The first step of the analysis determines the Level of Service (LOS) to be provided to existing and future development. The second step involves determining the cost per person and job to provide this LOS.

The City of Boulder recently acquired the 8.8 acre Boulder Community Hospital site. The entire purchase was \$41 million of which \$15.2 million was the land value. This component is included to account for future land needs for Municipal Facilities.

A summary of the cost of the land purchase is provided below:

**Figure 25. Boulder Community Hospital Land Purchase Details**

<i>Address</i>	<i>Acct</i>	<i>Acres</i>	<i>Total Cost</i>	<i>Cost per Acre</i>
1100 Balsam	R0602588	6.76	\$7,506,300	\$1,110,399
1155 Alpine Ave	R0116926	0.66	\$360,000	\$545,455
2655 Broadway	R0000500	0.69	\$2,478,200	\$3,591,594
1136 Alpine Ave	R0000925	0.48	\$2,506,300	\$5,221,458
1135 North Street	R0008544	0.12	\$1,162,000	\$9,683,333
1125 North Street	R0000927	0.12	\$1,165,000	\$9,708,333
<b>TOTAL</b>		<b>8.83</b>	<b>\$15,177,800</b>	<b>\$1,718,890</b>

*Sources: Boulder County Assessor, Online Property Search (data accessed by TischlerBise on Feb. 14, 2016).*

Per City Facilities and Asset Management, the City needs less than the full 8.83 acres of the site for future facility needs and anticipates retaining 3 acres of the property for future municipal facility needs. . Therefore, the above figure is adjusted to reflect this and is shown in Figure 26. Because this is a **plan-based approach where the land purchased today has excess capacity to serve growth in the future**, the demand base used in the calculation is population and employment in the **year 2040**. This reflects the period of time for which the purchased land is anticipated to serve.

Level of service (acre per demand unit) is calculated by multiplying total acres by proportionate share then dividing by applicable demand units (population and jobs in the year 2040). For Municipal Facilities, levels of service are:

- Residential: 3 acres x 60% proportionate share / 123,000 population \* 1,000 = .015 acres per 1,000 persons
- Nonresidential: 3 acres. x 40% proportionate share / 117,010 jobs \* 1,000 = .010 acres per 1,000 jobs

The 3 acres to be retained has an estimated cost of \$5.2 million, using the average cost per acre of \$1.7 million. The cost per person is \$26 (.015 acre per 1,000 persons x \$1,718,890 = \$26) and a cost per job of \$17 (.010 acres per 1,000 jobs x \$1,718,890 = \$17).

**Figure 26. Municipal Facilities Land Level of Service Standards and Cost Factors**

Site Acquisition	Acres*	Avg. Cost per Acre	Total Cost
Boulder Community Hospital Site	3.00	\$1,718,890	\$5,156,670

	Proportionate Share	2040 Projected Demand Units	LOS: Acres per 1,000 Demand Units	Cost per Demand Unit
Residential	60%	123,000 Population	0.015	\$26
Nonresidential	40%	117,010 Jobs	0.010	\$17

\* Per the City, it is assumed the City will retain 3 acres of the property for municipal facility needs.

Sources: City of Boulder Facilities and Asset Management; Boulder County Assessor, Online Property Search (data accessed by TischlerBise on Feb. 14, 2016).

### ***Municipal Court Component***

The plan-based methodology is used to calculate the Municipal Court component of the Municipal Facilities impact fee. The first step of the analysis determines the Level of Service (LOS) to be provided to existing and future development. The second step involves determining the cost per person and job to provide this LOS.

The City of Boulder currently leases space from Boulder County for its Municipal Court space (7,587 square feet).<sup>6</sup> The City conducted a space needs assessment for the court that identified the need for 12,000 square feet of Municipal Court space.<sup>7</sup>

Figure 27 summarizes the Municipal Court component level of service. Level of service (square feet per demand unit) is calculated by multiplying total square feet by proportionate share then dividing by applicable demand units. **The Municipal Court space needs analysis considered future growth therefore, the demand base used is population and jobs in the year 2040.** For Municipal Facilities, levels of service are:

- Residential: 12,000 sq. ft. x 60% proportionate share / 123,000 population = .06 sq. ft. per person
- Nonresidential: 12,000 sq. ft. x 40% proportionate share / 117,010 jobs = .04 sq. ft. per job

<sup>6</sup> Per City Facilities and Asset Management, Boulder County has expressed its desire to discontinue the lease with the City of Boulder within 3 to 5 years thus requiring the City to provide space for the Municipal Court.

<sup>7</sup> Trestle Strategy Group, "Space Needs Assessment of City of Boulder's Municipal Court (Draft)," May 11, 2015.

The planned cost is estimated at \$4.2 million, reflecting an average cost per square foot of \$350. The cost per person is \$21 (.06 sq. ft. x \$350 = \$21) and a cost per job of \$14 (.04 sq. ft. x \$350 = \$14).

**Figure 27. Municipal Court Level of Service Standards and Cost Factors**

Project	Square Feet	Cost/SF	Total Cost
Municipal Court Facility (planned)	12,000	\$350	\$4,200,000

	Proportionate Share	2040 Projected Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	60%	123,000 Population	0.06	\$21
Nonresidential	40%	117,010 Jobs	0.04	\$14

*Sources: Trestle Strategy Group, "Space Needs Assessment of City of Boulder's Municipal Court (Draft)," May 11, 2015; City of Boulder Facilities and Asset Management.*

## Credit Evaluation

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The City does not have any outstanding property tax-backed debt for municipal facility improvements included in the incremental expansion portion of the Impact Fee calculation, therefore no credit is included.

For the purchase of the Boulder Community Hospital site, the City issued debt (Certificates of Participation) for the full amount of the property (\$41 million). The City has entered into a *Lease Purchase Agreement* with the Boulder Municipal Property Authority (BMPA). BMPA will lease the Leased Property back to the City pursuant to the terms of the Lease Purchase Agreement. The City will (subject to annual appropriation) make Base Rental payments to BMPA **from any legally available revenues of the City**. The Base Rental payments will be held by the Trustee and used to pay debt service on the 2015 Certificates.<sup>8</sup>

The land component of the Municipal Facilities Impact Fee reflects new growth's share of the cost for the property. Therefore other City revenues will be used to cover existing development's share of the cost and no credit is necessary.<sup>9</sup>

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<sup>8</sup> "City of Boulder, Boulder Municipal Property Authority Agenda Item," September 15, 2015, p. 3. Emphasis added.

<sup>9</sup> However, it is noted that if the City sells land on which current City offices are housed, a credit or offset will need to be included in the calculation.

## Residential Impact Fees for Municipal Facilities

Figure 28 provides the schedule of residential impact fees by finished floor area for residential development. Capital cost per person, multiplied by persons per housing unit by size of housing unit, yields the residential impact fee schedule for municipal facilities.

**Figure 28. Municipal Facilities Input Factors and Maximum Supportable Residential Impact Fee Schedule**

<i>Level Of Service</i>	<i>Factors</i>
Municipal Facilities Building Cost	<u><i>Per Person</i></u> \$175
Land Cost	\$26
Municipal Court Cost	\$21
Debt Service Cost	\$0
<b>Net Capital Cost</b>	<b>\$222</b>

<b>RESIDENTIAL IMPACT FEES</b>			
<i>Square Feet</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Impact Fee per Housing Unit</i>
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b>Residential (by square feet of finished living space)</b>			
600	Dwelling Unit	1.17	\$259
800	Dwelling Unit	1.47	\$326
1,000	Dwelling Unit	1.70	\$377
1,200	Dwelling Unit	1.89	\$419
1,400	Dwelling Unit	2.05	\$455
1,600	Dwelling Unit	2.19	\$486
1,800	Dwelling Unit	2.32	\$515
2,000	Dwelling Unit	2.42	\$537
2,200	Dwelling Unit	2.52	\$559
2,400	Dwelling Unit	2.61	\$579
2,600	Dwelling Unit	2.70	\$599
2,800	Dwelling Unit	2.78	\$617
3,000	Dwelling Unit	2.85	\$632
3,200	Dwelling Unit	2.91	\$646
3,400	Dwelling Unit	2.98	\$661
3600+	Dwelling Unit	3.04	\$674

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the residential component of the Municipal Facilities category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>10</sup> Figure 20 compares the draft calculated cost to the current schedule for the residential component of the Municipal Facilities category.

**Figure 29. Municipal Facilities Fee Comparison (Residential): Current Cost per Person to Updated Cost per Person**

	<i>Cost per Person (2016)</i>	<b>Current City of Boulder Impact Fee Cost per Person<sup>^</sup></b>	<b>Increase / Decrease</b>
Municipal Facilities	\$222	\$131	\$91

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>10</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Nonresidential Impact Fees for Municipal Facilities

Figure 30 shows the schedule of maximum allowable impact fees for nonresidential development. For nonresidential land uses, such as a retail establishment, the number of employees per square feet (.00251) is multiplied by the capital cost per employee (\$155), for an impact fee of \$0.38 per square foot.

**Figure 30. Municipal Facility Input Factors and Maximum Supportable Nonresidential Impact Fee Schedule**

<i>Level Of Service</i>	<i>Factors</i>	
		<b><i>Per Employee</i></b>
Municipal Facilities Building Cost		\$124
Land Cost		\$17
Municipal Court Cost		\$14
Debt Service Cost		\$0
<b>Net Capital Cost</b>		<b>\$155</b>

<b>NONRESIDENTIAL IMPACT FEES</b>			
<b><i>Nonresidential Land Use</i></b>	<b><i>Development Unit</i></b>	<b><i>Jobs per Development Unit</i></b>	<b><i>Impact Fee per Development Unit</i></b>
Retail / Restaurant / Service	Square Feet of Floor Area	0.00251	\$0.38
Office	Square Feet of Floor Area	0.00359	\$0.55
Light Industrial	Square Feet of Floor Area	0.00231	\$0.35
Warehousing	Square Feet of Floor Area	0.00092	\$0.14
Institutional	Square Feet of Floor Area	0.00081	\$0.12
Hospital	Square Feet of Floor Area	0.00294	\$0.45
Nursing Home/Assisted Living	Bed	0.84	\$130.00
<i>Nursing Home/Assisted Living*</i>	<i>Square Feet of Floor Area</i>	<i>0.0021</i>	<i>\$0.32</i>
Lodging	Room	0.57	\$88.00
<i>Lodging**</i>	<i>Square Feet of Floor Area</i>	<i>0.00095</i>	<i>\$0.14</i>

\* For illustration and comparison with per square foot impact fees, assumes an average of 400 sq. ft. per bed

\*\* For illustration and comparison with per square foot impact fees, assumes an average of 600 sq. ft. per room

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per employee** compared to the **current cost per employee** from the current City of Boulder Impact Fee schedule for the nonresidential component of the Municipal Facilities category. It should be noted that the current cost per employee shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>11</sup> Figure 20 compares the draft calculated cost to the current schedule for the nonresidential component of the Municipal Facilities category.

**Figure 31. Municipal Facilities Fee Comparison (Nonresidential): Current Cost per Employee to Updated Cost per Employee**

	<i>Cost per Employee (2016)</i>	<b>Current City of Boulder Impact Fee Cost per Employee<sup>^</sup></b>	<b>Increase / Decrease</b>
Municipal Facilities	\$155	\$54	\$101

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>11</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

The revenue projection shown in Figure 32 is calculated based on the preliminary calculated 2016 Municipal Facilities Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 32. Projected Municipal Facilities Impact Fee Revenue**

		<i>Residential</i>	<i>Industrial</i>	<i>Retail</i>	<i>Office and Other Services</i>
<i>Fee (Wtd Avg)</i>		\$475	\$0.35	\$0.38	\$0.55
		per housing unit	per sq. ft.	per sq. ft.	per sq. ft.
<i>Year</i>		<i>Housing Units</i>	<i>Square Feet</i>	<i>Square Feet</i>	<i>Square Feet</i>
Base	2015	45,740	13,576,996	8,565,611	14,848,416
Year 1	2016	46,012	13,670,663	8,624,414	14,950,360
Year 2	2017	46,288	13,765,405	8,683,890	15,053,473
Year 3	2018	46,566	13,860,809	8,743,783	15,157,308
Year 4	2019	46,846	13,956,881	8,804,095	15,261,869
Year 5	2020	47,127	14,053,626	8,864,830	15,367,162
Year 6	2021	47,409	14,151,048	8,925,989	15,473,193
Year 7	2022	47,694	14,249,152	8,987,577	15,579,965
Year 8	2023	47,980	14,347,942	9,049,596	15,687,486
Year 9	2024	48,268	14,447,424	9,112,049	15,795,758
Year 10	2025	48,557	14,547,603	9,174,939	15,904,789
<i>Ten-Yr Increase</i>		2,817	970,607	609,328	1,056,373
<i>Projected Revenue =&gt;</i>		\$1,338,260	\$339,712	\$231,545	\$581,005
					<b>Total Projected Revenue =&gt; \$2,490,522</b>

## Police Impact Fees

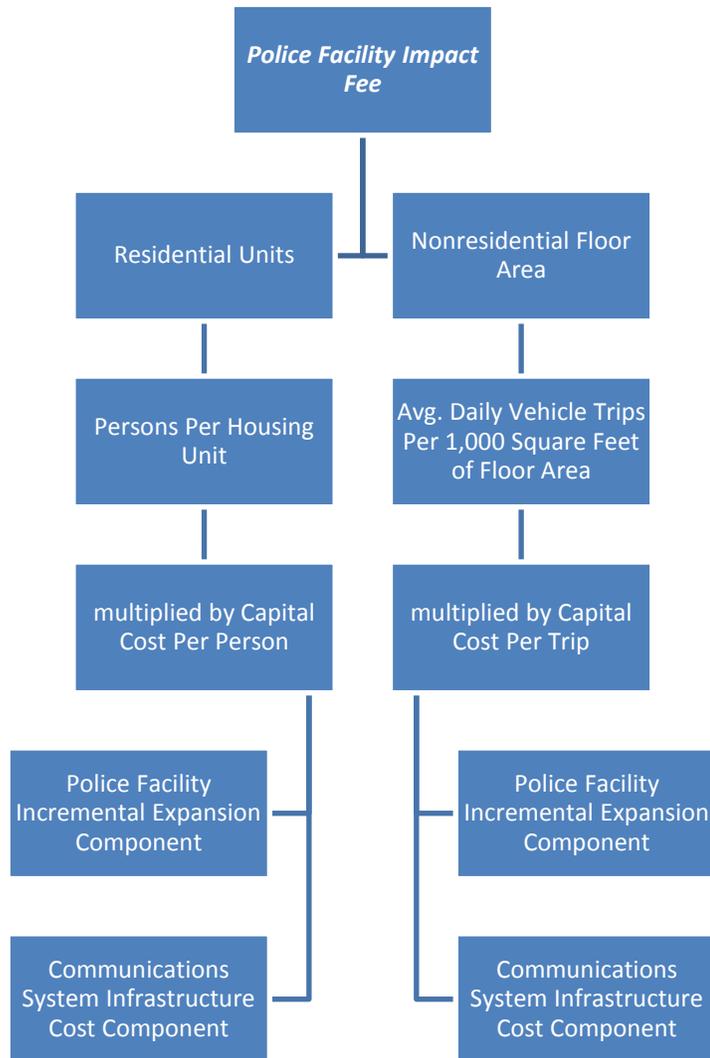
### Methodology

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The Police impact fee is calculated using an incremental expansion methodology. Because the Colorado State Impact Fee Act requires that infrastructure included in the fee calculation have a useful life of over 5 years, police cars are not eligible for impact fee funding.

As shown in Figure 33, the Police impact fee uses different demand indicators for residential and nonresidential development. Residential impact fees are calculated on a per capita basis and then converted to a proportionate fee amount by type of housing, based on the number of persons by size of housing unit. For nonresidential impact fees, TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for Police facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/warehouse development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for Police services from nonresidential development. Other possible nonresidential demand indicators, such as employment or floor area, will not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Police impact fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator, Police impact fees would be too high for industrial development.

Figure 33. Police Facilities Impact Fee Methodology Chart



## Proportionate Share Factors

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The proportionate share factors shown in Figure 34 are used to allocate capital costs to residential and nonresidential development.

Functional population is similar to what the U.S. Census Bureau calls "daytime population" by accounting for people living and working in a jurisdiction. In addition to the Boulder-specific data, TischlerBise has relied on extensive public and private sector input to establish reasonable "weighting factors" to account for time spent at either residential or nonresidential development. These weighting factors are shown below with grey shading.

The functional population analysis starts with 2015 estimates of jobs and population in Boulder (see yellow highlighting), as documented in the draft Land Use Assumptions (see Appendix A). According to the *2013 Transportation Master Plan (TMP) State of the System* report (see page 3-13), approximately 10 percent of Boulder jobs are self-employed persons. The remaining 90 percent of jobs require "journey-to-work" travel. The 2014 Boulder Valley Employee Survey indicates Boulder residents held 38 percent of these jobs, with persons living outside of Boulder holding the remaining 62 percent of journey-to-work jobs. The functional population analysis assumes all workers spend ten hours per weekday (annualized average) at nonresidential locations.

Residents who work in Boulder are assigned 10 hours to nonresidential development (discussed above) and 14 hours to residential development. Residents who work outside Boulder are assigned 14 hours to residential development. Jobs held by non-residents are assigned 10 hours to nonresidential development. Residents who do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages) to account for time spent shopping, eating out, and other social/recreational activities.

Based on Boulder's 2015 functional population analysis, the cost allocation for residential development is 60 percent, while nonresidential development accounts for 40 percent of the demand for municipal facility infrastructure.

**Figure 34. Proportionate Share Factors for Police Impact Fees**

<b>Boulder Functional Population Analysis</b>				<i>Demand Hours/Day</i>	<i>Person Hours</i>
<i>Service Units in 2015</i>					
<b>Nonresidential</b>					
	Jobs Located in City*	98,510			
	10% Self-employed	9,851		10	98,510
	Jobs Requiring Journey-To-Work	88,659			
	Jobs Held By Residents**	38%	33,690	10	336,900
	Jobs Held By Non-residents**	62%	54,969 <= 56% of jobs	10	549,690
	Non-working Residents	51,054		4	204,216
					<b>Nonresidential Subtotal</b> 1,189,316
					<b>Nonresidential Share =&gt;</b> 40%
<b>Residential</b>					
	Population*	104,808			
	Non-working Residents	51,054		20	1,021,080
	Resident Workers	53,754			
	81% Residents Working in City (includes self-employed)***		43,541 <= 44% of jobs	14	609,574
	19% Residents Working Outside City**	10,213		14	142,982
					<b>Residential Subtotal</b> 1,773,636
					<b>Residential Share =&gt;</b> 60%
					<b>TOTAL</b> 2,962,952

\* Boulder Land Use Assumptions, TischlerBise 03/25/16.  
 \*\* Percentages from 2014 Boulder Valley Employee Survey, Table 36, Question 32.  
 \*\*\* Percentages from 2014 Boulder Community Household Survey, Table 112, Question

## Police Facilities Level of Service Standards and Costs

### **Police Buildings**

The Police impact fee is calculated using the incremental expansion methodology for both Police station space and Communications System Infrastructure. The first step of the analysis determines the current LOS being provided to existing development. The second step involves determining the cost per person and per nonresidential vehicle trip to provide this LOS.

The top portion of Figure 35 lists the current inventory of Police space in the City of Boulder.

As shown, the City currently utilizes Police facility space totaling 95,749 square feet, including space that is owned and leased by the City of Boulder. Of that amount, 93,849 square feet is owned by the City.

Level of service (square feet per demand unit) is calculated by multiplying total square footage by proportionate share then dividing by applicable demand units. For Police Facilities, levels of service are:

- Residential: 95,749 sq. ft. x 60% proportionate share / 104,808 population = .55 sq. ft. per capita
- Nonresidential: 95,749 sq. ft. x 40% proportionate share / 249,903 vehicle trips = .15 sq. ft. per trip

The current value for Police buildings and contents are from the City's 2015 Property Schedule and the Trestle *Public Safety Space Needs Assessment*. To reflect total replacement costs for general Police space, 30 percent is added to the construction cost to reflect "soft" costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). According to information provided by the City, current Police facility space has a replacement value of approximately \$30 million, reflecting facilities owned by the City. The average replacement cost per square foot is \$317 resulting in a cost per person of \$184 (.55 sq. ft. per person x \$317 = \$174) and a cost per nonresidential trip of \$48 (.15 sq. ft. per trip x \$317 = \$48).

**Figure 35. Police Facilities Level of Service Standards and Cost Factors**

Facility	Location	Current Square Feet	Current Replacement Cost (Hard Costs)*	Current Replacement Cost (Soft Costs)**	Total Costs	Cost/SF
Headquarters	Public Safety Building/1805 E. 33rd	72,986	\$17,881,570	\$7,663,530	\$25,545,100	\$350
Training Ctr / Firing Range Addition	Public Safety Building/1805 E. 33rd	16,000	\$2,714,216	\$814,265	\$3,528,481	\$221
Police Storage (only building cost)	Storage/1805 E. 33rd St	4,763	\$461,693	\$138,508	\$600,201	\$126
Downtown Mall Annex	Downtown	850	leased	na	na	na
University Hill Annex	13th Street	450	leased	na	na	na
Bomb Disposal and Storage	N. 26th Street	100	\$41,174	\$12,352	\$53,526	\$535
San Juan del Centro Annex	Valmont Rd	600	leased	na	na	na
<b>TOTAL</b>		<b>95,749</b>	<b>\$21,098,653</b>	<b>\$8,628,655</b>	<b>\$29,727,308</b>	
<b>TOTAL City Owned***</b>		<b>93,849</b>	<b>\$21,098,653</b>	<b>\$8,628,655</b>	<b>\$29,727,308</b>	<b>\$317</b>

Cost per Square Foot=> \$317

BASED ON TOTAL SPACE (CITY OWNED AND LEASED)

	Proportionate Share	2015 Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	60%	104,808 persons	0.55	\$174
Nonresidential	40%	249,903 nonres trips	0.15	\$48

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015) except for Headquarters with replacement cost from City of Boulder Public Safety Building Preliminary Space Needs Assessment, 9/11/14, Trestle Strategy Group.

\*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.

\*\*\* Average cost per square foot is average of City owned facilities.

Sources: City of Boulder Property Schedule, 2015; City of Boulder Facilities and Asset Management; Trestle Strategy Group.

**Communications System Infrastructure**

For Communications System Infrastructure, an incremental based methodology is used and is based on current levels of service for current towers and equipment with useful life longer than 5 years. It should be noted that the City is embarking on a comprehensive radio infrastructure study. **Once that is complete, a plan-based methodology could be employed to reflect the needs for current and future growth.**

Based on the current value of \$1.9 million and proportionate share factors from above, the per capita cost is \$11 and the cost per trip is \$3.

**Figure 36. Police Communications Infrastructure Level of Service Standards and Cost Factors**

Facility	Location	Current Value
GUNBARREL Radio Shack Twr/Ant	Gunbarrel Hill	\$127,192
Chautauqua Radio Shack Twr/Ant	Chautauqua	\$149,525
Radio/Communications Equipment	Citywide	\$1,610,475
<b>TOTAL</b>		<b>\$1,887,192</b>

	Proportionate Share	2015 Demand Units	Cost per Demand Unit
Residential	60%	104,808 persons	\$11
Nonresidential	40%	249,903 nonres trips	\$3

Sources: City Property Schedule (2015); City of Boulder Police Department

**Credit Evaluation**

At present, the City of Boulder does not have any outstanding property-tax backed bonded debt related to the construction of Police facilities. Therefore, a credit for existing bond financing is not applicable to this impact fee.

## Residential Impact Fees for Police Facilities

Figure 37 provides the schedule of Police residential impact fees by finished floor area for residential development. Capital cost per person, multiplied by persons per housing unit by size of housing unit, yields the residential impact fee schedule for Police facilities.

**Figure 37. Police Input Factors and Maximum Supportable Residential Impact Fee Schedule**

<i>Level Of Service</i>	<i>Factors</i>						
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;"><b><i>Per Person</i></b></td> </tr> <tr> <td style="text-align: right;">Police Buildings Cost</td> </tr> <tr> <td style="text-align: right;">Communications Infrastructure Cost</td> </tr> <tr> <td style="text-align: right;">Debt Service Cost</td> </tr> <tr> <td style="text-align: right;"><b>Net Capital Cost</b></td> </tr> <tr> <td style="text-align: right;"><b>\$185</b></td> </tr> </table>	<b><i>Per Person</i></b>	Police Buildings Cost	Communications Infrastructure Cost	Debt Service Cost	<b>Net Capital Cost</b>	<b>\$185</b>
<b><i>Per Person</i></b>							
Police Buildings Cost							
Communications Infrastructure Cost							
Debt Service Cost							
<b>Net Capital Cost</b>							
<b>\$185</b>							
Police Buildings Cost	\$174						
Communications Infrastructure Cost	\$11						
Debt Service Cost	\$0						
<b>Net Capital Cost</b>	<b>\$185</b>						

<b>RESIDENTIAL IMPACT FEES</b>			
Square Feet	Development Unit	Persons per Housing Unit	Impact Fee per Housing Unit
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b><i>Residential (by square feet of finished living space)</i></b>			
600	Dwelling Unit	1.17	\$216
800	Dwelling Unit	1.47	\$271
1,000	Dwelling Unit	1.70	\$314
1,200	Dwelling Unit	1.89	\$349
1,400	Dwelling Unit	2.05	\$379
1,600	Dwelling Unit	2.19	\$405
1,800	Dwelling Unit	2.32	\$429
2,000	Dwelling Unit	2.42	\$447
2,200	Dwelling Unit	2.52	\$466
2,400	Dwelling Unit	2.61	\$482
2,600	Dwelling Unit	2.70	\$499
2,800	Dwelling Unit	2.78	\$514
3,000	Dwelling Unit	2.85	\$527
3,200	Dwelling Unit	2.91	\$538
3,400	Dwelling Unit	2.98	\$551
3600+	Dwelling Unit	3.04	\$562

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the residential component of the Police category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>12</sup> Figure 38 compares the draft calculated cost to the current schedule for the residential component of the Police category.

**Figure 38. Police Fee Comparison (Residential): Current Cost per Person to Updated Cost per Person**

	<b>Cost per Person (2016)</b>	<b>Current City of Boulder Impact Fee Cost per Person<sup>^</sup></b>	<b>Increase / Decrease</b>
Police	\$185	\$138	\$47

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>12</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Nonresidential Impact Fees for Police Facilities

Figure 39 shows the schedule of maximum allowable impact fees for nonresidential development. For nonresidential land uses, such as a retail establishment, the number of trips per square feet (.04270 x 33%) is multiplied by the capital cost per trip (\$51), for an impact fee of \$0.71 per square foot.

**Figure 39. Police Input Factors and Maximum Supportable Nonresidential Impact Fee Schedule**

*Level Of Service*

Police Buildings Cost  
 Communications Infrastructure Cost  
 Debt Service Cost  
 Net Capital Cost

*Factors*

<i>Per Trip</i>
\$48
\$3
\$0
<b>\$51</b>

<b>NONRESIDENTIAL IMPACT FEES</b>				
<i>Nonresidential Land Use</i>	<i>Development Unit</i>	<i>Vehicle Trip Rate per Demand Unit</i>	<i>Trip Adjustment Factors</i>	<i>Impact Fee per Development Unit</i>
Retail / Restaurant / Service	Square Feet of Floor Area	0.04270	33%	\$0.71
Office	Square Feet of Floor Area	0.01103	50%	\$0.28
Light Industrial	Square Feet of Floor Area	0.00697	50%	\$0.17
Warehousing	Square Feet of Floor Area	0.00356	50%	\$0.09
Institutional	Square Feet of Floor Area	0.01403	33%	\$0.23
Hospital	Square Feet of Floor Area	0.01322	50%	\$0.33
Nursing Home/Assisted Living	Bed	2.74	50%	\$69
<i>Nursing Home/Assisted Living*</i>	<i>Square Feet of Floor Area</i>	<i>0.00685</i>	<i>50%</i>	<i>\$0.17</i>
Lodging	Room	8.17	50%	\$208
<i>Lodging**</i>	<i>Square Feet of Floor Area</i>	<i>0.013616667</i>	<i>50%</i>	<i>\$0.34</i>

\* For illustration and comparison with per square foot impact fees, assumes an average of 400 sq. ft. per bed

\*\* For illustration and comparison with per square foot impact fees, assumes an average of 600 sq. ft. per room

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per trip** compared to the **current cost per trip** from the current City of Boulder Impact Fee schedule for the nonresidential component of the Police category. It should be noted that the current cost per trip shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>13</sup> Figure 40 compares the draft calculated cost to the current schedule for the nonresidential component of the Police category.

**Figure 40. Police Facilities Fee Comparison (Nonresidential): Current Cost per Trip to Updated Cost per Trip**

	<i>Cost per Trip (2016)</i>	<b>Current City of Boulder Impact Fee Cost per Trip<sup>^</sup></b>	<b>Increase / Decrease</b>
Police	\$51	\$19	\$32

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>13</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

The revenue projection shown in Figure 41 is calculated based on the preliminary calculated 2016 Police Facilities Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 41. Projected Police Facilities Impact Fee Revenue**

		<i>Residential</i>	<i>Industrial</i>	<i>Retail</i>	<i>Office and Other Services</i>
<i>Fee (Wtd Avg)</i>		\$395 per housing unit	\$0.17 per sq. ft.	\$0.71 per sq. ft.	\$0.28 per sq. ft.
<i>Year</i>		<i>Housing Units</i>	<i>Square Feet</i>	<i>Square Feet</i>	<i>Square Feet</i>
Base	2015	45,740	13,576,996	8,565,611	14,848,416
Year 1	2016	46,012	13,670,663	8,624,414	14,950,360
Year 2	2017	46,288	13,765,405	8,683,890	15,053,473
Year 3	2018	46,566	13,860,809	8,743,783	15,157,308
Year 4	2019	46,846	13,956,881	8,804,095	15,261,869
Year 5	2020	47,127	14,053,626	8,864,830	15,367,162
Year 6	2021	47,409	14,151,048	8,925,989	15,473,193
Year 7	2022	47,694	14,249,152	8,987,577	15,579,965
Year 8	2023	47,980	14,347,942	9,049,596	15,687,486
Year 9	2024	48,268	14,447,424	9,112,049	15,795,758
Year 10	2025	48,557	14,547,603	9,174,939	15,904,789
<i>Ten-Yr Increase</i>		2,817	970,607	609,328	1,056,373
<i>Projected Revenue =&gt;</i>		\$1,112,869	\$165,003	\$432,623	\$295,784
		<i>Total Projected Revenue =&gt;</i>			<b>\$2,006,279</b>

## Fire Impact Fees

The City of Boulder Fire impact fee is based on the incremental expansion cost of Fire Services facilities, Fire apparatus, and land for future Fire stations. The City has identified future needs for new Fire Stations and expansion and relocations of existing Fire Stations in the following recently completed studies: *Space Needs Assessment for Fire Station 3 and Administration Building*<sup>14</sup> and *Boulder Fire Rescue Station Location Report*.<sup>15</sup> While the *FY2016-2021 City Capital Improvement Plan* identifies future Fire-Rescue projects, specific projects are not yet programmed in the CIP. Therefore, an incremental approach is recommended as this methodology will allow for the greatest flexibility for the City to expand and/or build new Fire facilities in the next few years. Due to requirement of the Colorado Impact Fee Act that capital facilities have useful lives of over five years, only heavy apparatus (e.g., engines, rescue trucks) is included. Also included is a separate land component, which is delineated from Station levels of service and costs and reflects a change from the previous Impact Fee Study.

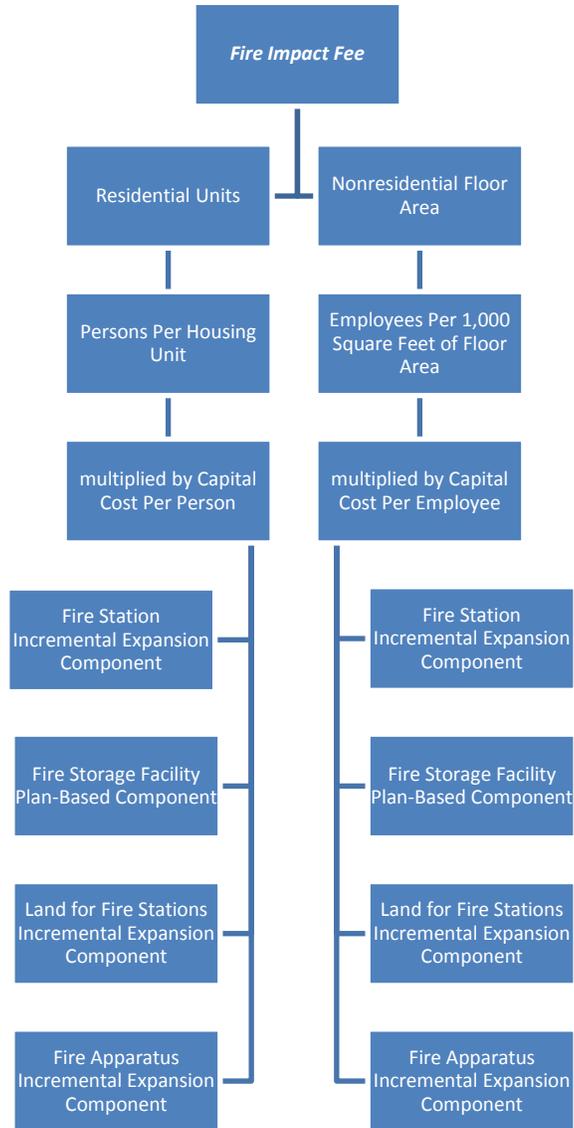
The demand for Fire infrastructure is a function of both residential and nonresidential growth. To allocate demand for infrastructure, two main approaches can be used: The calls for service approach and the functional population approach. The calls for service approach uses local data on Fire/EMS calls for service to different land use types to establish the relationship between the demand for facilities and the type of development. Calls for service data is available from the City of Boulder Fire Department and is used to allocate costs to residential and nonresidential development.

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<sup>14</sup> Trestle Strategy Group, "Space Needs Assessment of Boulder Fire-Rescue Department's Fire Station 3 and Administration Building (Draft)," March 17, 2015.

<sup>15</sup> City of Boulder, "Boulder Fire Rescue Station Location Report," March 2015.

**Figure 42. Fire Impact Fee Methodology Chart**



## Proportionate Share Factors

To determine demand for Fire services and facilities, calls for service to residential and nonresidential land uses are used. Boulder Fire Department provided data on Fire call incidents by land use for calendar year 2014. TischlerBise used this call data to determine the proportionate share factors shown in Figure 43. This data indicated that the City responded to 9,753 calls to known land uses (see bottom of figure). Of those known uses, 42 percent were to residential land uses and 58 percent to nonresidential land uses.

**Figure 43. Fire Proportionate Share Factors**

	TOTAL	Nonresidential	Residential	Unknown
No Property Use Reported	30			30
000 Property Use, Other	33			33
100 Assembly	906	906		
200 Educational	322	322		
300 Health Care, Detention & Correction	985	985		
400 Residential	3,896		3,896	
449 <i>Hotel/Motel, Commercial</i>	126	126		
500 Mercantile, Business	1,171	1,171		
600 Industrial, Utility, Defense, Agriculture, Mining	58	58		
700 Manufacturing, Processing	41	41		
800 Storage	72	72		
881 <i>Parking Garage (detached residential)</i>	1		1	
899 <i>residential or self-storage</i>	1		1	
900 Outside or Special Property Nonres	1,941	1,941		
962 <i>Residential street, road or residential driveway</i>	233		233	
None	41			41
Undetermined	53			53
<b>TOTALS</b>	<b>9,910</b>	<b>5,622</b>	<b>4,131</b>	<b>157</b>

		<b>% by Land Use</b>
Residential	4,131	<b>42%</b>
Nonresidential	5,622	<b>58%</b>
<b>Total to Known Land Uses</b>	<b>9,753</b>	<b>100%</b>
Unknown	157	
<b>Grand Total</b>	<b>9,910</b>	

Source: City of Boulder Fire Department, Property Use Report (01/01/2014 - 12/31/2014); TischlerBise analysis.

## Fire Level of Service Standards and Costs

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### ***Fire Service Facilities Incremental Expansion Cost Component***

As discussed above, the Fire impact fees are derived using the incremental expansion approach for buildings and land, based on the current 2015 level of service. As shown in Figure 44, the City of Boulder has eight fire stations, headquarters, and a training center.

As shown, the City currently utilizes Fire Station and Office space totaling 79,318 square feet, including space that is owned and leased by the City of Boulder. Of that amount, 73,318 square feet is owned by the City.

Level of service (square feet per demand unit) is calculated by multiplying total square footage by proportionate share then dividing by applicable demand units. For Fire Facilities, levels of service are:

- Residential:  $79,318 \text{ sq. ft.} \times 42\% \text{ proportionate share} / 104,808 \text{ population} = .32 \text{ sq. ft. per capita}$
- Nonresidential:  $79,318 \text{ sq. ft.} \times 58\% \text{ proportionate share} / 98,510 \text{ jobs} = .47 \text{ sq. ft. per job}$

The current value for Fire buildings and contents (not apparatus) is from the City's 2015 Property Schedule. To reflect total replacement costs for Fire Facilities, 30 percent is added to the construction cost to reflect "soft" costs for predevelopment, site improvements, and other non-construction costs (per City of Boulder Facilities and Asset Management (FAM)). According to information provided by the City, Fire Facility space has a replacement value of approximately \$17.5 million, reflecting facilities owned by the City. The replacement cost per square foot is \$238 resulting in a cost per person of \$76 ( $.32 \text{ sq. ft. per person} \times \$238 = \$76$ ) and a cost per job of \$112 ( $.47 \text{ sq. ft. per job} \times \$238 = \$112$ ).

**Figure 44. Fire Station Inventory and Costs**

Facility	Location	Current Square Feet	Current Replacement Cost (Hard Costs)*	Current Replacement Cost (Soft Costs)**	Total Costs	Cost/SF
Station 1	2441 13th Street	7,941	\$1,439,036	\$431,711	\$1,870,747	\$236
Station 2	2225 Baseline	4,752	\$708,697	\$212,609	\$921,306	\$194
Station 3	1585 30th Street	6,160	\$802,289	\$240,687	\$1,042,976	\$169
Station 4	4100 Darley	3,498	\$521,797	\$156,539	\$678,336	\$194
Station 5	4365 19th Street	3,716	\$690,071	\$207,021	\$897,092	\$241
Station 6	5145 N 63rd Street	3,435	\$616,464	\$184,939	\$801,403	\$233
Station 7	1380 55th Street	5,081	\$979,907	\$293,972	\$1,273,879	\$251
Station 8	6055 Reservoir Road	11,268	\$3,425,000	\$1,027,500	\$4,452,500	\$395
Fire Headquarters	Center Green Offices	6,000	leased	na	na	na
Training Center	6055 Reservoir Road	27,467	\$4,254,538	\$1,276,361	\$5,530,899	\$201
<b>TOTAL</b>		<b>79,318</b>	<b>\$13,437,799</b>	<b>\$4,031,340</b>	<b>\$17,469,139</b>	<b>\$220</b>
<b>TOTAL City Owned***</b>		<b>73,318</b>	<b>\$13,437,799</b>	<b>\$4,031,340</b>	<b>\$17,469,139</b>	<b>\$238</b>

Cost per Square Foot=> \$238

	Proportionate Share	2015 Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	42%	104,808 persons	0.32	\$76
Nonresidential	58%	98,510 jobs	0.47	\$112

\* Building, contents, equipment, miscellaneous improvements (City of Boulder Property Schedule, 2015).  
 \*\* Soft costs estimated at 30 percent of construction costs per City of Boulder Facilities and Asset Management.  
 \*\*\* Average cost per square foot is average of City owned facilities.  
 Sources: City of Boulder Property Schedule, 2015; City of Boulder Facilities and Asset Management.

**Fire Storage Facility Plan-Based Component**

The Fire Department has indicated a current and future need for vehicle/apparatus storage, which is separate from the level of service provided in current Fire Station inventory. This facility is identified as a priority in the *2012 Fire-Rescue Master Plan Update* and the *Space Needs Assessment of Fire Station 3 and Administration Building*.<sup>16</sup> The storage facility is currently identified in the CIP as an unfunded project as part of Fire Station 3/Administration.

The current assumption is that the storage facility will be separate from a new and/or relocated Fire Station 3 to allow for cost effective space utilization. Current planning estimates for facility specifications and costs are shown below in Figure 45. It should be noted that land costs are included in the estimate below however it is not known at this time whether a land purchase will be necessary for this facility.

**Figure 45. Fire Storage Facility Level of Service Standards and Cost Factors**

Project	Square Feet	Building Cost*	Land Cost*	Total Cost*
Fire Apparatus and Equipment Storage Facility (planned)	10,000	\$900,000	\$1,000,000	\$1,900,000
<i>Cost per Square Foot=&gt;</i>				\$190

	Proportionate Share	2040 Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	42%	123,000 persons	0.03	\$6
Nonresidential	58%	117,010 jobs	0.05	\$10

\* Planning estimates only. Construction costs estimated at \$850,000-\$1 million; 1 acre of land at \$1 million per acre.  
 Sources: City of Boulder Fire Rescue.

<sup>16</sup> Trestle Strategy Group, "Space Needs Assessment of Boulder Fire-Rescue Department's Fire Station 3 and Administration Building (Draft)," March 17, 2015.

***Fire Apparatus Incremental Expansion Component***

The Fire impact fees also use an incremental expansion approach for Fire apparatus, based on the current 2015 level of service. Current replacement costs for the City’s inventory of Fire apparatus (with a minimum 5-year useful life) are shown in Figure 46 and were provided by the City. As shown in Figure 46, the estimated current value totals approximately \$9.8 million.

**Figure 46. Fire Apparatus Inventory and Costs**

Item	Units	\$/Unit	Current Value
Fire Engines (Pumpers)	7	\$600,000	\$4,200,000
Fire Engines (Telesquirts)	3	\$850,000	\$2,550,000
Ladder Truck	1	\$1,200,000	\$1,200,000
Rescue Truck	2	\$250,000	\$500,000
Wild-Land Truck (Type 6)	3	\$200,000	\$600,000
Wild-Land Truck (Type 3)	2	\$350,000	\$700,000
<b>TOTAL</b>	<b>18</b>	<b>\$541,667</b>	<b>\$9,750,000</b>

	Proportionate Share	2015 Demand Units	LOS: Sq. Ft. per 1,000 Demand Units	Cost per Demand Unit
Residential	42%	104,808 persons	0.07	\$39
Nonresidential	58%	98,510 jobs	0.11	\$57

Source: City of Boulder Fire Department

**Fire Station Land Incremental Expansion Component**

The Fire impact fees also use an incremental expansion approach for Fire Station land, based on the current 2015 level of service. It is anticipated the City will need to purchase land for future Fire Station needs. Current levels of service and costs for the City’s inventory of Fire Station land are shown in Figure 47. Land values reflect current appraised values for each property. For Fire Station 8 and the Training Center, the City owns substantially more land than is needed for the Fire facilities on the site. Therefore, the amount shown is pro-rated to reflect an average site size based on the building square footage. As shown in Figure 47, the estimated current value of the land inventory is \$10.3 million, which reflects an average cost per acre of \$1.09 million.

**Figure 47. Fire Station Land Inventory and Costs**

Facility	Location	Current Acres	Current Value*	Value/Acre
Station 1	2441 13th Street	0.47	\$800,000	\$1,702,128
Station 2	2225 Baseline	0.29	\$871,200	\$3,004,138
Station 3	1585 30th	0.97	\$1,045,400	\$1,077,732
Station 4	4100 Darley	0.17	\$370,300	\$2,178,235
Station 5	4365 19th Street	0.54	\$457,400	\$847,037
Station 6	5145 N 63rd Street	0.99	\$638,300	\$644,747
Station 7	1380 55th Street	1.01	\$659,100	\$652,574
Station 8**	6055 Reservoir Road	1.45	\$1,577,546	\$1,090,473
Fire Headquarters	Center Green Offices	leased	leased	na
Training Center**	6055 Reservoir Road	3.53	\$3,845,444	\$1,090,473
<b>TOTAL</b>		<b>9.41</b>	<b>\$10,264,690</b>	<b>\$1,090,473</b>

Cost per Acre=> \$1,090,473

	Proportionate Share	2015 Demand Units	LOS: Sq. Ft. per Demand Unit	Cost per Demand Unit
Residential	42%	104,808 persons	0.04	\$44
Nonresidential	58%	98,510 jobs	0.06	\$65

\* Boulder County Assessor, Online Property Search (data accessed by TischlerBise on Feb. 14, 2016).

\*\* Station 8 and Training Center are on a total of 114 acres of City owned land. The acres identified are pro-rated for the facility size based on average Fire Station square feet per acre (floor area ratio). Value is estimated based on the weighted average for Stations 1-7 (\$1.09 million per acre).

**Credit Evaluation**

At present, the City of Boulder does not have any outstanding property-tax backed bonded debt related to the construction of Fire facilities. Therefore, a credit for existing bond financing is not applicable to this impact fee.

## Residential Impact Fees for Fire Facilities and Apparatus

Figure 48 provides the schedule of Fire impact fees by finished floor area for residential development. Capital cost per person, multiplied by persons per housing unit by size of housing unit, yields the residential impact fee schedule for Fire facilities.

**Figure 48. Fire Input Factors and Maximum Supportable Residential Impact Fee Schedule**

<i>Level Of Service</i>	<i>Factors</i>
Fire Station Cost	<b><i>Per Person</i></b> \$76
Fire Storage Facility Cost	\$6
Fire Apparatus Cost	\$39
Fire Station Land Cost	\$44
Debt Service Cost	\$0
Net Capital Cost	<b>\$165</b>

<b>RESIDENTIAL IMPACT FEES</b>			
<i>Square Feet</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Impact Fee per Housing Unit</i>
<i>(finished floor area)</i>		<i>All Housing Unit Types</i>	<i>All Housing Unit Types</i>
<b><i>Residential (by square feet of finished living space)</i></b>			
600	Dwelling Unit	1.17	\$193
800	Dwelling Unit	1.47	\$242
1,000	Dwelling Unit	1.70	\$280
1,200	Dwelling Unit	1.89	\$311
1,400	Dwelling Unit	2.05	\$338
1,600	Dwelling Unit	2.19	\$361
1,800	Dwelling Unit	2.32	\$382
2,000	Dwelling Unit	2.42	\$399
2,200	Dwelling Unit	2.52	\$415
2,400	Dwelling Unit	2.61	\$430
2,600	Dwelling Unit	2.70	\$445
2,800	Dwelling Unit	2.78	\$458
3,000	Dwelling Unit	2.85	\$470
3,200	Dwelling Unit	2.91	\$480
3,400	Dwelling Unit	2.98	\$491
3600+	Dwelling Unit	3.04	\$501

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per person** compared to the **current cost per person** from the current City of Boulder Impact Fee schedule for the residential component of the Fire category. It should be noted that the current cost per person shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>17</sup> Figure 49 compares the draft calculated cost to the current schedule for the residential component of the Fire category.

**Figure 49. Fire Fee Comparison (Residential): Current Cost per Person to Updated Cost per Person**

	<b>Cost per Person (2016)</b>	<b>Current City of Boulder Impact Fee Cost per Person<sup>^</sup></b>	<b>Increase / Decrease</b>
Fire	\$165	\$102	\$63

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>17</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Nonresidential Impact Fees for Fire Facilities and Apparatus

Figure 50 shows the schedule of maximum allowable Fire impact fees for nonresidential development. For nonresidential land uses, such as a retail establishment, the number of employees per square feet (.00251) is multiplied by the capital cost per employee (\$244), for an impact fee of \$0.61 per square foot.

**Figure 50. Fire Input Factors and Maximum Supportable Nonresidential Impact Fee Schedule**

<i>Level Of Service</i>	<i>Factors</i>	
		<u><i>Per Employee</i></u>
Fire Station Cost		\$112
Fire Storage Facility Cost		\$10
Fire Apparatus Cost		\$57
Fire Station Land Cost		\$65
Debt Service Cost		\$0
Net Capital Cost		<b>\$244</b>

<b>NONRESIDENTIAL IMPACT FEES</b>			
<i>Nonresidential Land Use</i>	<i>Development Unit</i>	<i>Jobs per Development Unit</i>	<i>Impact Fee per Development Unit</i>
Retail / Restaurant / Service	Square Feet of Floor Area	0.00251	\$0.61
Office	Square Feet of Floor Area	0.00359	\$0.87
Light Industrial	Square Feet of Floor Area	0.00231	\$0.56
Warehousing	Square Feet of Floor Area	0.00092	\$0.22
Institutional	Square Feet of Floor Area	0.00081	\$0.19
Hospital	Square Feet of Floor Area	0.00294	\$0.71
Nursing Home/Assisted Living	Bed	0.84	\$204.00
<i>Nursing Home/Assisted Living*</i>	<i>Square Feet of Floor Area</i>	<i>0.0021</i>	<i>\$0.13</i>
Lodging	Room	0.57	\$139.00
<i>Lodging**</i>	<i>Square Feet of Floor Area</i>	<i>0.00095</i>	<i>\$0.06</i>

\* For illustration and comparison with per square foot impact fees, assumes an average of 400 sq. ft. per bed

\*\* For illustration and comparison with per square foot impact fees, assumes an average of 600 sq. ft. per room

**Comparison to Current Impact Fees**

Because the proposed land use categories have changed from the current City of Boulder Impact Fee schedule, the figure below provides a comparison of the **draft calculated cost per employee** compared to the **current cost per employee** from the current City of Boulder Impact Fee schedule for the nonresidential component of the Fire category. It should be noted that the current cost per employee shown below is calculated based on the adopted amount in 2010 and escalated per the annual increases the City has applied in its annual updates.<sup>18</sup> Figure 51 compares the draft calculated cost to the current schedule for the nonresidential component of the Fire category.

**Figure 51. Fire Fee Comparison (Nonresidential): Current Cost per Employee to Updated Cost per Employee**

	<i>Cost per Employee (2016)</i>	Current City of Boulder Impact Fee Cost per Employee <sup>^</sup>	Increase / Decrease
Fire	\$244	\$143	\$101

<sup>^</sup> Cost as originally adopted in 2010 and inflated to current dollars (FY2016) using annual percentage increases per City of Boulder.

<sup>18</sup> The annual increases are as follows:

<i>Fiscal Year</i>	<i>% Increase</i>
2011	0.0%
2012	0.0%
2013	4.7%
2014	1.8%
2015	3.2%
2016	2.0%

## Projected Revenue

The revenue projection shown in Figure 52 is calculated based on the preliminary calculated 2016 Fire Impact Fee and the development projections described in the land use assumptions (Appendix A). To the extent the rate of development either accelerates or slows down, there will be a corresponding change in Impact Fee revenue and the timing of the need for capital improvements.

**Figure 52. Projected Fire Impact Fee Revenue**

		<i>Residential</i>	<i>Industrial</i>	<i>Retail</i>	<i>Office and Other Services</i>
<i>Fee (Wtd Avg)</i>		\$353	\$0.56	\$0.61	\$0.87
		per housing unit	per sq. ft.	per sq. ft.	per sq. ft.
<i>Year</i>		<i>Housing Units</i>	<i>Square Feet</i>	<i>Square Feet</i>	<i>Square Feet</i>
Base	2015	45,740	13,576,996	8,565,611	14,848,416
Year 1	2016	46,012	13,670,663	8,624,414	14,950,360
Year 2	2017	46,288	13,765,405	8,683,890	15,053,473
Year 3	2018	46,566	13,860,809	8,743,783	15,157,308
Year 4	2019	46,846	13,956,881	8,804,095	15,261,869
Year 5	2020	47,127	14,053,626	8,864,830	15,367,162
Year 6	2021	47,409	14,151,048	8,925,989	15,473,193
Year 7	2022	47,694	14,249,152	8,987,577	15,579,965
Year 8	2023	47,980	14,347,942	9,049,596	15,687,486
Year 9	2024	48,268	14,447,424	9,112,049	15,795,758
Year 10	2025	48,557	14,547,603	9,174,939	15,904,789
<i>Ten-Yr Increase</i>		2,817	970,607	609,328	1,056,373
<i>Projected Revenue =&gt;</i>		\$994,538	\$543,540	\$371,690	\$919,044
		<i>Total Projected Revenue =&gt;</i>			<b>\$2,828,812</b>

## Implementation and Administration

All costs in the impact fee calculations are given in current dollars with no assumed inflation rate over time. Necessary cost adjustments can be made as part of the recommended annual evaluation and update of impact fees. One approach is to adjust for inflation in construction costs by means of an index specific to construction as opposed to the consumer price index (CPI), which is more general in nature. TischlerBise recommends using the Marshall Swift Valuation Service or Engineering News Record (ENR), which provides comparative cost multipliers for various geographies and types of construction. The multipliers can be applied against the calculated impact fee. If cost estimates change significantly the City should redo the fee calculations.

There are certain accounting procedures that should be followed by the City. For example, monies received should be placed in a separate fund and accounted for separately and may only be used for the purposes authorized in the impact fee ordinance. Interest earned on monies in the separate fund should be credited to the fund.

## Credits and Reimbursements

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### *Future Revenue Credits*

There are three basic approaches used to calculate impact fees and each is linked to different credit methodology. The first major type of impact fee method is a cost recovery approach. This method is used for facilities that have adequate capacity to accommodate new development for at least a five to six year time frame. The rationale for the cost recovery is that new development is paying for its share of the useful life or remaining capacity of the existing facility. When using a cost recovery method, it is important to determine whether new development has already contributed toward the cost of existing public facilities. This type of credit is not necessary as new growth will pay its share of debt incurred for land purchased for Municipal Facilities through the impact fees.

A second basic approach used to calculate impact fees is the incremental expansion cost method. This method documents current factors and is best suited for public facilities that will be expanded incrementally in the future. Because new development will provide front-end funding of infrastructure, there is a potential for double payment of capital costs due to future principal

payments on existing debt for public facilities. A credit is not necessary for interest payments if interest costs are not included in the impact fees. This type of credit is not necessary for any of the impact fees calculated herein as there is no outstanding debt for capacity expansions.

A third basic approach used to calculate impact fees is the plan-based method. This method is based on future capital improvements needed to accommodate new development. The plan-based method may be used for public facilities that have commonly accepted service delivery factors to determine the need for future projects or the jurisdiction plans to significantly increase the current level of service standards. If a plan-based approach is used to derive impact fees, the credit evaluations should focus on future dedicated revenues that will fund growth-related capital improvements. This type of credit is not necessary for the fees calculated herein.

### ***Site-Specific Credits***

If a developer constructs a system improvement that was included in the fee calculations, it will be necessary to either reimburse the developer or provide a credit against the fees in the area benefiting from the system improvement. Project improvements normally required as part of the development approval process are not eligible for credits or offsets against impact fees. Specific policies and procedures related to site-specific credits or developer reimbursements for system improvements should be addressed in the ordinance that establishes the City's fees.

Based on TischlerBise's experience, it is better for the City to establish a reimbursement agreement with the developer that constructs a system improvement rather than provide a credit off of the fee. The latter is often more difficult to administer because it creates unique fees for specific geographic areas. The reimbursement agreement should be limited to a payback period of no more than ten years and the City should not pay interest on the outstanding balance. The developer must provide sufficient documentation of the actual cost incurred for the system improvement. The City of Boulder should only agree to pay the lesser of the actual construction cost or the estimated cost used in the impact fee analysis. If the City pays more than the cost used in the fee analysis, there will be insufficient fee revenue. Reimbursement agreements should only obligate the City to reimburse developers annually according to actual fee collections from the benefiting area.

## Collection and Expenditure Zones

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The reasonableness of impact fees is determined in part by their relationship to the local government's burden to provide necessary public facilities. The need to show a benefit usually requires communities to evaluate collection and expenditure zones for public facilities that have distinct geographic service areas. Consideration of zones will enable the City to show that developments paying fees are benefiting from the provision of additional capital improvements.

TischlerBise recommends a citywide fee for all impact fee calculated herein. All improvements covered under the impact fee program are derived based on citywide demand and will have a citywide benefit.

## Appendix A. Land Use Memo and Demographic Data



**To:** Chris Meschuk, AICP  
Senior Planner, Department of Community Planning & Sustainability  
*City of Boulder*

**From:** Dwayne Guthrie, Ph.D., AICP, and Julie Herlands, AICP  
*TischlerBise*

**Date:** September 20, 2016

**RE:** Land Use Assumptions for Impact Fee/Excise Tax Studies

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Attached please find Draft Land Use Assumptions for the Impact Fee/Excise Tax Studies. This document will become an Appendix to the final report(s) developed for this assignment.

Please let us know if there are any comments or questions. Thank you.

## Appendix A: Demographic Data

The population, housing unit, and job projections contained in this document provide the foundation for the Impact Fee/Excise Tax update for the City of Boulder. To evaluate the demand for growth-related infrastructure from various types of development, TischlerBise prepared documentation on population, housing units, jobs, nonresidential floor area, Average Weekday Vehicle Trip Ends (AWVTE), and demand indicators by type and size of dwelling. These metrics (explained further below) are the service units and demand indicators that will be used in the impact fee update.

Impact fees are based on the need for growth-related improvements and they must be proportionate by type of land use. Demographic data and development projections will be used to demonstrate proportionality and anticipate the need for future infrastructure. All land use assumptions and projected growth rates are consistent with socioeconomic data from the 2015 Boulder Valley Comprehensive Plan Trends Report. In contrast to the Comprehensive Plan, that has a long-range horizon, impact fees/excise taxes require a quantitative analysis with a shorter focus. Typically, impact fee studies look out five to ten years, with the expectation that fees will be periodically updated (e.g., every 5 years). Infrastructure standards are calibrated using Fiscal Year 2015 data, with FY16 being the first projection year. In the City of Boulder, the fiscal year begins on January 1<sup>st</sup>.

### Impact Fee/Excise Tax Service Area

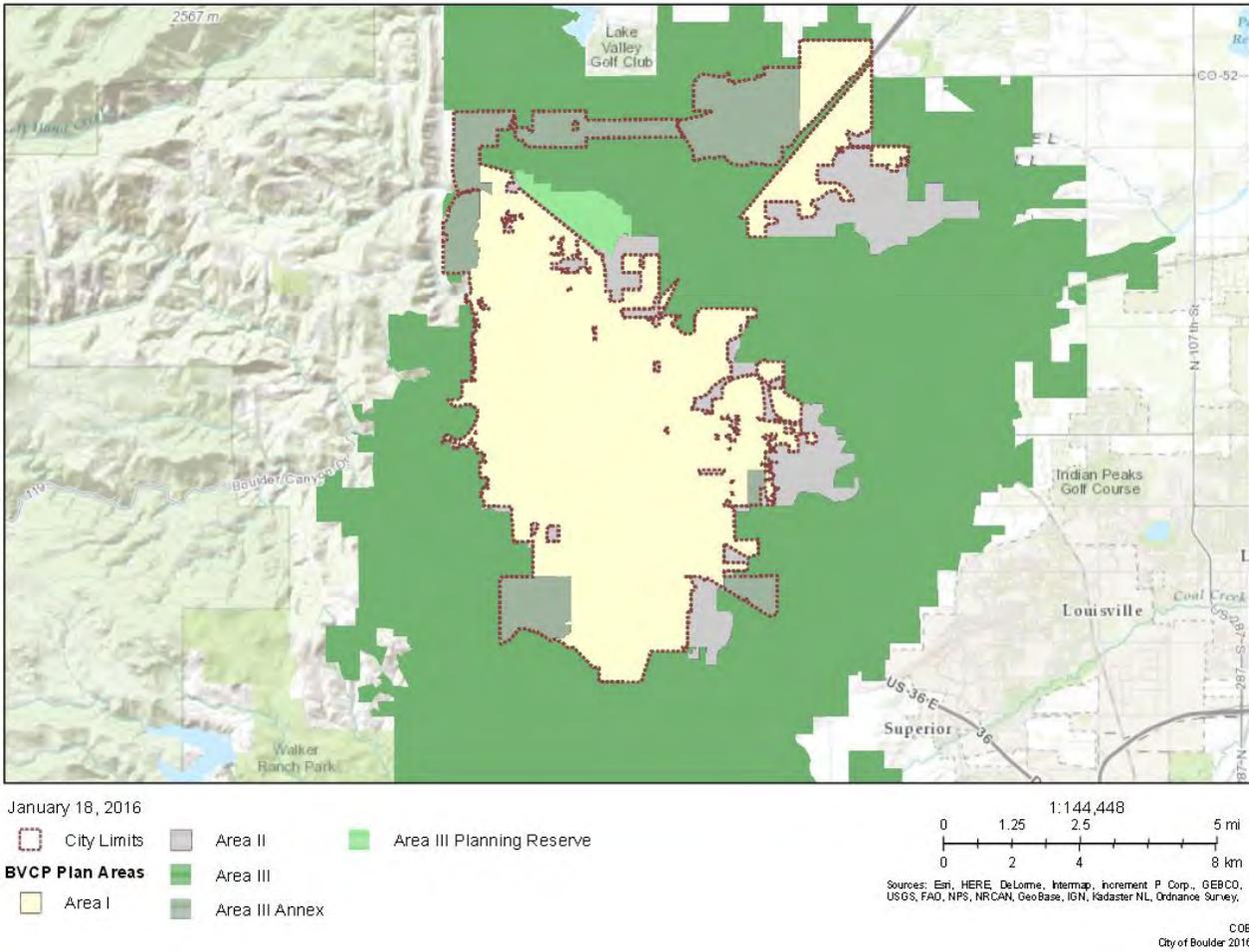
The City of Boulder is part of the Boulder Valley planning area, which is comprised of three areas:

- Area I is the urbanized area of the city.
- Area II is under county jurisdiction but where annexation to the city can be considered and where new urban development may occur coincident with adequate facilities and services.
- Area III is the remaining area in the Boulder Valley, generally under county jurisdiction and where the city and county intend to preserve existing rural land uses and character.<sup>1</sup>

The service area for the Impact Fee/Excise Tax study is the city limits. City estimates for 2015 and projections for 2015 to 2040 from the *2015 Boulder Valley Comprehensive Plan (BVCP) Trends Report* are used in this analysis and reflect development within Boulder City limits as defined in the BVCP. **For growth projections, city limits includes future development in both Area I and annexed portions of Area III.**

<sup>1</sup> 2015 BVCP Trends Report.

Figure A1: City of Boulder Planning Areas



## Summary of Growth Indicators

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Key development projections for the City of Boulder Impact Fee/Excise Tax study are housing units and nonresidential floor area, as shown in Figure A2. These projections will be used to estimate impact fee/excise tax revenue and to indicate the anticipated need for growth-related infrastructure. The goal is to have reasonable projections without being overly concerned with precision. Because impact fee methods are designed to reduce sensitivity to development projections in the determination of the proportionate-share fee amounts, if actual development is slower than projected, fee revenue will decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, the City will receive an increase in fee revenue, but will also need to accelerate infrastructure improvements to keep pace with the actual rate of development.

During the next five years, the 2015-2016 impact fee update expects an average increase of 282 housing units per year in the City. In comparison, 365 housing units on average were added per year from 2010 to 2014 and 387 units per year on average from 2004 to 2014.<sup>2</sup>

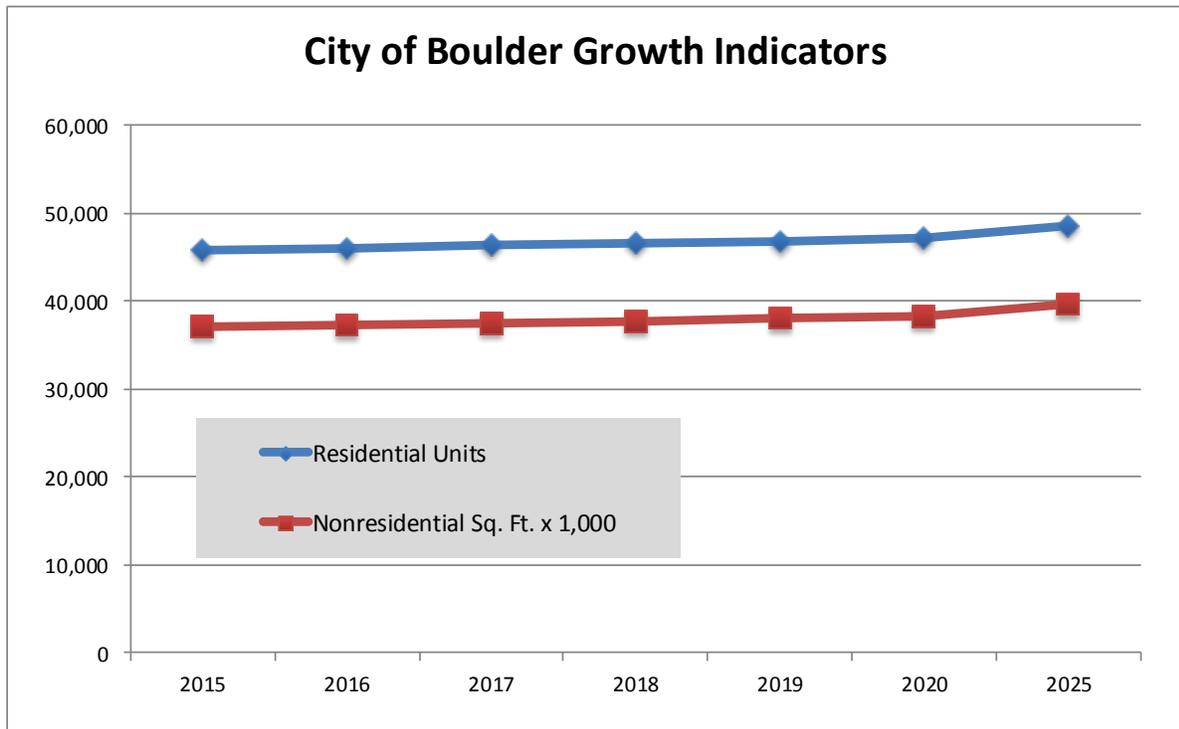
For nonresidential development, over the next five years, the City of Boulder expects an average increase of 264,000 square feet of nonresidential floor area per year. Current estimates of floor area by type of nonresidential development are discussed below (see Figure A10 and related text).

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<sup>2</sup> Because approximately 80 percent of recent housing development in the City is multifamily units, development activity is relatively “lumpy,” with yearly increases and decreases reflecting completion of multifamily buildings with multiple buildings coming online as opposed to single units.

**Figure A2: Summary of Development Projections and Growth Rates**

City of Boulder	10-Year Projection Period								Increase	Compound Growth Rate	
	One-Year Intervals					5-Year Interval		2015 to 2025 Average Annual			
	2015	2016	2017	2018	2019	2020	2025				
Residential Units	45,740	46,012	46,288	46,566	46,846	47,127	48,557	282	0.62%		
Nonresidential Sq. Ft. x 1,000	36,991	37,245	37,503	37,762	38,023	38,286	39,627	264	0.71%		

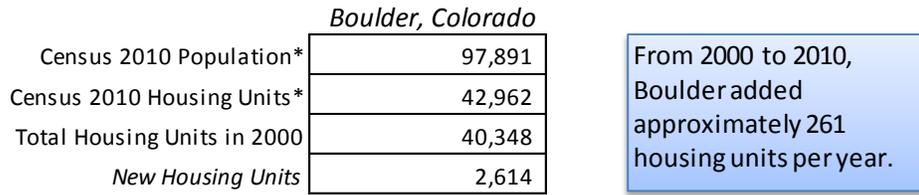


Sources: Figure A12: Population and Housing Unit Projections; Figure A13: Projected Jobs and Nonresidential Floor Area

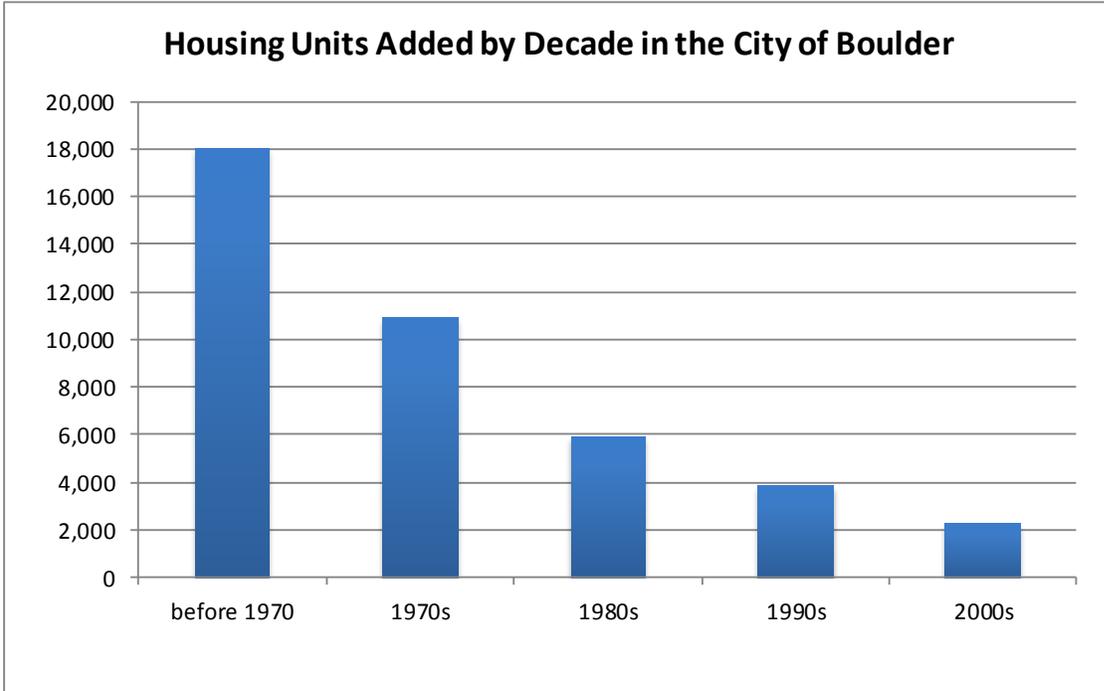
### Residential Construction

From 2000 to 2010, the City of Boulder increased by an average of 261 housing units per year. Figure A3 indicates citywide housing units added by decade in the city, according to data obtained from the U.S. Census Bureau and the 2015 BVCP Trends Report. Consistent with the nationwide decline in development activity during the Great Recession, residential construction slowed significantly from 2008 to 2010, thus decreasing the number of units added during the past decade. However, development activity has increased in recent years, and the City of Boulder estimates that over the last five years (2010 through 2014), approximately 365 units have been built per year.

**Figure A3: Housing Units by Decade**



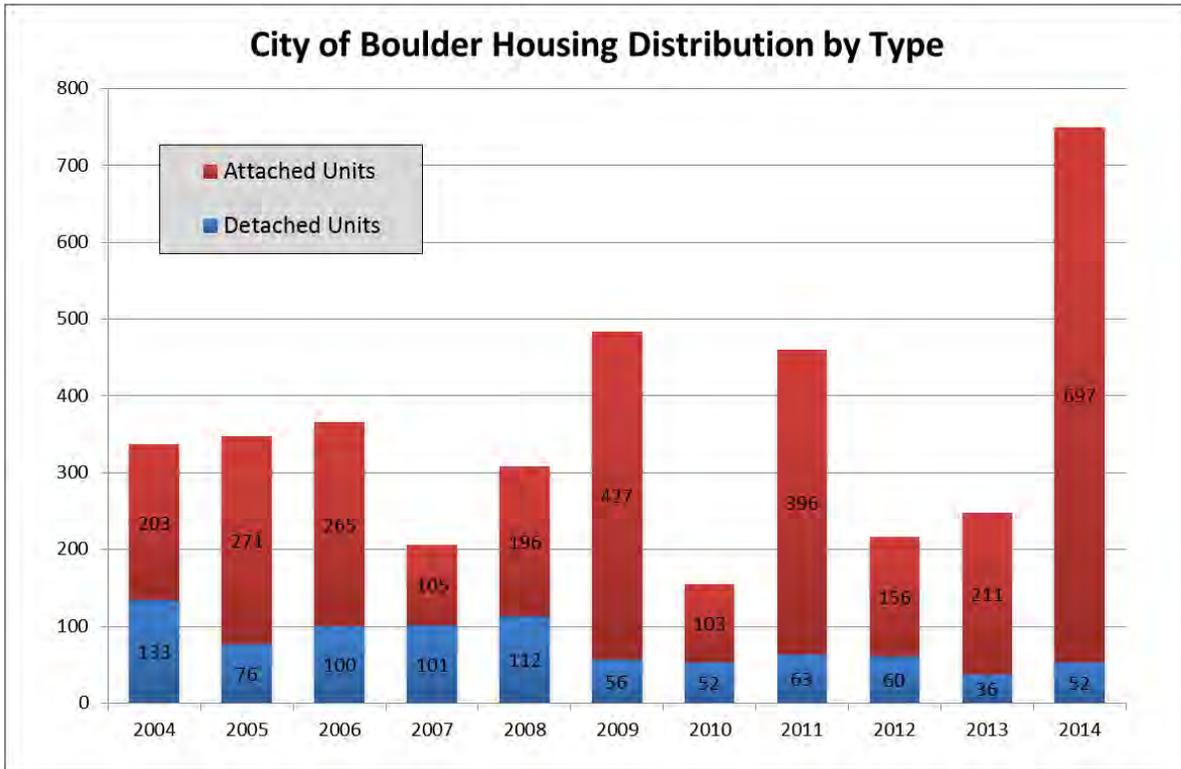
\* From City of Boulder, 2015 BVCP Trends Report.



Sources: City of Boulder, 2015 BVCP Trends Report; US Census American Community Survey

Furthermore, recent residential development in the City has been in multifamily structures rather than detached, single family homes. Figure A4 provides detail on residential construction over the last ten years illustrating the recent demand and absorption of multifamily units at a recent trend of approximately 80 percent multifamily attached and 20 percent single family detached, which is consistent with the distribution assumed in the BVCP projections

Figure A4: City of Boulder Housing Unit Distribution Trends by Type



Source: 2015 BVCP Trends Report

Figure A5: City of Boulder Housing Unit 10-Year and 5-Year Trends by Type

	10-Yr Trend	5-Yr Trend
Detached Units	708	263
Attached Units	2,827	1,563
<b>Total Net Increase</b>	<b>3,535</b>	<b>1,826</b>
<i>Average Annual</i>	354	365
Detached %	20%	14%
Attached %	80%	86%

Source: 2015 BVCP Trends Report

**Residential Demand Factors**

The 2010 Census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau has switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which is limited by sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). Part of the rationale for deriving fees by bedroom range, as discussed further below, is to address this ACS data limitation. Because townhouses generally have fewer bedrooms and less living space than detached units, fees by house size ensure proportionality and facilitate construction of affordable units.

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Impact fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. TischlerBise recommends that fees for residential development in Boulder be imposed according to the number of year-round residents per housing unit. Figure A6 indicates the average number of year-round residents per housing unit.

**Figure A6: Year-Round Persons per Unit by Type of Housing**

**2013 Summary by Two House Types: City of Boulder**

<i>Units in Structure</i>	<i>Persons</i>	<i>House-holds</i>	<i>Persons per Household</i>	<i>Housing Units</i>	<b><i>Persons per Housing Unit</i></b>	<i>Housing Mix</i>	<i>Vacancy Rate</i>
Single Unit*	57,742	22,479	2.57	23,284	2.48	52.9%	3%
All Other	36,747	19,828	1.85	20,767	1.77	47.1%	5%
Subtotal	94,489	42,307	2.23	44,051	<b>2.14</b>		4%
Group Quarters	<u>8,674</u>						
TOTAL	<u>103,163</u>						

\* Single unit includes detached and attached (e.g. townhouse).

Source: Tables B25024, B25032, B25033, and B26001.

2013 American Community Survey 1-Year Estimates, U.S. Census Bureau.

**Demand Indicators by Dwelling Size**

Custom tabulations of demographic data by bedroom range can be created from individual survey responses provided by the U.S. Census Bureau, in files known as Public Use Micro-data Samples (PUMS). PUMS files are available for areas of roughly 100,000 persons, and the City of Boulder is wholly contained in Public Use Micro-data Areas (PUMA) 803. At the top of Figure A7, in the cells with yellow shading, are the survey results for the City of Boulder. Unadjusted persons per dwelling, derived from PUMS data, were adjusted upward to match the control totals for the City of Boulder, as documented above in Figure A6.

**Figure A7: Average Number of Persons by Bedroom Range (All Housing Types)**

**City of Boulder 2013 Data**

Bedroom Range	Persons (1)	Vehicles Available (1)	Housing Units (1)	Boulder Hsg Mix	Unadjusted Persons/HU	Adjusted Persons/HU (2)
0-1	114	89	89	19%	1.28	<b>1.31</b>
2	220	162	121	25%	1.82	<b>1.86</b>
3	296	236	134	28%	2.21	<b>2.26</b>
4+	372	300	135	28%	2.76	<b>2.83</b>
Total	1,002	787	479		2.09	<b>2.14</b>

(1) American Community Survey, Public Use Microdata Sample for CO PUMA 803 (2013 One-Year unweighted data).  
 (2) Adjusted multipliers are scaled to make the average PUMS values match control totals based on American Community Survey 2013 1-year data for the City of Boulder.

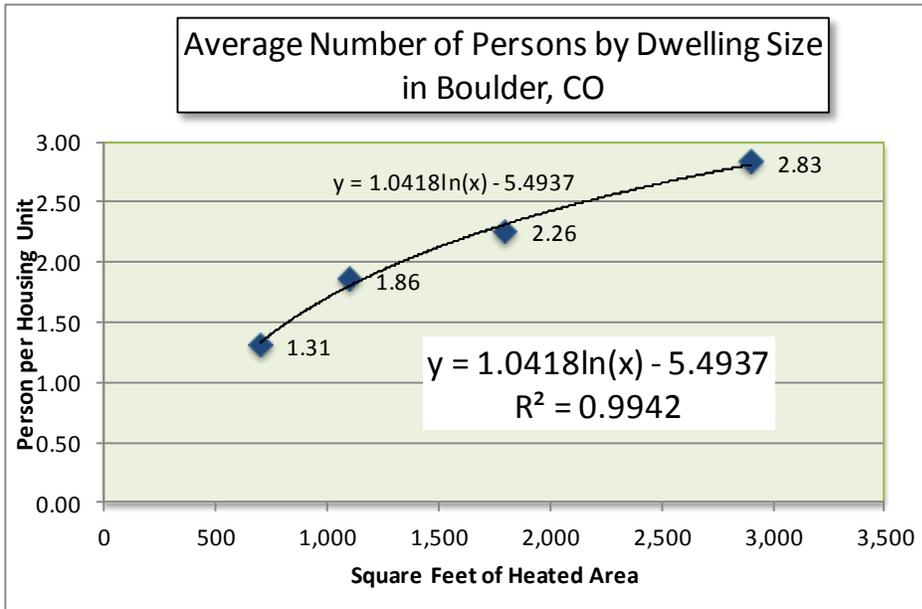
**Average Number of Persons by Dwelling Size**

Average floor area and number of persons by bedroom range are plotted in Figure A8, with a logarithmic trend line derived from four actual averages in the City. Using the trend line formula shown in the chart, TischlerBise derived the estimated average number of persons, by dwelling size, using five size thresholds. For the purpose of impact fees/excise taxes, TischlerBise recommends a minimum fee based on a unit size of 600 square feet and a maximum fee for units 3600 square feet or larger. Average dwelling sizes by bedroom range in the City was derived from the Property Assessor parcel database.

**Figure A8: Persons by Square Feet of Living Space (All Housing Types)**

Average dwelling size by bedroom range is from Property Assessor parcel database. Average persons per housing unit by bedroom range are derived from 2013 1-Year ACS PUMS data for CO PUMA 803 (City of Boulder).

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Persons	Square Feet	Persons
0-1	700	1.31	600	1.17
2	1,100	1.86	800	1.47
3	1,800	2.26	1000	1.70
4+	2,900	2.83	1200	1.89
			1400	2.05
			1600	2.19
			1800	2.32
			2000	2.42
			2200	2.52
			2400	2.61
			2600	2.70
			2800	2.78
			3000	2.85
			3200	2.91
			3400	2.98
			3600+	3.04



## Nonresidential Development Demand Indicators

In addition to data on residential development, the calculation of impact fees requires data on nonresidential development. TischlerBise uses the term “jobs” to refer to employment by place of work.

Figure A9 indicates the key nonresidential development prototypes that will be used to derive average weekday vehicle trips and Vehicle Miles of Travel (VMT). Current floor area estimates for industrial, commercial, and office/other services, are documented in the next section.

The prototype for future commercial development (i.e., retail and eating/drinking places) is an average-size Shopping Center (ITE code 820). For office and other services, General Office (ITE 710) is the prototype for future development. For future industrial development, two prototypes are included to reflect differences between Light Industrial (ITE code 110) and Warehouse (ITE code 150). (Current industrial estimates and projections use local data.) The remaining nonresidential land use categories included below are anticipated to be included in the impact fee schedule. ITE data for nonresidential land uses are used to reflect the relative average demand on the system from different types of land uses to be used in limited parts of the Impact Fee/Excise Tax Study—Police Impact Fee update and the Multimodal Transportation Funding Study. Further adjustments are anticipated to be made regarding these assumptions particularly for the Multimodal Transportation components of the Study as it progresses.

**Figure A9: Nonresidential Service Units per Development Unit**

<i>Nonres. Category#</i>	<i>ITE Code</i>	<i>Nonresidential Land Use</i>	<i>Development Unit</i>	<i>ITE Trip Rate per Development Unit</i>	<i>Employees per Development Unit*</i>	<i>Sq. Ft. per Employee*</i>
1	820	Retail / Restaurant / Service	1,000 Sq Ft	42.7	2.51	399
2	710	Office	1,000 Sq Ft	11.03	3.59	279
3	110	Light Industrial <sup>^</sup>	1,000 Sq Ft	6.97	2.31	433
4	150	Warehousing <sup>^</sup>	1,000 Sq Ft	3.56	0.92	1,087
5	520	Institutional <sup>**</sup>	1,000 Sq Ft	14.03	0.81	1,235
6	610	Hospital	1,000 Sq Ft	13.22	2.94	340
7	620	Nursing Home/Assisted Living	Bed	2.74	0.84	na
8	310	Lodging	Room	8.17	0.57	na

\* Factors derived from ITE trip data except Retail and Office, which is derived from local data (parcel database and current jobs)

<sup>^</sup> Two industrial categories are included here for use in the Impact Fee schedule due to different demand indicators between industrial subcategories.

\*\* Institutional = E.g., schools, churches

Sources: Trip Generation, Institute of Transportation Engineers (ITE), 9th Edition (2012);

Boulder County parcel database for City of Boulder (TischlerBise analysis); QCEW 2014 (CO Dept. of Labor and Employment)

Figure A10 provides the estimate of number and type of jobs located in the City of Boulder in 2015. The 2015 total job estimate of 98,510 is from the City of Boulder *2015 BVCP Trends Report* and reflects total of jobs of any type and any location including self-employment. To determine the estimate of jobs at nonresidential locations, TischlerBise used average annual 2014 Quarterly Census of Employment and Wages (QCEW) data for the City of Boulder and applied that distribution to the 2015 at-place estimate of 89,202.

**Figure A10: Jobs Estimate by Type**

	<i>Jobs 2014*</i>	<i>% of At-Place</i>	<i>Jobs 2015^</i>	<i>% of Total Jobs</i>
Retail / Restaurant / Services	21,232	24%	21,482	22%
Office / Institutional	52,647	60%	53,268	54%
Industrial	14,283	16%	14,451	15%
Total (At Place Jobs)	88,162	100%	89,202	91%
Self-Employed Estimate**			9,308	9%
<b>Total Jobs</b>			<b>98,510</b>	<b>100%</b>

\* Colorado Dept. of Labor and Employment, *Quarterly Census of Employment and Wages (QCEW) 2014 average annual.*

^ City of Boulder 2015 for estimate of at-place jobs and self-employed; distributed based on QCEW 2014 data.

\*\* City of Boulder 2015 estimate.

Using the above data and nonresidential floor area from the City’s parcel database, average square feet per job (and jobs per 1,000 square feet) can be derived. The City currently has approximately 37 million square feet of nonresidential building space in 2015. Dividing floor area by jobs indicates current averages by type of development as shown in Figure A11.

**Figure A11: Nonresidential Floor Area Estimates and Demand Factors**

	<i>Sq. Ft.*</i>	<i>Jobs 2015^</i>	<i>% Jobs Distribution</i>	<i>Sq. Ft. per Job</i>	<i>Jobs per 1,000 Sq. Ft.</i>
Retail / Restaurant / Services	8,565,611	21,482	24%	399	2.51
Office / Institutional	14,848,416	53,268	60%	279	3.59
Industrial**	13,576,996	14,451	16%	940	1.06
Total Nonresidential	36,991,023	89,202	100%		

\* County parcel database for City of Boulder; TischlerBise analysis

^ City of Boulder 2015 for estimate of at-place jobs and self-employed; distributed based on QCEW 2014 data.

\*\* Industrial jobs and square footage reflects the estimated aggregated industrial development of all subcategories in the City of Boulder; therefore the blended average jobs per 1,000 sq. ft. differs from Figure A10.

**Detailed Land Use Assumptions**

Demographic data shown in Figure A12 will be key inputs for the City of Boulder’s impact fee/excise tax update. Cells with gray shading are from the *2015 BVCP Trends Report*. Per the City projections, it is anticipated that the City will reach residential buildout at 52,000 housing units and 123,000 residents, which occurs prior to 2040.

New housing development is assumed to be predominantly multifamily development. Using recent trends, as shown above in Figure A4 from the *2015 BVCP Trends Report*, new housing units are assumed to be 20 percent single family and 80 percent multifamily.

**Figure A12: Population and Housing Unit Projections**

	2015	Projections ==>					5-Year Intervals					25-Year Net Increase
		Base Yr	1	2	3	4	5	10	15	20	25	
<b>Cumulative Population</b>												
Population^	104,808	105,566	106,324	107,082	107,840	108,598	112,388	116,178	119,968	123,000	18,192	
Annual Net Increase in Population		758	758	758	758	758	758	758	758	0		
<b>Cumulative Housing Units</b>												
		New %										
Housing Units^	45,740	46,012	46,288	46,566	46,846	47,127	48,557	50,032	51,551	52,010	6,270	
Single Family Hsg Units	20%	24,242	24,297	24,352	24,407	24,463	24,520	24,806	25,101	25,404	1,254	
All Other Hsg Units	80%	21,498	21,716	21,937	22,159	22,382	23,752	24,931	26,146	26,514	5,016	
Annual Net Increase in Housing Units		272	276	278	279	281	290	298	307	0	6,270	

^ Includes Colorado University group quarters population (in dormitories) and residential units (apartments)  
Source: 2015 BVCP Trends Report; TischlerBise analysis

Figure A13 provides projected jobs, by type of nonresidential floor area. Cells with gray shading are from the *2015 BVCP Trends Report*.

Projected jobs (shown at top of the figure) were converted to projections of nonresidential floor area (at the bottom of the figure) using the current multipliers listed above in Figure A9. The projected “jobs to population” ratio is shown at the bottom of the figure for informational purposes.

Figure A13: Projected Jobs and Nonresidential Floor Area

	Projections ==>										25-Year Net Increase	
	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040		
	Base Yr	1	2	3	4	5	10	15	20	25		
<b>Cumulative Jobs</b>												
Total Employment	98,510	99,187	99,871	100,561	101,255	101,954	105,523	109,219	113,047	117,010	18,500	
Annual Net Increase in Jobs		677	685	689	694	699	724	750	776	804		
	% of Total											
Retail / Restaurant / Services	22%	21,482	21,630	21,779	21,930	22,081	22,233	23,012	23,818	24,652	25,517	4,034
Office / Institutional	54%	53,268	53,634	54,004	54,377	54,753	55,131	57,061	59,059	61,129	63,272	10,003
Industrial	15%	14,451	14,551	14,651	14,752	14,854	14,957	15,480	16,022	16,584	17,165	2,714
Total (At Place Jobs)		89,202	89,815	90,435	91,059	91,688	92,321	95,553	98,899	102,365	105,954	16,752
Self-Employed Estimate	9%	9,308	9,372	9,437	9,502	9,567	9,633	9,971	10,320	10,682	11,056	1,748
<b>Total Jobs</b>		98,510	99,187	99,871	100,561	101,255	101,954	105,523	109,219	113,047	117,010	18,500
<b>Annual Net Increase in Jobs</b>												
Retail / Restaurant / Services			148	149	150	151	152	158	163	169	175	4,034
Office / Institutional			366	370	373	375	378	391	405	420	435	10,003
Industrial			99	100	101	102	103	106	110	114	118	2,714
Total (At Place Jobs)			613	620	624	629	633	655	679	703	728	16,752
Self-Employed Estimate			64	65	65	66	66	68	71	73	76	1,748
<b>Total Jobs</b>			677	685	689	694	699	724	750	776	804	18,500
<b>Nonresidential Square Footage</b>												
	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	9,496,055	9,828,568	10,172,884	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	16,461,497	17,037,966	17,634,895	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	15,059,113	15,588,778	16,137,243	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	41,016,665	42,455,312	43,945,021	6,953,998
Annual Net Increase in Nonres Sq. Ft.			254,414	257,331	259,132	260,946	262,773	272,099	281,757	291,757	302,113	
Population		104,808	105,566	106,324	107,082	107,840	108,598	112,388	116,178	119,968	123,000	18,192
Jobs to Population Ratio		0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.95	1.02

Source: 2015 BVCP Trends Report; TischlerBise analysis



## **2016 Transportation Development Impact Fee Study**

Prepared for:  
City of Boulder, Colorado

September 20, 2016



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## EXECUTIVE SUMMARY

As part of the 2016 transportation work scope, TischlerBise will prepare three products for the City of Boulder. This document focuses on the capital cost of transportation improvements needed to accommodate new development assuming more rigorous Development Impact Fee (DIF) legal requirements. A second work product will provide a Development Excise Tax (DET) study for a broader set of growth-related transportation improvements. The third work product will focus on operational costs and on-going maintenance of Boulder's multimodal transportation system.

As a revenue raising mechanism, an excise tax has less restrictive legal constraints than an impact fee. The latter is a form of land use regulation, imposed under the City's police power, for the purpose of health, safety, and welfare. In Colorado, local governments must establish an impact fee at a level no greater than necessary to defray projected impacts caused by, and directly related to, proposed development. Also, impact fees may only be used for capital facilities, excluding replacement of infrastructure and correcting existing deficiencies [see CRS 29-20-104.5].

This report complies with Colorado's impact fee enabling legislation and applicable legal precedents. The proposed 2016 Transportation DIF schedule is proportionate and reasonably related to the growth cost of capital facilities needed to serve new development [see CRS 29-20-104.5 (1) and (2)]. Specific costs have been identified using local data and current dollars. With input from City staff, TischlerBise determined demand indicators for transportation capacity and calculated proportionate share factors to allocate costs by type of development. Transportation DIF methodologies also identify the extent to which new development is entitled to various types of credits to avoid potential double payment of growth-related capital improvements.

## GENERAL IMPACT FEE METHODS

In contrast to project-level improvements, impact fees fund the growth cost of infrastructure that will benefit multiple development projects, or the entire jurisdiction (referred to as system improvements). There are three general methods for calculating one-time development charges for public facilities needed to accommodate new development. The choice of a particular method depends primarily on the timing of infrastructure construction (past, concurrent, or future) and service characteristics of the facility type being addressed. Each method has advantages and disadvantages in a particular situation, and can be used simultaneously for different cost components.

Reduced to its simplest terms, the process of calculating infrastructure costs for new development involves two main steps: (1) determining the cost of development-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, impact fee calculations can become quite complicated because of the many variables involved in defining the relationship between development and the need for facilities within the designated service area. The following paragraphs discuss three basic methods and how those methods can be applied in Boulder.

### ***Cost Recovery (past improvements)***

The rationale for recoupment, often called cost recovery, is that new development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which new growth will benefit. This methodology is often used for utility systems that must provide adequate capacity before new development can take place.

**Incremental Expansion (concurrent improvements)**

The incremental expansion method documents current level-of-service (LOS) standards for each type of public facility, using both quantitative and qualitative measures. This approach ensures that there are no existing infrastructure deficiencies or surplus capacity in infrastructure. New development is only paying its proportionate share for growth-related infrastructure. Revenue will be used to expand or provide additional facilities, as needed, to accommodate new development. An incremental expansion cost method is best suited for public facilities that will be expanded in regular increment to keep pace with development.

**Plan-Based (future improvements)**

The plan-based method allocates costs for a specified set of improvements to a specified amount of development. Improvements are typically identified in a capital improvements plan and development potential is identified by land use assumptions. There are two options for determining the cost per service unit: 1) total cost of a public facility can be divided by total service units (average cost), or 2) the growth-share of the public facility cost can be divided by the net increase in service units over the planning timeframe (marginal cost).

**Credits**

Regardless of the methodology, a consideration of “credits” is integral to legally defensible impact fee studies. There are two types of “credits” with specific characteristics, both of which should be addressed in studies and ordinances.

- First, a revenue credit might be necessary if there is a double payment situation and other revenues are contributing to the capital costs of infrastructure to be funded by DIF revenue. This type of credit is integrated into the DIF calculation, thus reducing the gross amount. In contrast to some studies that only provide general costs, with credits at the back-end of the analysis, Boulder’s 2016 transportation DIF study uses growth shares to provide an up-front reduction in total costs. Also, the 2016 study provides DIF revenue projections to verify that new development will fully fund the growth share of future infrastructure costs (i.e., only DIF revenue will pay for growth costs).
- Second, a site-specific credit or developer reimbursement might be necessary for dedication of land or construction of system improvements to be funded by DIF revenue. This type of credit is addressed in the administration and implementation of the impact fee program.

**CONCLUSIONS**

Because local government must quantify reasonable impacts caused by, and directly related to, proposed development [see CRS 29-20-104.5 (1) and (2)], the 2016 transportation study yields lower charges on new development. Proposed dollar amounts shown below are expected to yield just over one million dollars over the next ten years, which will cover the growth cost of planned enhancements to streets. In comparison, the current Transportation DET rate schedule will yield approximately \$11.5 million over the next ten years. TischlerBise also finds the current Transportation DET rate schedule to be inconsistent with best practices to ensure impact fees are proportionate to the need for capital facilities. For residential development, TischlerBise recommends a fee schedule based on dwelling size (measured by square feet of finished living space). To be proportionate, transportation impact fees should also differentiate by type of nonresidential development as shown in Figure DIF2. For ease of administration and comparison, the transportation DIF schedule is consistent with Boulder’s 2016 DIF study for all other types of infrastructure.

**PROPOSED 2016 TRANSPORTATION DEVELOPMENT IMPACT FEE**

Figure DIF1 summarizes the methods and cost components used in Boulder’s 2016 Transportation DIF study. Both the DIF and DET studies share the same types of improvements. The key difference between the two is that the proposed DET will fund multimodal improvements, such as bus, bike, pedestrian facilities and the DIF will fund street improvements for vehicles and freight.

**Figure DIF1: Proposed Transportation DIF Methods and Cost Components**

<i>Type of Improvements</i>	<i>Cost Allocation</i>	<i>Service Area</i>	<i>Plan-Based Method (future)</i>
<i>Streets</i>	Vehicle Miles of Travel	Citywide	Arterial/Collector Enhancements and Intersection Improvements

Figure DIF2 shows the proposed 2016 Transportation DIF schedule. For residential development, proposed amounts are based on square feet of finished living space. Garages, porches and patios are excluded from the DIF assessment. For nonresidential development, DIF rates are stated per square foot of floor area, except for "Nursing Home / Assisted Living" (per bed) and "Lodging" (per room). The proposed DIF schedule for nonresidential development is designed to provide a reasonable DIF amount for general types of development. For unique developments, the City may allow or require an independent assessment.

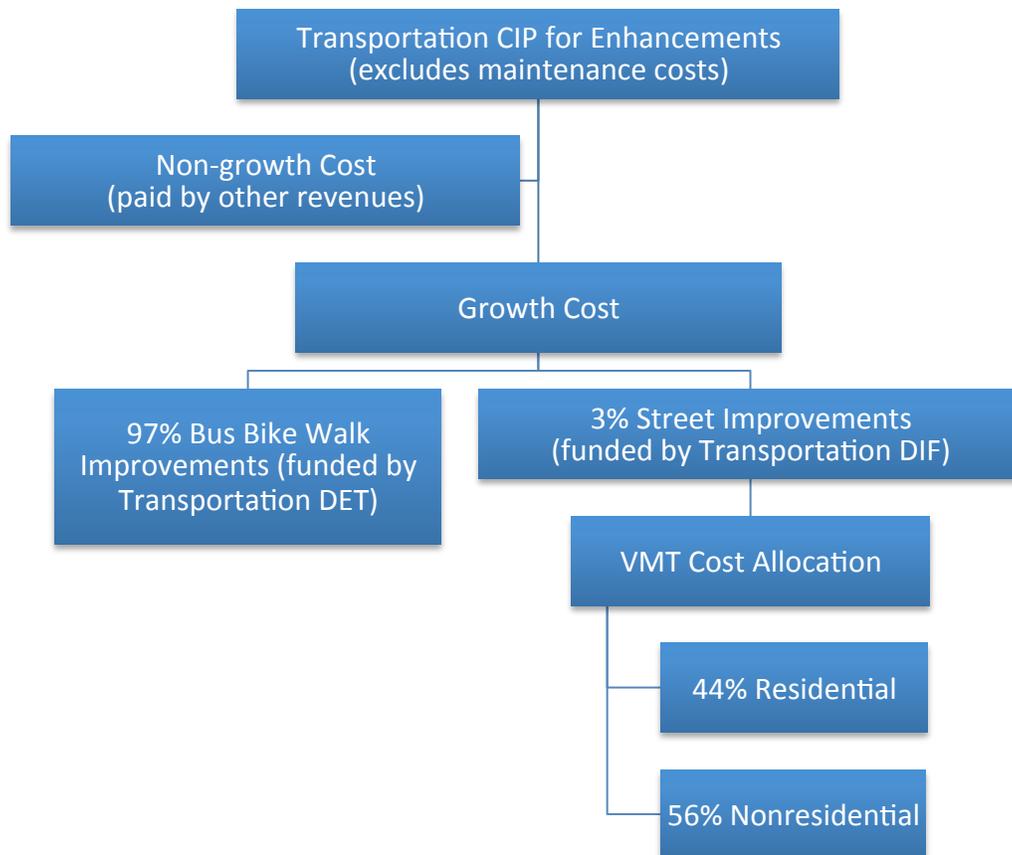
**Figure DIF2: Proposed 2016 Transportation DIF Schedule**

<b>2016 Transportation DIF</b>	<i>Development Unit</i>	<i>Proposed Transportation DIF</i>
<b>Residential (by square feet of finished living space)</b>		
600	Dwelling Unit	\$98
800	Dwelling Unit	\$125
1000	Dwelling Unit	\$146
1200	Dwelling Unit	\$164
1400	Dwelling Unit	\$178
1600	Dwelling Unit	\$191
1800	Dwelling Unit	\$202
2000	Dwelling Unit	\$212
2200	Dwelling Unit	\$221
2400	Dwelling Unit	\$229
2600	Dwelling Unit	\$237
2800	Dwelling Unit	\$244
3000	Dwelling Unit	\$250
3200	Dwelling Unit	\$256
3400	Dwelling Unit	\$262
3600+	Dwelling Unit	\$267
<b>Nonresidential</b>		
Retail / Restaurant	Square Foot	\$0.53
Office	Square Foot	\$0.22
Light Industrial	Square Foot	\$0.14
Warehousing	Square Foot	\$0.07
Institutional	Square Foot	\$0.18
Hospital	Square Foot	\$0.26
Nursing Home / Assisted Living	Bed	\$55
Lodging	Room	\$165

**TRANSPORTATION DIF**

The 2016 Transportation DIF study uses a plan-based methodology that includes improvements for vehicular travel on streets. Figure DIF3 provides an overview of the methodology. This study documents the general cost allocation between residential and nonresidential development, including detailed calculations used to derive specific DIF amounts by dwelling size and type of nonresidential development. From the universe of all projects in Boulder’s Capital Improvement Plan (CIP), which is based on the Transportation Master Plan (TMP), staff and consultants identified transportation improvements needed to accommodate new development over ten years. This study refers to these projects as “enhancements” to differentiate them from “maintenance” projects that are not eligible for impact fee funding. Also, each project was evaluated to quantify the reasonable impacts caused by, and directly related to, proposed development, as required by Colorado’s impact fee enabling legislation. These “growth costs” will be funded by DET and DIF revenue, with non-growth costs funded by other revenues. Staff determined that 97% of enhancement projects are for Bus Bike Walk facilities to be funded by the Transportation DET (primarily moving people), with the remaining 3% for street improvements (i.e. primarily moving vehicles and freight) to be funded by the Transportation DIF. The growth cost of street improvements was allocated according to estimated Vehicle Miles of Travel (VMT) for general types of development.

**Figure DIF3: DIF Calculation Flow Chart**



### GROWTH SHARE OF FUTURE TRANSPORTATION ENHANCEMENTS

The 9.9% growth share is based on the projected average annual increase in person trips to and from Boulder from 2010 to 2035 (illustrated by Figure 3-22 in Boulder's State of the System Report). Because internal-external travel is most evident during morning and afternoon peak hours, it is a key factor in our perception of traffic congestion. Figure DIF4 provides a reasonable means of quantifying the minimum impact of growth on transportation facilities.

**Figure DIF4: Person Trips To and From Boulder**

Communities	2010	2035	Change	%Change
Broomfield	28,130	39,254	11,124	39.5%
Denver	13,643	14,416	773	5.7%
DIA	2,962	4,139	1,176	39.7%
ERIE	11,993	24,546	12,554	104.7%
Lafayette	18,613	21,564	2,950	15.9%
Longmont	40,976	47,774	6,798	16.6%
Lyons	1,892	1,968	77	4.0%
Louisville	25,799	26,214	415	1.6%
Superior	9,988	12,073	2,085	20.9%
TOTAL	153,995	191,947		

0.99% <= Average Annual Growth Rate

**9.9% <= Percent Increase Over Ten Years**

Data source

H:\Projects - Open\A-E\BOULDER Transit Master Plan 2012.777\05 Background\Travel Demand Model\Person\_Trips

### CAPITAL IMPROVEMENTS PLAN FOR TRANSPORTATION FACILITIES

Colorado's enabling legislation requires local government to quantify the reasonable impacts on capital facilities caused by, and directly related to proposed development. Boulder's current practice is to derive citywide impact fees and limit fee expenditures to projects that will benefit new development throughout the entire city. As shown in Figure DIF5, the ten-year growth cost of planned street enhancement projects is approximately \$1.12 million. Given the fact that Boulder is not expanding geographically (i.e. no significant additional transportation infrastructure on the periphery), the improvements listed below are primarily enhancements to existing facilities. Thus existing and new development will equally benefit from all projects except those with a 100% growth share. The four line items that are 100% attributable to new development are for development coordination, TIP scoping/prioritization and corridor studies. To account for grant funds, four line items in the table below have growth cost ranging from 16.1% to 49.5% of the local cost. These percentages were derived after applying the 9.9% growth allocation factor to the total project cost.

Figure DIF5: Growth Cost of Transportation Enhancements

CIP#	Description	Ten-Year Cost (less grants)	Growth-Related Enhancement Costs			Growth Share of Local Cost
			FY16-25 Bus Bike Walk	FY16-25 Streets		
310TR151NG	* Boulder Slough - 30th	Local share of multiuse path (to	\$96,000	\$47,500	\$0	49.5%
310TR480NC	East Arapahoe	Transportation Corridor Study	\$100,000	\$75,000	\$25,000	100.0%
310TR154NG	* 19th - Norwood to Up	Local share of reconstruction &	\$157,000	\$16,800	\$8,400	16.1%
310TD021OC	Citywide	Intersection improvements	\$200,000	\$4,000	\$15,800	9.9%
310TR479OC	30th & Colorado	Transportation Corridor Study	\$200,000	\$150,000	\$50,000	100.0%
310TR157NG	Citywide	Bldr Co/City Joint TIP Scoping &	\$289,000	\$289,000	\$0	100.0%
310D004OC	Citywide Funds 2810 & 3	Development coordination	\$450,000	\$337,500	\$112,500	100.0%
310TD019NC	28th St - Baseline to Iris	Complete street elements; turn	\$470,000	\$42,000	\$4,700	9.9%
310BJ002NC	Bluff & 30th St	Traffic signal	\$532,000	\$10,500	\$42,100	9.9%
310TR692OC	Citywide	Tributary greenways	\$585,000	\$57,900	\$0	9.9%
310TR112OC	Citywide	Pedestrian facilities enhance	\$750,000	\$74,300	\$0	9.9%
3102ABCK02	Boulder Creek	Path improvements	\$770,000	\$76,200	\$0	9.9%
310TR743NC	28th St - Valmont to Iris	Multimodal improvements	\$860,000	\$76,900	\$8,500	9.9%
3102ABCK01	Boulder Creek	Path lighting	\$979,680	\$97,000	\$0	9.9%
310TR692OC	Citywide	Bikeway facilities enhancement	\$1,350,000	\$133,700	\$0	9.9%
310TR152NG	* Broadway - Violet to H	Local share of reconstruction &	\$1,825,000	\$661,000	\$34,800	38.1%
3102ABCK03	Boulder Creek - Arapaho	Underpass	\$2,365,000	\$234,100	\$0	9.9%
310TR156NC	Boulder Creek & Aprapa	Reconstruction and multimoda	\$2,500,000	\$248,300	\$0	9.9%
310TR153NG	* 30th St & Colorado	Local share of bike/ped underp	\$3,150,000	\$588,500	\$149,600	23.4%
310TR773OC	Citywide	Pedestrian facilities repair/repl	\$3,774,000	\$375,500	\$0	9.9%
310TR003OC	Citywide	Major capital reconstruction an	\$4,800,000	\$436,900	\$39,700	9.9%
310TR052OG	Citywide Funds 2800 & 2	TIP local match & TMP implem	\$18,363,000	\$1,642,800	\$182,500	9.9%
Years 7-10	Citywide	Additional CIP Projects	\$29,710,500	\$3,783,600	\$449,100	14.2%
Action Plan	Railroad Quite Zone Improvements		\$5,000,000	\$712,319	\$0	14.2%
Action Plan	HOP Conversion to Clean Vehicles		\$12,000,000	\$1,709,567	\$0	14.2%
Action Plan	Community Transit Network Routes Converted to BRT		\$12,833,000	\$1,828,239	\$0	14.2%
Action Plan	East Circulator / Williams Village Improvements		\$16,301,000	\$2,322,304	\$0	14.2%
Action Plan	New and Modified Community Transit Network Routes		\$26,165,000	\$3,727,568	\$0	14.2%
Action Plan	Transit Capital Plan		\$38,900,000	\$5,541,845	\$0	14.2%
Action Plan	Other Bike/Ped Enhancements		\$50,757,000	\$7,231,040	\$0	14.2%
Ten-Year Total =>			\$236,232,180	\$32,531,881	\$1,122,700	14.2%
				97%	3%	

\* Projects with grant funding; enhancement cost growth share is approximately 9.9% of total cost

<b>\$33,654,581</b> <= Ten Year Growth Cost
\$202,577,599 <= Total to be funded by other revenues

**VEHICLE MILES OF TRAVEL**

Figure DIF5 above indicates street improvements to provide additional vehicular capacity account for 3% of the growth cost, or \$1.12 million over the next ten years. The streets component of the Transportation DIF is derived from custom trip generation rates (see Appendix A), trip rate adjustment factors, and the capital cost per Vehicle Mile of Travel (VMT). The latter is a function of average trip length, trip-length weighting factor by type of development, and the growth cost of transportation improvements. Each component is described below.

VMT is a measurement unit equal to one vehicle traveling one mile. In the aggregate, VMT is the product of vehicle trips multiplied by the average trip length<sup>1</sup>. The average trip length of 3.8 miles within Boulder is from the 2012 Modal Shift Report, as derived from a survey of residents (i.e. household travel diaries).

### **Vehicular Trip Generation Rates**

Boulder's 2016 Transportation DIF study is based on Average Weekday Vehicle Trip Ends (AWVTE). For residential development, trip rates are customized using demographic data for Boulder, as documented in Appendix A. For nonresidential development, trip generation rates are from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 9<sup>th</sup> Edition 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate transportation development fees, trip generation rates require an adjustment factor to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor is 50%. As discussed further below, the DIF methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

### **Adjustments for Commuting Patterns and Pass-By Trips**

Residential development has a slightly larger trip adjustment factor of 52% to account for commuters leaving Boulder for work. According to the Boulder Valley 2012 Modal Shift report (see Figure 46), work or work commute trips by single and multiple occupancy vehicles accounted for 15.9% of production trips (i.e., all out-bound trips, which are 50% of all trip ends). Also, Table 112 (Question 24) in the 2014 Boulder Community Survey indicates that 19% of resident workers traveled outside Boulder for work. In combination, these factors ( $0.159 \times 0.50 \times 0.19 = 0.02$ ) support the additional 2% allocation of trips to residential development.

For commercial development, the trip adjustment factor is less than 50% because retail development and some services, like schools and daycare facilities, attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, ITE indicates that 34% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66% of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 66% multiplied by 50%, or approximately 33% of the trip ends.

### **Trip Length Weighting Factor by Type of Land Use**

The transportation DIF methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As shown in Figure DIF6, trips associated with residential development are approximately 113% of the average trip length. The residential trip length adjustment factor includes data on work commute, driving passengers, social/recreational purposes and other

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<sup>1</sup> Typical VMT calculations for development-specific traffic studies, along with most transportation models of an entire urban area, are derived from traffic counts on particular road segments multiplied by the length of that road segment. For the purpose of the DIF study, VMT calculations are based on attraction (inbound) trips to development located in the service area, with trip length limited to the road network considered to be system improvements (arterials and collectors). This refinement eliminates pass-through or external-external trips, and travel on roads that are not system improvements (e.g. state highways).

work/business travel. Conversely, shopping and eating trips associated with commercial development are roughly 68% of the average trip length while other nonresidential development typically accounts for trips that are 72% of the average for all trips.

**Figure DIF6: Average Trip Length by Trip Purpose in Boulder**

Type of Development	Trip Purpose	Miles Percent	Miles	Trips Percent	Trips	Miles Per Trip	Weighting Factor
1-Residential	Work Commute	14.9%	2,719	9.2%	444	6.1	<b>1.13</b>
1-Residential	Drive a Passenger	6.6%	1,205	4.8%	232	5.2	
1-Residential	Change Mode & Other	2.9%	529	2.5%	121	4.4	
1-Residential	Social/Recreational	15.0%	2,738	13.4%	647	4.2	
1-Residential	Go Home	35.4%	6,461	34.7%	1,676	3.9	
1-Residential	Other Work/Business	3.7%	675	4.6%	222	3.0	
<b>1-Residential Total</b>			<b>14,327</b>		<b>3,342</b>	<b>4.3</b>	
2-Retail/Restaurant	Shopping	8.4%	1,533	11.1%	536	2.9	<b>0.68</b>
2-Retail/Restaurant	Eat a Meal	4.0%	730	7.1%	343	2.1	
<b>2-Retail/Restaurant Total</b>			<b>2,263</b>		<b>879</b>	<b>2.6</b>	
3-Other Nonresidential	Personal Business	5.7%	1,040	6.3%	304	3.4	<b>0.72</b>
3-Other Nonresidential	School	3.4%	621	6.3%	304	2.0	
<b>3-Other Nonresidential Total</b>			<b>1,661</b>		<b>609</b>	<b>2.7</b>	
<b>TOTAL</b>			<b>100.0%</b>	<b>18,251</b>	<b>100.0%</b>	<b>4,830</b>	<b>3.8</b>

Data Source: Figures 44 and 45, Modal Shift in Boulder Valley, 2012.

**DEVELOPMENT PROTOTYPES AND PROJECTED VMT**

The relationship between the amount of development within Boulder and Vehicle Miles of Travel (VMT) is documented in Figure DIF7. At the top are data on existing and projected development units. The lower portion of the table indicates the cost allocation for street improvements. VMT per development unit is equal to AWWTE x Trip Adjustment Factor x Mode Share for Single and Multiple Occupancy Vehicles (SOV & MOV) x Trip Length Weighting Factor x Average Trip Length. Based on projected development in Boulder over the next ten years, residential development should pay for approximately 44% of the growth cost of street improvements, with the remaining 56% funded by nonresidential development.

**Figure DIF7: Projected VMT Increase to Development within Boulder**

Development Type (1)	2015 Development Units (1)	2025 Development Units (1)	Additional Development Units
Single Unit Dwellings	24,242	24,806	564
Multiple Unit Dwellings	21,498	23,752	2,254
Industrial Sq Ft	13,576,996	14,547,603	970,607
Retail Sq Ft	8,565,611	9,174,939	609,328
Office & Other Services Sq Ft	14,848,416	15,904,789	1,056,373
Housing Unit Total	45,740	48,558	2,818
Nonres KSF Total	36,991,023	39,627,331	2,636,308

- (1) Land Use Assumptions, TischlerBise 2016.
- (2) Residential trip rates adjusted to Boulder demographics; nonresidential trip rates are national averages (ITE 2012).
- (3) Residential includes commuting pattern adjustment; Retail includes pass-by adjustment.
- (4) Residential mode share from Figure 1, 2012 Modal Shift; nonresidential mode share from Table 2 (primary mode) 2014 Employee Survey.
- (5) Derived from Figures 44+45, Modal Shift, 2012..
- (6) Figure 19, 2012 Modal Shift

**Streets Cost Allocation Based on Vehicle Miles of Travel**

Development Type	Avg Wkdy Veh Trip Ends per Dev Unit (2)	Trip Adjustment Factors (3)	SOV+MOV Mode Share (4)	Trip Length Weighting Factor (5)	Vehicle Miles of Travel per Dev Unit	Ten Year VMT Increase	Proportionate Share by Type of Dev
Single Unit Dwellings	8.17	52%	55.5%	113%	10.12	5,710	10.27%
Multiple Unit Dwellings	6.63	52%	55.5%	113%	8.22	18,519	33.31%
Industrial (per KSF)	3.56	50%	73.2%	72%	3.56	3,460	6.22%
Retail (per KSF)	42.70	33%	73.2%	68%	26.65	16,240	29.21%
Office & Other Services (per KSF)	11.03	50%	73.2%	72%	11.05	11,668	20.99%
Average Trip Length in miles (6) =>					3.80	55,598	100.00%
Ten Year Growth Cost of Street Improvements =>						\$1,122,700	
Cost per Additional VMT =>						\$20.19	

**COST ALLOCATION FOR STREET IMPROVEMENTS**

Input variables for Boulder’s 2016 Transportation DIF schedule are shown in Figure DIF8. Inbound VMT by type of development, multiplied by the capacity cost per VMT, yields the DIF amount. For example, Lodging generates 8.18 VMT per room, multiplied by the capital cost of \$20.19 per VMT, yields a DIF charge of \$165 per room (truncated) for street improvements.

The text below from Trip Generation (ITE 2012) supports the consultant’s recommendation to use ITE 820 Shopping Center as a reasonable proxy for all commercial development (i.e. retail and restaurants). The shopping center trip generation rates are based on 302 studies with an r-squared value of 0.79. The latter is a goodness-of-fit indicator with values ranging from 0 to 1. Higher values indicate the independent variable (floor area) provides a better prediction of the dependent variable (average

weekday vehicle trip ends). If the r-squared value is less than 0.50, ITE does not publish the value because factors other than floor area provide a better prediction of trip rates.

*“A shopping center is an integrated group of commercial establishments. Shopping centers, including neighborhood, community, regional, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, and health clubs. Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include out parcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied include peripheral buildings, it can be assumed that some of the data show their effect.”*

**Figure DIF8: Cost of Street Improvements Allocated by VMT**

**Residential DIF for Streets**

Square Feet of Living Space	Development Unit	AWVTE per Dev Unit (2)	Trip Adjustment Factors (3)	SOV+MOV Mode Share (4)	Trip Length Weighting Factor (5)	VMT per Dev Unit	Proposed Streets Component
600	Dwelling Unit	3.94	52%	55.5%	113%	4.88	\$98
800	Dwelling Unit	5.03	52%	55.5%	113%	6.23	\$125
1000	Dwelling Unit	5.87	52%	55.5%	113%	7.27	\$146
1200	Dwelling Unit	6.56	52%	55.5%	113%	8.13	\$164
1400	Dwelling Unit	7.14	52%	55.5%	113%	8.85	\$178
1600	Dwelling Unit	7.65	52%	55.5%	113%	9.48	\$191
1800	Dwelling Unit	8.09	52%	55.5%	113%	10.03	\$202
2000	Dwelling Unit	8.49	52%	55.5%	113%	10.52	\$212
2200	Dwelling Unit	8.85	52%	55.5%	113%	10.97	\$221
2400	Dwelling Unit	9.18	52%	55.5%	113%	11.38	\$229
2600	Dwelling Unit	9.48	52%	55.5%	113%	11.75	\$237
2800	Dwelling Unit	9.76	52%	55.5%	113%	12.10	\$244
3000	Dwelling Unit	10.02	52%	55.5%	113%	12.42	\$250
3200	Dwelling Unit	10.26	52%	55.5%	113%	12.71	\$256
3400	Dwelling Unit	10.49	52%	55.5%	113%	13.00	\$262
3600+	Dwelling Unit	10.71	52%	55.5%	113%	13.27	\$267

**Nonresidential DIF for Streets**

Type	Development Unit	AWVTE per Development Unit (2)	Trip Adjustment Factors (3)	SOV+MOV Mode Share (4)	Trip Length Weighting Factor (5)	VMT per Dev Unit	Proposed Streets Component
Retail / Restaurant	Sq Ft	0.04270	33%	73.2%	68%	0.02665	\$0.53
Office	Sq Ft	0.01103	50%	73.2%	72%	0.01105	\$0.22
Light Industrial	Sq Ft	0.00697	50%	73.2%	72%	0.00698	\$0.14
Warehousing	Sq Ft	0.00356	50%	73.2%	72%	0.00356	\$0.07
Institutional	Sq Ft	0.01403	33%	73.2%	72%	0.00927	\$0.18
Hospital	Sq Ft	0.01322	50%	73.2%	72%	0.01324	\$0.26
Nursing Home / Assisted Living	Bed	2.74	50%	73.2%	72%	2.74	\$55
Lodging	Room	8.17	50%	73.2%	72%	8.18	\$165

**REVENUE CREDIT EVALUATION**

A credit for other revenues is only necessary if there is potential double payment for system improvements. In Boulder, sales and gas tax revenue will be used for maintenance of existing facilities, correcting existing deficiencies, and for capital projects that are not DIF system improvements. As shown below in the Figure DIF9, cumulative DIF revenue over the next ten years approximates the growth cost of system improvements. There is no potential double payment from other revenues if Boulder’s elected officials make a legislative policy decision to use Transportation DIF revenue to fund the growth cost of system improvements.

**FUNDING STRATEGY FOR TRANSPORTATION IMPROVEMENTS**

The revenue projection shown in Figure DIF9 assumes implementation of the proposed 2016 Transportation DIF schedule and the development projections described in the land use assumptions. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in DIF revenue and the timing of capital improvements. Based on the proposed 2016 methodology, residential development will generate approximately 44% of the growth cost for transportation system improvement, with nonresidential development generating 56%.

**Figure DIF9: Projected Transportation DIF Revenue**

		<i>Residential (assumes 1600 Sq Ft)</i>	<i>Light Industrial</i>	<i>Retail &amp; Restaurants</i>	<i>Office &amp; Other Services</i>
		\$191	\$0.14	\$0.54	\$0.22
<i>Year</i>		<i>per housing unit</i>	<i>per 1000 Sq Ft</i>	<i>per 1000 Sq Ft</i>	<i>per 1000 Sq Ft</i>
		<i>Housing Units</i>	<i>Square Feet</i>	<i>Square Feet</i>	<i>Square Feet</i>
Base	2015	45,740	13,576,996	8,565,611	14,848,416
Year 1	2016	46,012	13,670,663	8,624,414	14,950,360
Year 2	2017	46,288	13,765,405	8,683,890	15,053,473
Year 3	2018	46,566	13,860,809	8,743,783	15,157,308
Year 4	2019	46,846	13,956,881	8,804,095	15,261,869
Year 5	2020	47,127	14,053,626	8,864,830	15,367,162
Year 6	2021	47,409	14,151,048	8,925,989	15,473,193
Year 7	2022	47,694	14,249,152	8,987,577	15,579,965
Year 8	2023	47,980	14,347,942	9,049,596	15,687,486
Year 9	2024	48,268	14,447,424	9,112,049	15,795,758
Year 10	2025	48,557	14,547,603	9,174,939	15,904,789
<i>Ten Year Increase</i>		2,817	970,607	609,328	1,056,373
Projected Revenue =>		\$538,000	\$136,000	\$329,000	\$232,000
Total Projected Transportation DIF Revenue (rounded) =>					\$1,235,000
Res Share =>		44%		Nonres Share => 56%	

## APPENDIX A: LAND USE ASSUMPTIONS RELATED TO TRANSPORTATION

Most of the demographic data used in the transportation studies are documented in Appendix A of the 2016 Capital Facility Development Impact Fee Study for the City of Boulder (TischlerBise 8/31/16). This Appendix contains additional information specific to the transportation analysis, such as customized vehicle trip generation rates for the City of Boulder.

### CUSTOM TRIP GENERATION RATES BY DWELLING SIZE

As an alternative to simply using national average trip generation rates for residential development, as published by the Institute of Transportation Engineers (ITE), TischlerBise derived custom trip rates using local demographic data. Key inputs needed for the analysis (i.e. average number of persons and vehicles available per housing units) are available from American Community Survey (ACS) data for Colorado Public Use Microdata Area 803, which is essentially the City of Boulder.

#### City of Boulder Control Totals

The 2010 census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau has switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which is limited by sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). Part of the rationale for deriving development related transportation taxes/fees by bedroom range, as discussed further below, is to address this ACS data limitation. Because townhouses generally have fewer bedrooms and less living space than detached units, fees by dwelling size ensure proportionality and facilitate construction of affordable units.

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. TischlerBise recommends that fees for residential development in Boulder be imposed according to the number of year-round residents per housing unit. Figure A1 indicates the average number of year-round residents per housing unit in Boulder. In 2013, the control total for the City of Boulder is 2.14 persons per dwelling (i.e. weighted average for all types of housing).

**Figure A1: Year-Round Persons per Unit by Type of Housing**

**2013 Summary by Two House Types**

Units in Structure	Persons	Households	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single Unit*	57,742	22,479	2.57	23,284	2.48	53%	3%
All Other	36,747	19,828	1.85	20,767	1.77	47%	5%
Subtotal	94,489	42,307	2.23	44,051	<b>2.14</b>		4%
Group Quarters	8,674						
<b>TOTAL</b>	<b>103,163</b>						

\* Single unit includes detached and attached (e.g. townhouse).

Source: Tables B25024, B25032, B25033, and B26001.

2013 American Community Survey 1-Year Estimates, U.S. Census Bureau.

Trip generation rates are also dependent upon the average number of vehicles available per dwelling. Figure A2 indicates vehicles available per housing unit in the City of Boulder. For the purpose of customizing vehicle trip generation rates, the control total for Boulder is an average of 1.55 vehicles available per housing unit.

**Figure A2: Vehicles Available per Housing Unit**

Tenure	Vehicles Available (1)	Households (2)		
		Single Unit Detached or Attached	All Other	Total
Owner-occupied	35,644	16,469	3,657	20,126
Renter-occupied	32,522	6,010	16,171	22,181
Total	68,166	22,479	19,828	42,307

Units per Structure	Vehicles Available	Housing Units (3)	Vehicles per Housing Unit
Single Detached or Attached	37,979	23,284	1.63
All Other	30,187	20,767	1.45
Total	68,166	44,051	<b>1.55</b>

(1) Vehicles available by tenure from Table B25046, American Community Survey, 2013.

(2) Households by tenure and units in structure from Table B25032, ACS, 2013.

(3) Housing units from Table B25024, American Community Survey, 2013.

### Customized Trip Rates by Dwelling Size and Type

Custom tabulations of demographic data by bedroom range can be created from individual survey responses provided by the U.S. Census Bureau, in files known as Public Use Micro-data Samples (PUMS). Because PUMS files are available for areas of roughly 100,000 persons, the City of Boulder approximates Colorado Public Use Micro-data Area (PUMA) 803. At the top of Figure A3, in the cells with yellow shading, are the 2013 survey results for Boulder (latest available). Unadjusted survey results derived from PUMS data (i.e. persons per dwelling and vehicles available per dwelling), were adjusted to match control totals for the City of Boulder, as documented above in Figures A1 and A2.

The middle section of Figure A3 provides nation-wide data from the Institute of Transportation Engineers (ITE). AWWTE is the acronym for Average Weekday Vehicle Trip Ends, which measures vehicles coming and going from a development. Dividing trip ends per household by trip ends per person yields an average of 2.01 persons per occupied apartment and 3.73 persons per occupied single dwelling, based on ITE's national survey. Applying Boulder's current housing mix of 47% apartments and 53% single-unit dwellings yields a weighted average of 2.92 persons per household. In comparison to the national data, Boulder only has an average of 2.14 persons per housing unit.

Dividing trip ends per household by trip ends per vehicle available yields an average of 1.30 vehicles available per occupied apartment and 1.58 vehicles available per occupied single dwelling, based on ITE's national survey. Applying Boulder's current housing mix of 47% apartments and 53% single-unit dwellings yields a weighted average of 1.45 vehicles available per household. In comparison to the national data, Boulder has more vehicles available, with an average of 1.55 per housing unit.

Rather than rely on one methodology, the recommended trip generation rates shown in the bottom section of Figure A3 (see Boulder AWWTE per Housing Unit in bold numbers), are an average of trip rates based on persons and vehicles available, for all types of housing units by bedroom range. In the City of Boulder, each housing unit is expected to yield an average of 7.45 Average Weekday Vehicle Trip Ends (AWVTE), compared to the national average of 8.17 trip ends per household.

**Figure A3: Persons and AWWTE by Bedroom Range and House Type**

<b>City of Boulder 2013 Data</b>								
Bedroom Range	Persons (1)	Vehicles Available (1)	Housing Units (1)	Boulder Hsg Mix	Unadjusted Persons/HU	Adjusted Persons/HU (2)	Unadjusted VehAvl/HU	Adjusted VehAvl/HU (2)
0-1	114	89	89	19%	1.28	<b>1.31</b>	1.00	0.95
2	220	162	121	25%	1.82	<b>1.86</b>	1.34	1.27
3	296	236	134	28%	2.21	<b>2.26</b>	1.76	1.66
4+	372	300	135	28%	2.76	<b>2.83</b>	2.22	2.10
Total	1,002	787	479		2.09	<b>2.14</b>	1.64	<b>1.55</b>

<b>National Averages According to ITE</b>						
ITE Code	AWVTE per Person	AWVTE per Vehicle Available	AWVTE per Household	Boulder Hsg Mix	Persons per Household	Veh Avl per Household
220 Apt	3.31	5.10	6.65	47%	2.01	1.30
210 SFD	2.55	6.02	9.52	53%	3.73	1.58
Wgtd Avg	2.91	5.59	<b>8.17</b>		<b>2.92</b>	<b>1.45</b>

<b>Recommended AWWTE per Dwelling Unit by Bedroom Range</b>			
Bedroom Range	AWVTE per Housing Unit Based on Persons (3)	AWVTE per Housing Unit Based on Vehicles Available (4)	<b>Boulder AWWTE per Housing Unit (5)</b>
0-1	3.81	5.31	<b>4.56</b>
2	5.41	7.10	<b>6.26</b>
3	6.58	9.28	<b>7.93</b>
4+	8.24	11.74	<b>9.99</b>
Total	6.23	8.66	<b>7.45</b>

(1) American Community Survey, Public Use Microdata Sample for CO PUMA 803 (2013 One-Year unweighted data).  
 (2) Adjusted multipliers are scaled to make the average PUMS values match control totals based on American Community Survey 2013 1-year data for the City of Boulder.  
 (3) Adjusted persons per housing unit multiplied by national weighted average trip rate per person.  
 (4) Adjusted vehicles available per housing unit multiplied by national weighted average trip rate per vehicle available.  
 (5) Average of trip rates based on persons and vehicles available per housing unit.

<b>AWVTE per Dwelling by House Type</b>			
ITE Code	AWVTE per Housing Unit Based on Persons (3)	AWVTE per Housing Unit Based on Vehicles Available (4)	Boulder AWWTE per Housing Unit (5)
All Other	5.15	8.11	6.63
210 SFD	7.22	9.11	8.17
All Types	6.23	8.66	<b>7.45</b>

Boulder Persons/HU
1.77
2.48
<b>2.14</b>

Boulder VehAvl/HU
1.45
1.63
<b>1.55</b>

**Trip Generation by Dwelling Size**

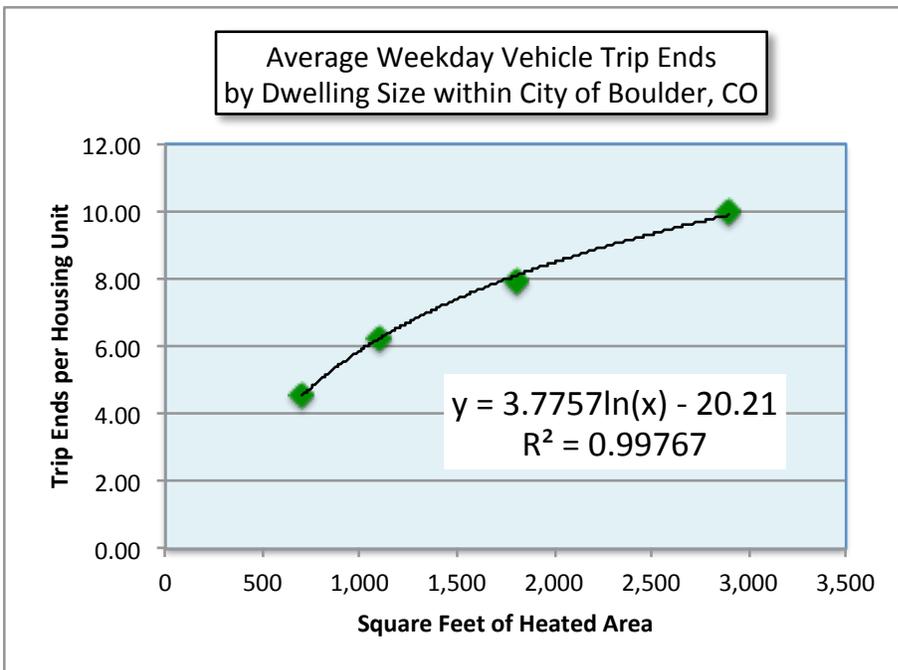
To derive AWWTE by dwelling size, TischlerBise matched trip generation rates and average floor area, by bedroom range, as shown in Figure A4. The logarithmic trend line formula, derived from the four actual averages in Boulder, is used to derive estimated trip ends by dwelling size. The table indicates trip rates for dwellings that range from 600 to 3600+ square feet, with 200 square foot increments to be consistent with Boulder’s current impact fee schedule. TischlerBise does not recommend average fees for all house sizes because it makes small units less affordable and essentially subsidizes larger units.

Apartment units will generally be in the lower end of the size range (generally one and two bedroom units). Single-unit dwellings will have floor areas in the upper end of the size range. Smaller units will likely have three bedrooms. All units with 3601 or more square feet of living space are assumed to generate a maximum 10.71 AWWTE per dwelling.

**Figure A4: Vehicle Trips by Dwelling Size**

Average dwelling size by bedroom range is from Property Assessor parcel database. Average weekday vehicle trip ends are calibrated to 2013 1-Year ACS PUMS data for CO PUMA 803 (City of Boulder).

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Square Feet	Trip Ends
0-1	700	4.56	600	3.94
2	1,100	6.26	800	5.03
3	1,800	7.93	1000	5.87
4+	2,900	9.99	1200	6.56
			1400	7.14
			1600	7.65
			1800	8.09
			2000	8.49
			2200	8.85
			2400	9.18
			2600	9.48
			2800	9.76
			3000	10.02
			3200	10.26
			3400	10.49
			3600+	10.71





## **2016 Transportation Development Excise Tax Study**

Prepared for:  
City of Boulder, Colorado

September 20, 2016

**TischlerBise**  
FISCAL | ECONOMIC | PLANNING

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## EXECUTIVE SUMMARY

As part of the 2016 transportation work scope, TischlerBise will prepare three products for the City of Boulder. This work product is a Development Excise Tax (DET) study for a broad set of growth-related transportation improvements. A second work product focuses on the capital cost of transportation improvements needed to accommodate new development assuming more rigorous Development Impact Fee (DIF) legal requirements. The third work product will focus on operational costs and on-going maintenance of Boulder's multimodal transportation system.

Boulder's DET is a one-time revenue imposed on new construction. An excise tax is imposed on the performance of an act, the engaging in an occupation, or the enjoyment of a privilege. In some states, home-rule cities may impose excise taxes using general taxation powers. Other states have limited the use of excise taxes to jurisdictions that have special enabling legislation. Boulder has collected an excise tax for transportation since the 1980s. In 1998, voters approved a consolidated DET that included transportation. By policy, a portion of the consolidated DET authorized by voters is also used to acquire land for parks, but the combined total for parkland and transportation is less than the total DET authorized for residential development.

### CURRENT TRANSPORTATION DET

As shown in Figure DET1, the current Transportation DET is \$2.48 per square foot of nonresidential floor area and approximately \$2,227 per detached dwelling and \$1,650 per attached dwelling. Applying these rates to the projected increase in development within Boulder over the next ten years would yield approximately \$11.5 million in Transportation DET revenue, with residential units contributing 43% of the six-year total and 57% from nonresidential development.

**Figure DET1: Transportation DET Rates Currently Collected**

Tax Name	Nonresidential	Residential	
	Per Square Foot	Per Detached Dwelling Unit	Per Attached Dwelling Unit or Mobile Home
<b>Development Excise Tax</b>			
Park Land	N/A	\$1,144.84	\$795.98
Transportation	\$2.48	\$2,226.93	\$1,650.29
Total	\$2.48	\$3,371.77	\$2,446.27
<b>Housing Excise Tax</b>	\$0.51	\$0.23 per square foot	\$0.23 per square foot

The right column in Figure DET2 indicates the maximum consolidated DET amounts approved by voters in 1998. Nonresidential development is currently paying the maximum rate, but residential development could pay up to \$5,630 per detached dwelling and \$3,624 per attached dwelling. One option to consider during the 2016 DET update is to increase the transportation DET rates up to the maximum for residential units, as approved by voters. This change would increase the DET by \$3,403

per detached dwelling and \$1,974 per attached dwelling. Based on projected development over the next ten years, collecting the maximum DET from residential development would provide an additional \$6.4 million for transportation improvements over the next ten years (i.e. a total of \$17.9 million). Maximum voter-approved DET rates would obtain approximately 63% of future Transportation DET revenue from residential development and 37% from nonresidential development.

**Figure DET2: Maximum Voter-Approved DET Rates**

TYPE OF DEVELOPMENT	CURRENT	PROPOSED 1999	PROPOSED MAXIMUM (LIMITED BY CPD)
NEW AND ANNEXING DETACHED DWELLING UNIT	3,667.05	4,331.06	5,630.38
NEW AND ANNEXING ATTACHED DWELLING UNIT	2,369.03	2,787.77	3,624.10
NEW, ANNEXING AND EXPANDED NON-RESIDENTIAL DEVELOPMENT	1.45 PER SQUARE FOOT	1.91 PER SQUARE FOOT	2.48 PER SQUARE FOOT

**PROPOSED 2016 TRANSPORTATION DEVELOPMENT EXCISE TAX**

Figure DET3 summarizes the methods and cost components used in Boulder’s 2016 Transportation DET study. In contrast to the 1996 DET study, TischlerBise recommends switching from an emphasis on moving vehicles to moving people, primarily through bus, bike, and pedestrian facilities. As summarized in Figure DET3, capital costs are allocated to residential and nonresidential development based on a “functional population” analysis, as described further below.

**Figure DET3: Proposed Transportation DET Methods and Cost Components**

Type of Improvements	Cost Allocation	Service Area	Plan-Based Method (future)
<i>Bus Bike Walk</i>	Functional Population and Jobs	Citywide	Sidewalks, Multi-Use Paths, Bike Lanes and Transit

Figure DET4 shows the proposed 2016 Transportation DET schedule, along with both maximum and current Transportation DET rates. If City Council does not decide to seek voter approval for increasing the DET rates, TischlerBise recommends implementation of the maximum DET rate schedule already approved by voters.

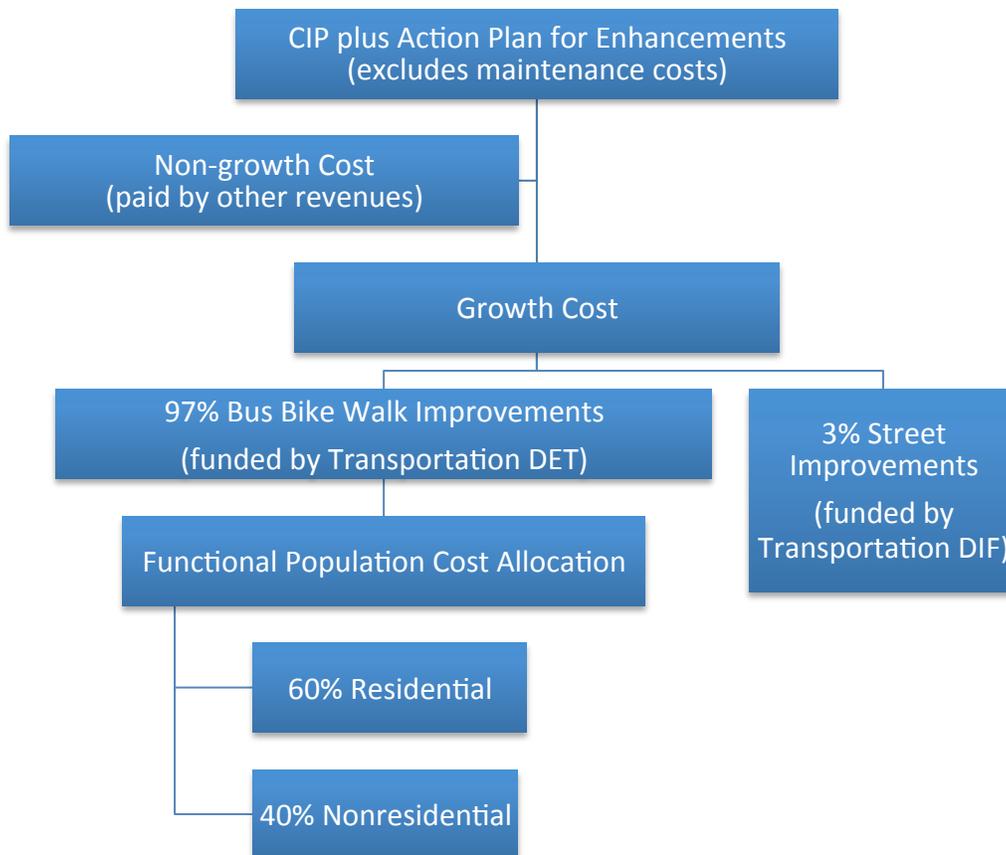
**Figure DET4: Proposed 2016 Transportation DET Schedule**

<b>2016 Transportation DET</b>	<i>Development Unit</i>	<i>Proposed Transportation DET</i>	<i>Maximum DET</i>	<i>Current Transportation DET</i>
<b>Residential (by dwelling type)</b>				
Attached	Dwelling Unit	\$4,454	\$3,624	\$1,650
Detached	Dwelling Unit	\$6,437	\$5,630	\$2,227
<b>Nonresidential</b>				
All Nonresidential	Square Foot	\$4.47	\$2.48	\$2.48

**MULTIMODAL TRANSPORTATION DET**

The 2016 Transportation DET study uses a plan-based methodology that includes improvements for all modes of travel. Figure DET5 provides an overview of the methodology. This study documents the general cost allocation between residential and nonresidential development, including detailed calculations used to derive specific DET amounts by dwelling type. From the universe of all projects in Boulder’s Capital Improvement Plan (CIP) and the Action Investment Program of the 2014 Transportation Master Plan (TMP), staff and consultants identified transportation improvements needed to accommodate new development over ten years. This study refers to these projects as “enhancements” to differentiate them from “maintenance” projects that are not eligible for DET funding. Also, each project was evaluated to quantify the “growth costs” to be funded by DET revenue, with non-growth costs funded by other revenues. Staff determined that 97% of enhancement projects are for Bus Bike Walk facilities (primarily moving people), with the remaining 3% for street improvements (i.e. primarily moving vehicles and freight). The growth cost of Bus Bike Walk improvements was allocated to residential and non-residential development based on functional population (described further below). The growth cost of street improvements was allocated according to estimated Vehicle Miles of Travel (VMT) for general types of development, as described in the 2016 Transportation DIF study.

**Figure DET5: DET Calculation Flow Chart**



### GROWTH SHARE OF FUTURE TRANSPORTATION ENHANCEMENTS

The 9.9% default growth share is based on the projected average annual increase in person trips to and from Boulder from 2010 to 2035 (illustrated by Figure 3-22 in Boulder's State of the System Report). Because internal-external travel is most evident during morning and afternoon peak hours, it is a key factor in our perception of traffic congestion. Figure DET6 provides a reasonable means of quantifying the minimum impact of growth on transportation facilities.

**Figure DET6: Person Trips To and From Boulder**

Communities	2010	2035	Change	%Change
Broomfield	28,130	39,254	11,124	39.5%
Denver	13,643	14,416	773	5.7%
DIA	2,962	4,139	1,176	39.7%
ERIE	11,993	24,546	12,554	104.7%
Lafayette	18,613	21,564	2,950	15.9%
Longmont	40,976	47,774	6,798	16.6%
Lyons	1,892	1,968	77	4.0%
Louisville	25,799	26,214	415	1.6%
Superior	9,988	12,073	2,085	20.9%
TOTAL	153,995	191,947		

0.99% <= Average Annual Growth Rate

9.9% <= Percent Increase Over Ten Years

Data source

H:\Projects - Open\A-E\BOULDER Transit Master Plan 2012.777\05 Background\Travel Demand Model\Person\_Trips

### CIP PLUS ACTION INVESTMENT PROGRAM FOR TRANSPORTATION FACILITIES

As shown in Figure DET7, the ten-year growth-related cost of planned enhancement projects is approximately \$236 million. The upper two-thirds of the table lists CIP projects. The bottom third of the table lists additional Action Investment Program capital improvements, with updated capital costs as provided by Boulder's transportation staff.

The ten-year, growth share of local costs is 14.2% of the total cost, less grant funding. The proposed transportation DET rate schedule would fund \$32.53 million over ten years. Based on the CIP analysis by staff, approximately 97% of the growth cost is for Bus Bike Walk improvements and 3% will be spent on vehicular capacity (i.e. \$1.12 million over ten years).

**Figure DET7: Growth-Related Cost of Transportation Enhancements**

CIP#	Description	Ten-Year Cost (less grants)	Growth-Related Enhancement Costs		Growth Share of Local Cost	
			FY16-25 Bus Bike Walk	FY16-25 Streets		
310TR151NG	* Boulder Slough - 30th	Local share of multiuse pat	\$96,000	\$47,500	\$0	49.5%
310TR480NC	East Arapahoe	Transportation Corridor St	\$100,000	\$75,000	\$25,000	100.0%
310TR154NG	* 19th - Norwood to Up	Local share of reconstructi	\$157,000	\$16,800	\$8,400	16.1%
310TD021OC	Citywide	Intersection improvements	\$200,000	\$4,000	\$15,800	9.9%
310TR479OC	30th & Colorado	Transportation Corridor St	\$200,000	\$150,000	\$50,000	100.0%
310TR157NG	Citywide	Bldr Co/City Joint TIP Scop	\$289,000	\$289,000	\$0	100.0%
310TDO04OC	Citywide Funds 2810 & 3	Development coordination	\$450,000	\$337,500	\$112,500	100.0%
310TD019NC	28th St - Baseline to Iris	Complete street elements;	\$470,000	\$42,000	\$4,700	9.9%
310BJ002NC	Bluff & 30th St	Traffic signal	\$532,000	\$10,500	\$42,100	9.9%
310TR692OC	Citywide	Tributary greenways	\$585,000	\$57,900	\$0	9.9%
310TR112OC	Citywide	Pedestrian facilities enhan	\$750,000	\$74,300	\$0	9.9%
3102ABCK02	Boulder Creek	Path improvements	\$770,000	\$76,200	\$0	9.9%
310TR743NC	28th St - Valmont to Iris	Multimodal improvements	\$860,000	\$76,900	\$8,500	9.9%
3102ABCK01	Boulder Creek	Path lighting	\$979,680	\$97,000	\$0	9.9%
310TR692OC	Citywide	Bikeway facilities enhance	\$1,350,000	\$133,700	\$0	9.9%
310TR152NG	* Broadway - Violet to H	Local share of reconstructi	\$1,825,000	\$661,000	\$34,800	38.1%
3102ABCK03	Boulder Creek - Arapaho	Underpass	\$2,365,000	\$234,100	\$0	9.9%
310TR156NC	Boulder Creek & Aprapa	Reconstruction and multim	\$2,500,000	\$248,300	\$0	9.9%
310TR153NG	* 30th St & Colorado	Local share of bike/ped un	\$3,150,000	\$588,500	\$149,600	23.4%
310TR773OC	Citywide	Pedestrian facilities repair/	\$3,774,000	\$375,500	\$0	9.9%
310TR003OC	Citywide	Major capital reconstructio	\$4,800,000	\$436,900	\$39,700	9.9%
310TR052OG	Citywide Funds 2800 & 2	TIP local match & TMP imp	\$18,363,000	\$1,642,800	\$182,500	9.9%
Years 7-10	Citywide	Additional CIP Projects	\$29,710,500	\$3,783,600	\$449,100	14.2%
Action Plan	Railroad Quite Zone Improvements		\$5,000,000	\$712,319	\$0	14.2%
Action Plan	HOP Conversion to Clean Vehicles		\$12,000,000	\$1,709,567	\$0	14.2%
Action Plan	Community Transit Routes Converted to BRT		\$12,833,000	\$1,828,239	\$0	14.2%
Action Plan	East Circulator / Williams Village Improvements		\$16,301,000	\$2,322,304	\$0	14.2%
Action Plan	New/Modified Community Transit Network Routes		\$26,165,000	\$3,727,568	\$0	14.2%
Action Plan	Transit Capital Plan		\$38,900,000	\$5,541,845	\$0	14.2%
Action Plan	Other Bike/Ped Enhancements		\$50,757,000	\$7,231,040	\$0	14.2%
Ten-Year Total =>			\$236,232,180	\$32,531,881	\$1,122,700	14.2%
				97%	3%	

\* Projects with grant funding; enhancement cost growth share is approximately 9.9% of total cost

\$33,654,581 <= Ten Year Growth Cost

\$202,577,599 <= Total to be funded by other revenues

**COST ALLOCATION FOR BUS BIKE WALK FACILITIES**

The demand for Bus Bike Walk facilities is a function of both residential and nonresidential development. As shown in Figure DET8, functional population is similar to what the U.S. Census Bureau calls "daytime population" by accounting for people living and working in a jurisdiction. In addition to the Boulder-specific data, TischlerBise has relied on extensive public and private sector input to establish reasonable "weighting factors" to account for time spent at either residential or nonresidential development. These weighting factors are shown below with grey shading.



The functional population analysis starts with 2015 estimates of jobs and population in Boulder (see yellow highlighting), as documented in the Land Use Assumptions by TischlerBise. According to the 2013 TMP State of the System report (see page 3-13), approximately 10% of Boulder jobs are self-employed persons. The remaining 90% of jobs require “journey-to-work” travel. The 2014 Boulder Valley Employee Survey indicates Boulder residents held 38% of these jobs, with persons living outside of Boulder holding the remaining 62% of journey-to-work jobs. The functional population analysis assumes all workers spend ten hours per weekday (annualized average) at nonresidential locations.

Residents who work in Boulder are assigned 10 hours to nonresidential development (discussed above) and 14 hours to residential development. Residents who work outside Boulder are assigned 14 hours to residential development. Jobs held by non-residents are assigned 10 hours to nonresidential development. Residents who don't work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages) to account for time spent shopping, eating out, and other social/recreational activities.

Based on Boulder’s 2015 functional population analysis, the cost allocation for residential development is 60%, while nonresidential development accounts for 40% of the demand for Bus Bike Walk infrastructure.

**Figure DET8: Functional Population**

<b>Boulder Functional Population Analysis</b>				<i>Demand</i>	<i>Person</i>
<i>Service Units in 2015</i>				<i>Hours/Day</i>	<i>Hours</i>
<b>Nonresidential</b>					
	Jobs Located in City*	98,510			
	10% Self-employed	9,851		10	98,510
	Jobs Requiring Journey-To-Work	88,659			
	Jobs Held By Residents**	38%	33,690	10	336,900
	Jobs Held By Non-residents**	62%	54,969 <= 56% of jobs	10	549,690
	Non-working Residents	51,054		4	204,216
					<b>Nonresidential Subtotal</b>
					<b>1,189,316</b>
					<b>Nonresidential Share =&gt; 40%</b>
<b>Residential</b>					
	Population*	104,808			
	Non-working Residents	51,054		20	1,021,080
	Resident Workers	53,754			
	81% Residents Working in City		43,541 <= 44% of jobs	14	609,574
	(includes self-employed)***				
	19% Residents Working Outside City***	10,213		14	142,982
					<b>Residential Subtotal</b>
					<b>1,773,636</b>
					<b>Residential Share =&gt; 60%</b>
					<b>TOTAL</b>
					<b>2,962,952</b>

\* Boulder Land Use Assumptions, TischlerBise 01/27/16.  
 \*\* Percentages from 2014 Boulder Valley Employee Survey, Table 36, Question 32.  
 \*\*\* Percentages from 2014 Boulder Community Household Survey, Table 112, Question 24.

Based on the cost of planned transportation enhancements (see Figure DET7 above) Bus Bike Walk improvements are expected to cost \$32.53 million over the next ten years. As shown in Figure DET9, 60% of this amount, divided by the projected increase in Boulder’s population over the next ten years, yields a capital cost of \$2,575 per additional resident. The Bus Bike Walk component of the 2016 DET for transportation improvements is equal to the cost per person multiplied by the average number of persons per dwelling, by house type. For example, an apartment building would have to pay \$2,575 per person multiplied by an average of 1.73 persons per dwelling, or \$4,454 per dwelling unit (truncated). The DET for nonresidential development is equal to the capital cost per additional job, multiplied by the average number of jobs per development unit.

**Figure DET9: Bus Bike Walk Improvements Allocated to Population & Jobs**

Ten Year Growth Cost of Bus Bike Walk Improvements =>		\$32,531,881	
<b>Cost Range and Allocation per Service Unit</b>			
	<i>Proportionate Share Based on Functional Population</i>	<i>2015 to 2025 Increase</i>	<i>Cost per Additional Service Unit</i>
Boulder Population	60%	7,580	\$2,575
Boulder Jobs	40%	7,013	\$1,856
	2015	2025	
Population	104,808	112,388	
Jobs	98,510	105,523	
Ten Year Increase in Population plus Jobs		7.2%	
<b>Residential</b>			
<i>Type</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Proposed Bus Bike Walk Component</i>
Attached	Dwelling Unit	1.73	\$4,454
Detached	Dwelling Unit	2.50	\$6,437
<b>Nonresidential</b>			
<i>Type</i>	<i>Development Unit</i>	<i>Jobs per Development Unit</i>	<i>Proposed Bus Bike Walk Component</i>
All Nonresidential	Sq Ft of Floor Area	0.00241	\$4.47

**FUNDING STRATEGY FOR TRANSPORTATION IMPROVEMENTS**

The revenue projection shown in Figure DET10 assumes implementation of the maximum, voter-approved DET schedule and the development projections described in the Land Use Assumptions by TischlerBise. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in DET revenue and the timing of capital improvements.

Maximum voter-approved DET rates are expected to yield approximately \$17.9 million over the next ten years, which will cover approximately 55% the growth share of planned transportation improvements (i.e. CIP plus Action Investment Program). In comparison, the current Transportation DET rate schedule would yield approximately \$11.5 million over the next ten years. Based on the maximum voter-approved DET rate schedule, residential development will generate approximately 63% of projected revenue, with nonresidential development generating the remaining 37%.

**Figure DET10: Projected Transportation DET Revenue**

		<i>Attached Residential</i>	<i>Detached Residential</i>	<i>Industrial</i>	<i>Retail &amp; Restaurants</i>	<i>Office &amp; Other Services</i>
Maximum DET Rates =>		\$3,624	\$5,630	\$2.48	\$2.48	\$2.48
Year		per housing unit	per housing unit	per 1000 Sq Ft	per 1000 Sq Ft	per 1000 Sq Ft
		<i>Housing Units</i>	<i>Housing Units</i>	<i>Square Feet</i>	<i>Square Feet</i>	<i>Square Feet</i>
Base	2015	21,498	24,242	13,576,996	8,565,611	14,848,416
Year 1	2016	21,716	24,297	13,670,663	8,624,414	14,950,360
Year 2	2017	21,937	24,352	13,765,405	8,683,890	15,053,473
Year 3	2018	22,159	24,407	13,860,809	8,743,783	15,157,308
Year 4	2019	22,382	24,463	13,956,881	8,804,095	15,261,869
Year 5	2020	22,607	24,520	14,053,626	8,864,830	15,367,162
Year 6	2021	22,833	24,576	14,151,048	8,925,989	15,473,193
Year 7	2022	23,061	24,633	14,249,152	8,987,577	15,579,965
Year 8	2023	23,290	24,690	14,347,942	9,049,596	15,687,486
Year 9	2024	23,520	24,748	14,447,424	9,112,049	15,795,758
Year 10	2025	23,752	24,806	14,547,603	9,174,939	15,904,789
<i>Ten Year Increase</i>		2,254	563	970,607	609,328	1,056,373
Projected Revenue =>		\$8,168,000	\$3,172,000	\$2,407,000	\$1,511,000	\$2,620,000
Total Projected Transportation DET Revenue (rounded) =>						<b>\$17,878,000</b>
Res Share =>		63%			Nonres Share => 37%	

**APPENDIX A: LAND USE ASSUMPTIONS RELATED TO TRANSPORTATION**

Most of the demographic data used in the transportation studies are documented in Appendix A of the 2016 Capital Facility Development Impact Fee Study for the City of Boulder (TischlerBise 8/31/16). This Appendix contains additional information specific to the transportation DET analysis, such as average number of persons by house type in Boulder.

**PERSONS PER HOUSING UNIT**

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. TischlerBise recommends that the DET for residential development in Boulder be imposed according to the number of year-round residents per housing unit. To be consistent with the current DET rate schedule in Boulder, TischlerBise derived the average number of persons for two dwelling types: 1) “detached” single-family houses, and 2) all other categories of “units in structure”, which is referred to as “attached” housing. Because the U.S. Census Bureau only publishes standard American Community Survey (ACS) tables with single-family detached and attached units combined, TischlerBise created a custom tabulation of 2013 five-year Public Use Microdata Sample (PUMS) for Public Use Microdata Area (PUMA) 803, which closely approximates the City of Boulder. The un-weighted survey results indicate detached units contained 1,224 persons in 490 housing units, which is an average of 2.50 persons per housing unit. For attached housing (i.e. all other dwellings) the PUMS survey found 824 persons residing in 475 housing units, which is an average of 1.73 persons per housing unit.



# KEYSER MARSTON ASSOCIATES

## 2016 JOBS HOUSING NEXUS ANALYSIS

*In Support of*

### **NON-RESIDENTIAL AFFORDABLE HOUSING IMPACT FEES**

*Prepared for*  
**City of Boulder**

*Prepared by:*  
**Keyser Marston Associates, Inc.**

**September 20, 2016**

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## I. INTRODUCTION

The following report is a nexus analysis in support of the Affordable Housing Fee applicable to new non-residential development in the City of Boulder. The report is an analysis of the linkages between non-residential development and the need for additional affordable housing. The report has been prepared by Keyser Marston Associates, Inc. (KMA) pursuant to a contractual agreement with the City of Boulder.

### **Background and Context**

The City of Boulder adopted its Affordable Housing Fee on non-residential development in 2011. At the time of adoption, the fee applied only to “bonus” or additional floor area over the base allowable floor area within the “DT-5” zoning district in Boulder’s downtown. In May 2015, the Affordable Housing Fee was expanded to apply to all non-residential development City-wide. The Affordable Housing Fee levels adopted in May 2015 were intended as an interim measure to be adjusted pending completion of this study.

Boulder’s Affordable Housing Fee is part of a suite of policies the City has implemented to support affordable housing. The City’s Inclusionary Housing policy requires 20% of units in new residential projects to be made affordable. Boulder has a policy to condition new annexations on an even greater share of residential units being made affordable. The City also has taxes dedicated to financing affordable housing including a broadly applicable property tax and a development excise tax.

Work on this analysis was initiated during late summer 2015. A 12-member working group was formed to guide development of this study and parallel analyses addressing impact and excise taxes for capital facilities and transportation, operating funding for transportation and a proposed framework for an art in public places requirement applicable to new private development in Boulder. The working group convened for a series of approximately 5-6 meetings during the conduct of the work and has provided oral and written feedback as the work progressed.

### **Purpose**

The purpose of an affordable housing nexus analysis is to document and quantify the impact of the development of new workplace buildings (such as office, retail, hotel, industrial), the employees that work in them, and the resulting demand for affordable housing. Since jobs in all buildings cover a range in compensation levels, and the households of the workers range in size, there are housing needs at all affordability levels. This analysis quantifies the need for affordable housing created by the development of each type of workplace building. The analysis and findings may be used as the foundation for enacting an affordable housing impact fee to be levied on non-residential development in Boulder.

This nexus study has been prepared to satisfy the requirements of Colorado Law requiring local agencies that adopt impact fees to quantify the reasonable impacts of proposed developments and establish impact fees at a level no greater than necessary to defray impacts directly related to new development. The conclusions of the analysis represent the maximum supportable or legally defensible impact fee levels consistent with this requirement. The City is free to take a range of policy considerations into account in setting fees anywhere up to these maximums. Section V of the report includes a series of analyses prepared to provide context potentially useful in considering fee levels that are appropriate for Boulder.

## **Analysis Scope**

This analysis examines eight types of workplace buildings, per direction of City staff and consistent with the other fee studies under concurrent preparation:

- Office, inclusive of professional, high-tech, medical and dental offices;
- Light Industrial which includes flex space, light manufacturing and some types of Research and Development as well as auto repair and other quasi industrial activities;
- Retail / Restaurant / Service – a broad category covering restaurant and other food service, entertainment, and personal service as well as other types of service uses;
- Hospital and other medical buildings, such as specialized clinics, surgery centers, and the like;
- Lodging which covers the range from full service hotels to minimum service extended stay operations;
- Warehouse and other storage facilities;
- Institutional such as educational, religious, childcare, cultural and arts buildings; and
- Assisted living and related, such as nursing homes, memory care and other senior or specialized care facilities.

The above types cover a broad range of non-residential buildings. While technically “commercial” only refers to some of the building types enumerated above, the term “commercial” is used interchangeably with the term “non-residential” for purposes of this report.

The household income categories addressed in the analysis are:

- Extremely Low Income (households earning up to 30% Area Median Income (AMI)),
- Low Income (households earning between 31% and 60% of AMI),
- Low to Moderate Income (between 61% and 76% of AMI) and
- Middle Income (77%-120% of AMI).

The Area Median Income is that published by HUD for Boulder County.

## Report Organization

The report is organized into five sections and two appendices as follows:

- Section I. provides an introduction and describes the purpose and organization of this report.
- Section II. presents a summary of the nexus concept and some of the key issues and underlying assumptions in the analyses linking jobs and housing demand.
- Section III. presents an analysis of the jobs and housing relationships associated with each workplace building type and concludes with a quantification of the number of households at each income level associated with each building type.
- Section IV. contains a summary of the costs of delivering housing units affordable to households at the income levels under study, allocated to each square foot of building area, and provides the conclusions regarding maximum supported fee levels.
- Section V. presents materials that may be useful to policy makers as context for consideration of potential fee levels. Context materials include information on market conditions in Boulder, the development costs for various types of non-residential development, and a summary of linkage fee programs in other communities. The material in this section is not part of the nexus analysis.
- Appendix A. – provides a discussion of various specific factors and assumptions in relation to the nexus concept to supplement the overview provided in Section II.
- Appendix B. – contains support information on worker occupations and incomes and an identification of the industry categories represented within each building type.

## Data Sources and Qualifications

The analyses in this report have been prepared using the best and most recent data available. Local and current data was used whenever possible. Sources such as the American Community Survey of the U.S. Census, the 2010 Census, and Bureau of Labor Statistics data were used extensively. Other sources and analyses when used are noted in the text and footnotes. While we believe all sources utilized are sufficiently accurate for the purposes of the analyses, we cannot guarantee their accuracy. KMA assumes no liability for information from these and other sources.

## II. THE NEXUS CONCEPT

### Introduction

This section outlines the nexus concept and some of the key issues surrounding the impact of new non-residential development on the demand for affordable residential units in Boulder. The nexus analysis and discussion focus on the relationships among development, growth, employment, income of workers and demand for affordable housing. The analysis describes the impact of new construction of the types of buildings in which there are workers and the need for additional affordable housing, quantified both in terms of number of units and the justified fee to provide those affordable units.

### Background

The first jobs-housing linkage fee programs were adopted by the cities of San Francisco and Boston in the mid-1980s. To support the fees, the City of San Francisco commissioned an early version of a nexus analysis.

Authority to establish commercial linkage fees has been upheld in federal court, specifically in the case *Commercial Builders of Northern California v. City of Sacramento*. Commercial builders in Sacramento sued the City of Sacramento following adoption of a housing linkage fee. Both the U.S. District Court and the Ninth Circuit Court of Appeals upheld the commercial linkage fees adopted by the City of Sacramento. The Supreme Court of the United States denied the builders' petition to hear the case, allowing the ruling of the Ninth Circuit to stand.

In Colorado, authority for local governments wishing to impose impact fees on new development is established in Title 29 Article 20 of the Colorado Revised Statutes, which was added in 2001 with enactment of Senate Bill 15 ("SB 15"). The authority of home rule municipalities (including the City of Boulder) to establish impact fees predates the enactment of SB 15. Local agencies adopting impact fees are required to quantify the reasonable impacts of proposed developments on existing capital facilities and establish impact fees at a level no greater than necessary to defray the impacts directly related to new development. Impact fees cannot be imposed to remedy existing deficiencies. Studies by local governments designed to fulfill the requirements of SB 15 are often referred to as "nexus" studies. This nexus study has been prepared consistent with the requirements in Section 29-20-104 of the Colorado Revised Statutes.

### The Nexus Methodology

An overview of the basic nexus concept and methodology is helpful to understand the discussion and concepts presented in this section. This overview consists of a quick "walk through" of the major steps of the analysis. The nexus analysis links new commercial buildings

with new workers in the City; these workers demand additional housing in proximity to the jobs, a portion of which needs to be affordable to the workers in lower income households.

The analysis begins by assuming a prototypical building size and then the following calculations are made:

- The total number of employees working in the building based on average employment density data is estimated. For analysis purposes, buildings of 20,000 square feet are analyzed. The same size of 20,000 square feet is used for all building types so categories may be readily compared.
- Occupation and income information for typical job types in the building is used to calculate the number of workers at various income levels (Extremely Low, Low, Low to Moderate, and Middle) addressed in the analysis. Compensation data is from the 2014 Bureau of Labor Statistics Occupational Employment Survey and is specific to Boulder County. Occupations by building type are derived from the Occupational Employment Survey and represents data for industry categories corresponding to each building type.
- Census data indicates that many workers are members of households where more than one person is employed and that there is a range of household sizes; factors derived from the Census are used to translate the workers in the building into Extremely Low, Low, Low to Moderate and Middle-Income households of various sizes.
- Then, the number of Extremely Low-, Low-, Low to Moderate- and Middle-Income households are divided by the building size to arrive at the number of housing units per square foot of building area, for each income category.
- In the last step, the number of households per square foot in each income category is multiplied by the cost of delivering housing units affordable to these income groups.

### **Discount for Changing Industries**

The Boulder area economy, like that of the U.S. as a whole, is constantly evolving. Over the past decade in Boulder County, employment in the publishing and manufacturing sectors of the economy have been in decline along with employment in the construction sector. Jobs lost over the last decade in these declining sectors have been replaced by job growth in other industry categories.

The analysis makes an adjustment to take these declines, changes and shifts within all sectors of the economy into account, recognizing that jobs added are not 100% net new in all cases. A 21% adjustment is utilized based on the long term shifts in employment that have occurred in some sectors of the local economy and the likelihood of continuing changes in the future. Long term declines in employment experienced in some sectors of the economy mean that some of the new jobs are being filled by workers that have been displaced from another industry and who are presumed to already have housing locally. The analysis makes the assumption that

existing workers downsized from declining industries are available to fill a portion of jobs in new workplace buildings built in Boulder.

The 21% downward adjustment used for purposes of the analysis is based on data specific to Boulder County published by the Colorado Department of Labor and Employment and derived from the Bureau of Labor Statistics Quarterly Census of Employment and Wages. The data covers the ten-year period from 2004 to 2014. County-level data was selected rather than City-specific data in recognition of the regional nature of the labor market. Over this period, approximately 4,500 jobs were lost by industry sectors experiencing declines in employment. Over the same period, growing and stable industries added a total of 21,700 jobs. The figures are used to establish a ratio between jobs lost in declining industries to jobs gained in growing and stable industries at 21%.<sup>1</sup> The 21% factor is applied as an adjustment in the analysis, effectively assuming one in every five new jobs is filled by a worker down-sized from a declining industry and who already lives locally.

The declining industries adjustment represents a conservative adjustment in that it likely results in an understatement of the impact analysis findings. Some displaced workers may exit the workforce entirely by retiring rather than seek a new job in one of the growing sectors of the local economy. In addition, development of new workspace buildings is generally driven by net new demand for space after space vacated by businesses in declining sectors has been re-occupied. If all space that is vacated by declining sectors of the economy could be readily re-occupied, no declining industries adjustment would be warranted. The declining industries adjustment addresses a special case in which building types vacated by declining sectors are of a special purpose or obsolete nature not readily adaptable to the needs of the growth sectors of the economy. In this special case, an adjustment is called for to account for the share of jobs in new workplace buildings that are net new.

## Commuting

This section provides a brief summary of commute relationships in the City of Boulder. The major relationship of interest in a nexus analysis is the share of employment in the City of Boulder held by City of Boulder residents. The current relationship often serves as a useful starting point for making a policy choice regarding the future share, or target, of all new jobs (and new worker households) to be able to live in the city.

According to the Boulder Valley Comprehensive Plan, Trends Report dated December 8, 2015, the share of jobs in the City of Boulder held by Boulder residents is 45%. It is important to recognize that the existing commute share does not necessarily represent the demand for housing in Boulder. The existing commute share in Boulder reflects the housing options that are

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<sup>1</sup> The 21% ratio is calculated as 4,500 jobs lost in declining sectors divided by 21,700 jobs gained in growing and stable sectors = 20.7% (rounded to 21%).

available and their affordability. It should also be noted that even if more housing were available and affordable, it is unlikely that 100% of people who work in Boulder would choose to live in Boulder. The choice of where one lives depends on additional factors (schools, style of housing, types of amenities, and local services, etc.) as well as where one works.

For Boulder, long term projections in the 2015 Boulder Valley Comprehensive Plan Trends Report indicate that the current ratio between population and jobs is likely to remain similar in the future; therefore, it appears reasonable to expect the commute share to remain within a similar range as the current 45%. For purposes of the analysis, findings have been adjusted to reflect the assumption that 45% of the total housing need associated with new workplace buildings is met in Boulder consistent with the established commute relationship.

### **Other Factors and Assumptions**

Appendix A provides a discussion of other specific factors in relation to the nexus concept including housing needs of the existing population, multiplier effects (indirect and induced jobs), changes in labor force participation, and economic cycles.

### III. JOBS HOUSING NEXUS ANALYSIS

This section presents a summary of the analysis linking the development of the eight types of workplace buildings to the estimated number of affordable housing units required in each of four income categories. This section should not be read or reproduced without the narrative presented in the previous sections.

#### Analysis Approach and Framework

The analysis establishes the jobs housing nexus for individual commercial land use categories, quantifying the connection between employment growth in Boulder and affordable housing demand.

The analysis examines the employment associated with the development of workplace building prototypes. Then, through a series of steps, the number of employees is converted to households and housing units by income level. The findings are expressed in terms of numbers of households per 20,000 square feet, for ease of presentation. In the final step, we convert the numbers of households for an entire building to the number of households per square foot.

#### Household Income Limits

The analysis estimates demand for affordable housing in four household income categories: Extremely Low, Low, Low to Moderate, and Middle Income. Household income limits are published by the Colorado Housing Financing Agency.

The income limits are shown below:

Household Income Limit	Household Size					
	1-person	2-person	3-person	4-person	5-person	6 + person
Extremely Low (30% AMI)	\$20,900	\$23,850	\$26,850	\$29,800	\$32,200	\$34,600
Low Income (60% AMI)	\$41,760	\$47,760	\$53,700	\$59,640	\$64,440	\$69,240
Low to Moderate (76% AMI)	\$53,040	\$60,660	\$68,200	\$75,740	\$81,840	\$87,890
Median (100% of AMI)	\$69,600	\$79,600	\$89,500	\$99,400	\$107,400	\$115,400
Middle (120% AMI)	\$83,520	\$95,520	\$107,400	\$119,280	\$128,880	\$138,480

Source: 2015 income limits from the Colorado Housing Finance Agency (CHFA)

#### Analysis Steps

The analysis is conducted using a model that KMA has developed for application in many jurisdictions for which the firm has conducted similar analyses. The model inputs are all local data to the extent possible, and are fully documented.

Tables 1 through 4 at the end of this section summarize the nexus analysis steps for the eight building types. Following is a description of each step of the analysis:

### **Step 1 – Estimate of Total New Employees**

The first step in Table 1 identifies the total number of direct employees who will work in the building types being analyzed. Average employment density factors are used to make the calculation.

Employment density estimates are based on assumptions developed for purposes of the analyses under concurrent preparation related to capital facilities and transportation impact fees. Office and retail employment density estimates reflect local data specific to the City of Boulder derived from local parcel data on building square footages combined with employment data from the Quarterly Census of Employment and Wages (QCEW). Other employment density assumptions are drawn from the Institute of Transportation Engineers (Trip Generation, 9<sup>th</sup> edition published in 2012).

- *Office* – 3.59 employees per 1,000 square feet building area. This represents an average based on the existing mix of office users in the City of Boulder. It represents a cross section that includes professional and corporate offices, high-tech activities, as well as medical offices. While many tech activities are denser than the average in terms of number of employees per 1,000 square feet, medical office and some types of professional offices can be less dense by a similar margin.
- *Light Industrial* – 2.31 employees per 1,000 square foot. This category covers light manufacturing, flex space (mix of office, manufacturing, storage, and some commercial uses of more industrial character like auto body repair).
- *Retail / Restaurant / Service* – 2.51 employees per 1,000 square feet. This represents an average based on the existing mix of retail, restaurant, and also a whole range of entertainment and personal service type uses in the City of Boulder. Restaurant space typically has a higher employment density, while retail space ranges widely depending on the type of retail, with furniture stores, for example, representing the lower end. Entertainment space would be less dense.
- *Hospital* - 2.94 employees per 1,000 square feet. The hospital category covers traditional hospitals plus independent clinics, surgery centers and other specialized medical and ambulatory care facilities.
- *Lodging* – 0.95 employees per 1,000 square feet. Lodging covers a range from higher service hotels, which are far more employment intensive, to minimal service extended stay hotels which have a lower employment density.
- *Warehouse* – 0.92 employees per 1,000 square feet. Warehouse and storage uses are characterized by low density of employment.
- *Institutional* – 0.81 employees per 1,000 square feet. Institutional uses are school and other educational buildings, places of worship, other religious, and cultural uses

dedicated to performing and visual arts. Many buildings in this category are owned by the non-profit and governmental sectors.

- *Assisted Living* – 2.10 employees per 1,000 square feet. Assisted living and related, such as nursing homes, memory care and other senior or specialized care facilities are both residential and commercial in nature. Due to their high level of employment and the high incidence of lower paid employees, they, like hotels, may be treated as a non-residential use for purposes of linkage fee application.

KMA conducted the analysis on 20,000 square foot buildings. This facilitates the presentation of the nexus findings, as it allows jobs and housing units to be presented in whole numbers that can be more readily understood. At the conclusion of the analysis, the findings are divided by building size to express the linkages per square foot, so that the findings can be applied to buildings of any size.

### ***Step 2 – Adjustment for Changing Industries***

This step is an adjustment to take into account any declines, changes and shifts within all sectors of the economy and to recognize that new space is not always 100% equivalent to net new employees. A 21% downward adjustment is utilized to recognize the long-term shifts in employment occurring in the local economy and the likelihood of continuing changes in the future. (See Section II discussion)

### ***Step 3 – Adjustment from Employees to Employee Households***

This step (Table 1) converts the number of employees to the number of employee household, recognizing that that there is, on average, more than one worker per household, and thus the number of housing units needed for new workers is less than the number of new workers. The workers-per-worker household ratio eliminates from the equation all non-working households, such as those comprised of retired persons and students.

The number of workers per household in a given geographic area is a function of household size, labor force participation rate and employment availability, as well as other factors. According to the 2011-2013 ACS, the number of workers per worker household in Boulder County was 1.62, including full- and part-time workers. The total number of jobs created is divided by 1.62 to determine the number of new households. This ratio excludes all non-worker households. If the average number of workers in all households were used, it would have produced a greater demand for housing units. County-level data was selected as it is likely more representative of the pattern for Boulder's workforce than City-specific data would be.

#### **Step 4 – Occupational Distribution of Employees**

Estimating the occupational breakdown of employees is the first step to arrive at income levels. The Bureau of Labor Statistics publishes data on the distribution of occupations within industries. Applicable industry categories are identified for each building type and then employment levels by industry are weighted based on the current mix by industry for the City of Boulder from the Quarterly Census of Employment and Wages.

The industries included in the analysis vary by building type.

- For office buildings, the mix of industries includes high-tech, architectural, engineering and other professional services, small firms such as realtors, insurance agents, employment services, as well as legal and medical offices.
- For light industrial buildings, the mix of industries represent a broad range of manufacturing industry types with navigational, measuring, control and electro-medical instrument manufacturing representing the largest share of overall employment. Auto repair and maintenance is also represented.
- For retail space, the industries include restaurants, retailers of all types, as well as laundry, personal care and service, and entertainment industry categories.
- For Hospital, the mix of industries includes hospitals, outpatient care centers, and medical and diagnostic laboratories.
- Lodging includes the traveler accommodation industry category and reflects an adjustment to remove casino-type hotels from the employment profile.
- Warehouse reflects the warehousing and storage industry category.
- Assisted Living includes the continuing care and assisted living, nursing home, and residential care sectors.

The May 2014 National Industry-Specific Occupational Estimates, published by the Bureau of Labor Statistics (BLS), are used to translate industries to occupations. At the end of this step (Table 2) the occupational composition of employees in the eight types of buildings have been estimated. Appendix B includes detailed information regarding the occupational compositions and specific industry categories that reflect the expected mix of activities in the new buildings.

- Occupations applicable to Office buildings include a range of computer and mathematical, business and financial, office and administrative support, management, architecture and engineering, and sales occupations, among others.
- Industrial occupations consist of production, architecture and engineering, office and administrative support, management, and smaller percentages of sales, transportation, computer and mathematical occupations.

- Retail / Restaurant / Service employment consists predominantly of food preparation and serving and sales related occupations which represent a combined 74% of employment for this building type.
- Hospital employment is concentrated in the healthcare practitioner occupational category which represents approximately half of total employment. Other categories include healthcare support (12%) and office and administrative support (15%).
- Hotels employ workers primarily from three main occupation categories: building and grounds cleaning and maintenance (maid service, etc.), food preparation and serving related, and office and administrative support, which together make up 77% of hotel workers. Other hotel occupations include personal care, management, and maintenance and repair.
- Warehouse employment is concentrated in the transportation and material moving occupations with 60% of total employment. Office and administrative support occupations make up an additional 22% of employment.
- Institutional employment includes a range of educational, community and social service, personal care and service, and administrative and office support occupations.
- Assisted living employment is comprised of healthcare support (35%), healthcare practitioners and technical (17%), and food preparation and serving (14%), and personal care and service occupation categories (12%).

The results of Step #4 are shown on Table 1; the table shows both the percentage of total employee households and the number of employee households in the prototype buildings.

### ***Step 5 – Estimated Employee Household Income***

In this step, occupations are translated to employee incomes based on recent Boulder County wage and salary information from the Bureau of Labor Statistics. The wage and salary information summarized in the Appendix B Tables provided the income inputs to the model. Worker compensations used in the analysis assumes full time employment (40 hours per week) based on the Bureau of Labor Statistic's approach to presenting annual compensation information which assumes full time employment.

In the even numbered Appendix B tables, the BLS data provides a distribution of specific occupations within each major occupation category. For example, within the Food Preparation and Serving Category, there are Supervisors, Cooks, Bartenders, Waiters and Waitresses, Dishwashers, etc. For each detailed occupational category, the model uses the distribution of wages to calculate the percent of worker households that would fall into each income category. The occupations with the lowest compensation levels are in Retail / Restaurant and Hotel buildings.

The calculation is performed for each possible combination of household size and number of workers in the household. For households with more than one worker, individual *employee* income data was used to calculate the household income by assuming multiple earner households are, on average, formed of individuals with similar incomes. The model recognizes that many, but not all, households have multiple incomes.

### ***Step 6 – Distribution of Household Size and Number of Workers***

In this step, the model examines the demographics of Boulder County in order to develop percentage factors for each potential combination of household size and number of workers. Data from the 2011-2013 American Community Survey is used to derive the percentages. County averages are used because it is likely a better representation of Boulder's workforce than the City-specific profile. This step in the analysis accounts for the fact that households have a range in size and a range in the number of workers. The result of Step 6 is a distribution of working households by number of workers and household size.

### ***Step 7 – Estimate of Number of Households that Meet Size and Income Criteria***

This is the final step to calculate the number of worker households meeting the size and income criteria for the four affordability tiers. The calculation combines the matrix of results from Step 5 on percentage of worker households that would meet the income criteria at each potential household size/number of workers combination, with Step 6, the percentage of worker households having a given household size/number of workers combination. The result is the percentage of households that fall into each affordability tier. The percentages are then multiplied by the number of households from Step 3 to arrive at the number of households in each affordability tier.

Table 2 shows the results after completing Steps 5, 6, and 7 for the Extremely Low Income Tier. The methodology is repeated for each of the lower income tiers, resulting in a total count of worker households for each 20,000 square feet of building area.

### **Summary by Income Level**

Table 3 at the end of this section indicates the results of the analysis for each of the eight building types, for all of the income categories. The table presents the number of households in each affordability category, the total number up to 120% of median, and the remaining households earning over 120% of median associated with a 20,000 square foot building. The findings in Table 3 are summarized below.

**New Worker Households by Income Level per 20,000 square feet**

	Light							Assisted Living
	Office	Industrial	Retail	Hospital	Lodging	Warehouse	Institutional	
Extremely Low	0.9	1.1	6.4	0.7	2.8	1.2	0.8	3.1
Low Income	6.7	5.8	12.0	7.1	4.4	4.1	3.0	9.5
Low to Moderate	4.1	2.9	2.8	4.2	0.9	1.4	1.3	3.4
Middle Income	8.6	5.2	2.4	8.4	0.7	1.6	1.7	3.0
<b>Subtotal</b>	<b>20.3</b>	<b>15.0</b>	<b>23.7</b>	<b>20.3</b>	<b>8.9</b>	<b>8.3</b>	<b>6.9</b>	<b>19.1</b>
Above Middle Income	14.8	7.6	0.9	8.4	0.4	0.7	1.0	1.4
<b>Total</b>	<b>35.1</b>	<b>22.6</b>	<b>24.5</b>	<b>28.7</b>	<b>9.3</b>	<b>9.0</b>	<b>7.9</b>	<b>20.5</b>

The table below summarizes the percentage of total new worker households that fall into each income category. As indicated, over 90% of retail, lodging, warehouse, and assisted living worker households are below 120% of median. This finding is not surprising given the generally low compensation levels applicable to many retail, hotel, warehouse, and assisted living jobs. Office worker households have the highest incomes on average with 25% in the Middle Income category and 42% earning above 120% of median.

**Percent of New Worker Households by Income Level**

	Light							Assisted Living
	Office	Industrial	Retail	Hospital	Lodging	Warehouse	Institutional	
Extremely Low	2.5%	4.7%	26.2%	2.4%	30.3%	13.3%	10.4%	15.2%
Low Income	19.1%	25.6%	49.0%	24.9%	47.9%	45.2%	38.1%	46.3%
Low to Moderate	11.7%	12.8%	11.6%	14.4%	10.1%	16.1%	16.4%	16.8%
Middle Income	24.6%	23.1%	9.6%	29.1%	7.3%	17.8%	22.0%	14.8%
<b>Subtotal</b>	<b>57.8%</b>	<b>66.2%</b>	<b>96.5%</b>	<b>70.8%</b>	<b>95.6%</b>	<b>92.4%</b>	<b>86.9%</b>	<b>93.0%</b>
Above Middle Income	42.2%	33.8%	3.5%	29.2%	4.4%	7.6%	13.1%	7.0%
<b>Total</b>	<b>100%</b>	<b>100%</b>						

**Adjustment for Commute Relationship**

Table 4 indicates the results of the analysis after an adjustment for commuting. As discussed in Section II, 45% of the jobs in the City of Boulder are estimated to be held by residents of the city. In other words, if the existing commute relationship were to hold for new employee households, 45% would be expected to reside in the City of Boulder, with the remaining 55% distributed throughout the region. The estimates of households for each income category in a prototypical 20,000 square foot building are adjusted downwards by this 45% commute factor. This adjustment is not technically required for nexus purposes. The City could, for example, choose to include all housing demand in the nexus analysis. The City could also choose to use

a factor other than the existing commute relationship that might incorporate policy considerations such as a goal to house a greater or lesser percentage of the workforce locally. Use of the 45% factor was selected based on long term projections in the Boulder Valley Comprehensive Plan Trends Report which indicate the current ratio of population to jobs is expected to remain similar in the future. The table below summarizes the housing need by income tier after making the 45% adjustment for commuting:

**New Worker Households by Income Level, per 20,000 square feet,  
after 45% Commute Adjustment**

	Light							Assisted Living
	Office	Industrial	Retail	Hospital	Lodging	Warehouse	Institutional	
Extremely Low	0.4	0.5	2.9	0.3	1.3	0.5	0.4	1.4
Low Income	3.0	2.6	5.4	3.2	2.0	1.8	1.4	4.3
Low to Moderate	1.8	1.3	1.3	1.9	0.4	0.7	0.6	1.6
Middle Income	3.9	2.4	1.1	3.8	0.3	0.7	0.8	1.4
<b>Subtotal</b>	<b>9.1</b>	<b>6.7</b>	<b>10.7</b>	<b>9.2</b>	<b>4.0</b>	<b>3.7</b>	<b>3.1</b>	<b>8.6</b>
Above Middle Income	6.7	3.4	0.4	3.8	0.2	0.3	0.5	0.6
<b>Total</b>	<b>15.8</b>	<b>10.2</b>	<b>11.0</b>	<b>12.9</b>	<b>4.2</b>	<b>4.0</b>	<b>3.6</b>	<b>9.2</b>

The analysis thus far has worked with prototypical buildings of 20,000 square feet. In a final step, the conclusions are translated to a per-square-foot level and expressed as coefficients. These coefficients state the portion of a household, or housing unit, by affordability level for which each square foot of building area is associated (See Table 5 at the end of this section).

This is the summary of the housing nexus analysis, or the linkage from buildings to employees to housing demand, by income level. We believe that it is a conservative analysis that most likely understates the households at each income level generated by these building types.

**TABLE 1**  
**NET NEW HOUSEHOLDS AND OCCUPATION DISTRIBUTION BY BUILDING TYPE**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

<i>Per 20,000 Sq.Ft. of Building Area</i>	<b>LIGHT</b>							<b>ASSISTED</b>
	<b>OFFICE</b>	<b>INDUSTRIAL</b>	<b>RETAIL</b>	<b>HOSPITAL</b>	<b>LODGING</b>	<b>WAREHOUSE</b>	<b>INSTITUTIONAL</b>	<b>LIVING</b>
Step 1 - Estimate of Number of Employees								
Employment Density (Employees per 1,000 SF)	3.59	2.31	2.51	2.94	0.95	0.92	0.81	2.10
Number of Employees Per 20,000 SF Building Area	71.8	46.2	50.2	58.8	19.0	18.4	16.2	42.0
Step 2 - Net New Employees after Declining Industries Adjustment (21%)	56.7	36.5	39.7	46.5	15.0	14.5	12.8	33.2
Step 3 - Adjustment for Number of Households (1.62)	35.1	22.6	24.5	28.7	9.3	9.0	7.9	20.5
Step 4 - Occupation Distribution <sup>(1)</sup>								
Management Occupations	8.3%	9.1%	2.3%	4.2%	4.5%	3.5%	5.7%	3.0%
Business and Financial Operations	11.5%	6.7%	0.5%	2.1%	1.5%	0.1%	3.1%	0.9%
Computer and Mathematical	21.0%	7.4%	0.1%	1.2%	0.1%	0.5%	0.8%	0.1%
Architecture and Engineering	5.0%	13.5%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%
Life, Physical, and Social Science	1.1%	1.3%	0.0%	0.7%	0.0%	0.0%	0.4%	0.0%
Community and Social Services	0.7%	0.0%	0.0%	6.1%	0.0%	0.0%	9.3%	1.8%
Legal	1.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Education, Training, and Library	0.4%	0.0%	0.1%	0.3%	0.0%	0.0%	33.6%	0.0%
Arts, Design, Entertainment, Sports, and Media	3.6%	0.9%	0.4%	0.2%	0.3%	0.1%	3.5%	0.1%
Healthcare Practitioners and Technical	5.6%	0.2%	1.2%	50.5%	0.0%	0.1%	1.3%	16.9%
Healthcare Support	3.1%	0.1%	0.3%	11.8%	0.5%	0.0%	3.1%	35.0%
Protective Service	0.6%	0.1%	0.3%	0.6%	1.6%	0.7%	0.5%	0.5%
Food Preparation and Serving Related	0.3%	0.3%	45.3%	1.7%	24.7%	0.1%	2.0%	14.3%
Building and Grounds Cleaning and Maint.	2.5%	0.4%	0.6%	2.6%	31.9%	1.0%	1.8%	6.4%
Personal Care and Service	0.8%	0.0%	3.1%	0.8%	4.0%	0.0%	20.2%	12.1%
Sales and Related	6.9%	5.0%	28.6%	0.3%	2.2%	1.7%	1.4%	0.3%
Office and Administrative Support	20.6%	12.8%	8.4%	14.7%	20.3%	22.3%	9.9%	5.0%
Farming, Fishing, and Forestry	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Construction and Extraction	0.6%	0.3%	0.1%	0.2%	0.1%	0.1%	0.2%	0.0%
Installation, Maintenance, and Repair	1.7%	6.4%	2.3%	0.9%	5.0%	3.2%	0.7%	1.9%
Production	2.0%	30.2%	2.0%	0.3%	2.2%	4.0%	0.4%	1.1%
Transportation and Material Moving	1.8%	4.7%	4.2%	0.6%	1.1%	60.3%	1.9%	0.7%
<b>Totals</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**TABLE 1**  
**NET NEW HOUSEHOLDS AND OCCUPATION DISTRIBUTION BY BUILDING TYPE**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

Per 20,000 Sq.Ft. of Building Area	LIGHT							ASSISTED
	OFFICE	INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	LIVING
Management Occupations	2.9	2.1	0.6	1.2	0.4	0.3	0.5	0.6
Business and Financial Operations	4.0	1.5	0.1	0.6	0.1	0.2	0.2	0.2
Computer and Mathematical	7.4	1.7	0.0	0.3	0.0	0.0	0.1	0.0
Architecture and Engineering	1.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0
Life, Physical, and Social Science	0.4	0.3	0.0	0.2	0.0	0.0	0.0	0.0
Community and Social Services	0.2	0.0	0.0	1.8	0.0	0.0	0.7	0.4
Legal	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Education, Training, and Library	0.1	0.0	0.0	0.1	0.0	0.0	2.7	0.0
Arts, Design, Entertainment, Sports, and Media	1.3	0.2	0.1	0.1	0.0	0.0	0.3	0.0
Healthcare Practitioners and Technical	2.0	0.0	0.3	14.5	0.0	0.0	0.1	3.5
Healthcare Support	1.1	0.0	0.1	3.4	0.0	0.0	0.2	7.2
Protective Service	0.2	0.0	0.1	0.2	0.1	0.1	0.0	0.1
Food Preparation and Serving Related	0.1	0.1	11.1	0.5	2.3	0.0	0.2	2.9
Building and Grounds Cleaning and Maint.	0.9	0.1	0.1	0.8	3.0	0.1	0.1	1.3
Personal Care and Service	0.3	0.0	0.8	0.2	0.4	0.0	1.6	2.5
Sales and Related	2.4	1.1	7.0	0.1	0.2	0.2	0.1	0.1
Office and Administrative Support	7.2	2.9	2.1	4.2	1.9	2.0	0.8	1.0
Farming, Fishing, and Forestry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction and Extraction	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Installation, Maintenance, and Repair	0.6	1.5	0.6	0.3	0.5	0.3	0.1	0.4
Production	0.7	6.8	0.5	0.1	0.2	0.4	0.0	0.2
Transportation and Material Moving	<u>0.6</u>	<u>1.1</u>	<u>1.0</u>	<u>0.2</u>	<u>0.1</u>	<u>5.4</u>	<u>0.2</u>	<u>0.1</u>
<b>Totals</b>	<b>35.1</b>	<b>22.6</b>	<b>24.5</b>	<b>28.7</b>	<b>9.3</b>	<b>9.0</b>	<b>7.9</b>	<b>20.5</b>

Notes:

(1) Appendix B Tables 1 through 16 contain additional information regarding worker occupation categories.

**TABLE 2**  
**ESTIMATE OF QUALIFYING HOUSEHOLDS - EXTREMELY LOW INCOME**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

**Analysis for Households Earning up to 30% of Median**

	<b>OFFICE</b>	<b>LIGHT INDUSTRIAL</b>	<b>RETAIL</b>	<b>HOSPITAL</b>	<b>LODGING</b>	<b>WAREHOUSE</b>	<b>INSTITUTIONAL</b>	<b>ASSISTED LIVING</b>
<i>Per 20,000 SF Building</i>								
<b>Step 5, 6, &amp; 7 - Households Earning up to 30% of Median<sup>(1)</sup></b>								
Management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Life, Physical and Social Science	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Community and Social Services	0.00	0.00	0.00	0.03	0.00	0.00	0.02	0.00
Legal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education Training and Library	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00
Arts, Design, Entertainment, Sports, and Media	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Healthcare Practitioners and Technical	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Healthcare Support	0.06	0.00	0.00	0.26	0.00	0.00	0.00	0.85
Protective Service	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related	0.00	0.00	3.90	0.00	0.78	0.00	0.00	0.82
Building Grounds and Maintenance	0.19	0.00	0.00	0.00	1.16	0.00	0.00	0.48
Personal Care and Service	0.00	0.00	0.13	0.00	0.11	0.00	0.41	0.59
Sales and Related	0.10	0.08	1.62	0.00	0.00	0.00	0.00	0.00
Office and Admin	0.31	0.14	0.22	0.27	0.49	0.19	0.03	0.06
Farm, Fishing, and Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction and Extraction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Installation Maintenance and Repair	0.00	0.03	0.02	0.00	0.01	0.01	0.00	0.00
Production	0.06	0.53	0.08	0.00	0.00	0.04	0.00	0.00
Transportation and Material Moving	0.00	0.23	0.24	0.00	0.00	0.87	0.00	0.00
HH earning up to 30% of Median - major occupations	0.79	1.01	6.20	0.60	2.54	1.11	0.69	2.80
HH earning up to 30% of Median - all other occupations	0.08	0.04	0.24	0.09	0.27	0.08	0.13	0.32
<b>Total Households Earning up to 30% of Median</b>	<b>0.9</b>	<b>1.1</b>	<b>6.4</b>	<b>0.7</b>	<b>2.8</b>	<b>1.2</b>	<b>0.8</b>	<b>3.1</b>

**Notes:**

(1) Appendix B Tables 1 through 16 contain additional information on worker occupation categories and compensation levels.

**TABLE 3  
WORKER HOUSEHOLDS BY AFFORDABILITY LEVEL  
JOBS HOUSING NEXUS ANALYSIS  
CITY OF BOULDER, CO**

*Per 20,000 S.F. Building*

	<b>OFFICE</b>	<b>LIGHT INDUSTRIAL</b>	<b>RETAIL</b>	<b>HOSPITAL</b>	<b>LODGING</b>	<b>WAREHOUSE</b>	<b>INSTITUTIONAL</b>	<b>ASSISTED LIVING</b>
<b>NUMBER OF HOUSEHOLDS BY INCOME TIER <sup>(1)</sup></b>								
Extremely Low (0% - 30% AMI)	0.9	1.1	6.4	0.7	2.8	1.2	0.8	3.1
Low Income (31% - 60% AMI)	6.7	5.8	12.0	7.1	4.4	4.1	3.0	9.5
Low to Moderate (61% to 76% AMI)	4.1	2.9	2.8	4.2	0.9	1.4	1.3	3.4
Middle Income (77% to 120% AMI)	8.6	5.2	2.4	8.4	0.7	1.6	1.7	3.0
<b>Subtotal - Affordable Categories</b>	<b>20.3</b>	<b>15.0</b>	<b>23.7</b>	<b>20.3</b>	<b>8.9</b>	<b>8.3</b>	<b>6.9</b>	<b>19.1</b>
Above Middle Income (> 120% AMI)	14.8	7.6	0.9	8.4	0.4	0.7	1.0	1.4
<b>Total New Worker Households</b>	<b>35.1</b>	<b>22.6</b>	<b>24.5</b>	<b>28.7</b>	<b>9.3</b>	<b>9.0</b>	<b>7.9</b>	<b>20.5</b>
<b>PERCENTAGE OF HOUSEHOLDS BY INCOME TIER</b>								
Extremely Low (0% - 30% AMI)	2.5%	4.7%	26.2%	2.4%	30.3%	13.3%	10.4%	15.2%
Low Income (31% - 60% AMI)	19.1%	25.6%	49.0%	24.9%	47.9%	45.2%	38.1%	46.3%
Low to Moderate (61% to 76% AMI)	11.7%	12.8%	11.6%	14.4%	10.1%	16.1%	16.4%	16.8%
Middle Income (77% to 120% AMI)	24.6%	23.1%	9.6%	29.1%	7.3%	17.8%	22.0%	14.8%
<b>Subtotal - Affordable Categories</b>	<b>57.8%</b>	<b>66.2%</b>	<b>96.5%</b>	<b>70.8%</b>	<b>95.6%</b>	<b>92.4%</b>	<b>86.9%</b>	<b>93.0%</b>
Above Middle Income (> 120% AMI)	42.2%	33.8%	3.5%	29.2%	4.4%	7.6%	13.1%	7.0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Notes:

(1) See Appendix B Tables 1 through 16 for information regarding worker compensation levels.

**TABLE 4**  
**WORKER HOUSEHOLDS BY AFFORDABILITY LEVEL - AFTER 45% COMMUTE ADJUSTMENT**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

*Per 20,000 S.F. Building*

	<b>OFFICE</b>	<b>LIGHT INDUSTRIAL</b>	<b>RETAIL</b>	<b>HOSPITAL</b>	<b>LODGING</b>	<b>WAREHOUSE</b>	<b>INSTITUTIONAL</b>	<b>ASSISTED LIVING</b>
<b>AFTER 45% COMMUTE ADJUSTMENT</b>								
<b>NUMBER OF HOUSEHOLDS BY INCOME TIER <sup>(1)</sup></b>								
Extremely Low (0% - 30% AMI)	0.4	0.5	2.9	0.3	1.3	0.5	0.4	1.4
Low Income (31% - 60% AMI)	3.0	2.6	5.4	3.2	2.0	1.8	1.4	4.3
Low to Moderate (61% to 76% AMI)	1.8	1.3	1.3	1.9	0.4	0.7	0.6	1.6
Middle Income (77% to 120% AMI)	3.9	2.4	1.1	3.8	0.3	0.7	0.8	1.4
<b>Subtotal - Affordable Categories</b>	<b>9.1</b>	<b>6.7</b>	<b>10.7</b>	<b>9.2</b>	<b>4.0</b>	<b>3.7</b>	<b>3.1</b>	<b>8.6</b>
Above Middle Income (> 120% AMI)	6.7	3.4	0.4	3.8	0.2	0.3	0.5	0.6
<b>Total New Worker Households</b>	<b>15.8</b>	<b>10.2</b>	<b>11.0</b>	<b>12.9</b>	<b>4.2</b>	<b>4.0</b>	<b>3.6</b>	<b>9.2</b>

Notes:

(1) See Appendix B Tables 1 through 16 for information regarding worker compensation levels.

**TABLE 5  
HOUSING DEMAND NEXUS FACTORS PER SQ.FT. OF BUILDING AREA  
JOBS HOUSING NEXUS ANALYSIS  
CITY OF BOULDER, CO**

	Number of Housing Units per Square Foot of Building Area <sup>(1)</sup>							ASSISTED LIVING
	OFFICE	LIGHT INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	
Extremely Low (0% - 30% AMI)	0.00001969	0.00002368	0.00014491	0.00001532	0.00006327	0.00002689	0.00001852	0.00007019
Low Income (31% - 60% AMI)	0.00015069	0.00013032	0.00027073	0.00016075	0.00010009	0.00009152	0.00006794	0.00021378
Low to Moderate (61% to 76% AMI)	0.00009203	0.00006489	0.00006379	0.00009346	0.00002108	0.00003260	0.00002926	0.00007757
Middle Income (77% to 120% AMI)	0.00019448	0.00011756	0.00005327	0.00018830	0.00001532	0.00003606	0.00003915	0.00006816
<b>Total</b>	<b>0.00045690</b>	<b>0.00033646</b>	<b>0.00053270</b>	<b>0.00045783</b>	<b>0.00019976</b>	<b>0.00018707</b>	<b>0.00015486</b>	<b>0.00042970</b>

Notes:

<sup>(1)</sup> Calculated by dividing number of household in Table 4 by 20,000 square feet to convert to households per square foot of building.

#### **IV. TOTAL HOUSING NEXUS COSTS**

This section takes the conclusions of the previous section on the number of households in the lower income categories associated with new commercial development projects and identifies the total cost of assistance required to make housing affordable. This section puts a cost on the units for each income level to produce the “total nexus cost.” This is done for each of the prototype units.

A key component of the analysis is the size of the gap between what households can afford and the cost of producing new housing in Boulder, known as the ‘affordability gap.’ Affordability gaps are calculated for each of the four categories of area median income utilized for this analysis: Extremely Low Income (qualifying income: 30% of median and under), Low Income (31% to 60%), Low to Moderate Income (61% to 76.2%), and Middle Income (76.3% to 120%). The following summarizes the analysis of mitigation cost which is based on the affordability gap to provide units that are affordable to worker households in the lower income tiers. Detailed affordability gap calculations are presented in Tables 7 and 8 at the end of this section.

##### **City Assisted Affordable Unit Prototypes**

For estimating the affordability gap, there is a need to match a household of each income level with a unit type and size according to governmental regulations and City practices and policies. The analysis assumes that Extremely Low and Low Income households will be assisted in a multi-family apartment unit averaging two-bedrooms and 800 square feet in size and that Low to Moderate and Middle Income households will be assisted in a three-bedroom for-sale townhome unit averaging 1,400 square feet.

The larger townhome unit is assumed for the Low to Moderate and Middle Income households because it is one strategy to meet the needs of families in these income tiers who increasingly face affordability challenges in Boulder. A smaller two-bedroom unit is more typical for Extremely Low and Low Income households, especially for projects that are subsidized with Low Income Housing Tax Credits. In all cases, it is assumed that the prototype affordable unit reflects a modest unit consistent with what the City is likely to assist and appropriate for housing the average Extremely Low, Low, Low to Moderate, and Middle Income worker household.

##### **Development Costs**

KMA prepared an estimate of total development cost for typical affordable rental units inclusive of land, direct construction, indirect (soft costs) and financing costs based on a review of development pro forma data for recent affordable rental developments assisted by the City of

Boulder and based on discussions with affordable housing developers in Boulder<sup>2</sup>. On this basis, it is estimated that the affordable apartment prototype will have a total development cost per unit of approximately \$293,000. The for-sale prototype is estimated to have a total development cost of approximately \$423,000 based on local data for inputs such as land acquisition costs, direct and indirect costs of construction, supplemented by third party cost estimating sources such as RS Means.

### Development Costs

Qualifying Income	Unit Tenure / Type	Development Cost
30% AMI and under	Rental	\$293,000
31% to 60% AMI	Rental	\$293,000
61% to 76.2% AMI	Ownership	\$423,000
76.3% to 120% AMI	Ownership	\$423,000

It is noted that the development costs in this analysis are based on new construction projects even though it is recognized that acquisition/rehab projects play a major role in creating affordable housing opportunities in Boulder. On this point, it is important to note that, on average, the affordable acquisition/rehab projects currently being planned in the City are just as expensive as the new construction projects.

### Affordability Gap

The affordability gap is the difference between the cost of developing the affordable unit and the amount of funding sources available to pay for the unit. For rental units, the affordability gap is the difference between total development costs and financing available from the supported debt and the value of 4% Low Income Housing Tax Credits. For ownership units, the affordability gap is the difference between total development costs and the affordable purchase price determined based on the City's methodology.

Affordable rents were estimated based on maximum household incomes for Extremely Low and Low Income households net of estimated tenant paid utilities. Maximum affordable sales prices for ownership units were calculated consistent with the City's existing guidelines and underwriting assumptions as of Q1 2016.

### Maximum Affordable Sales Prices and Rent Levels

Qualifying Income	Unit Tenure / Type	Unit Size	Maximum Housing Costs
30% AMI and under	Rental	2 bedrooms	\$606 / Month*
31% to 60% AMI	Rental	2 bedrooms	\$1,054 / Month*
61% to 76.2% AMI	Ownership	3 bedrooms	\$203,100
76.3% to 120% AMI	Ownership	3 bedrooms	\$321,300

\*Tenant rent net of estimated tenant-paid utilities.

<sup>2</sup> Affordable housing developers interviewed for this assignment included Element Properties, Allison Management (Andy Allison), and Boulder Housing Partners (Housing Authority). Project pro formas reviewed include The Residences at Sutherland, Lee Hill Community, Thunderbird/Osage, High Mar, Trinity, and SPARK West.

The operating income estimate for the apartment project takes into consideration rental income, a factor for vacancy/turnover/bad debt, operating expenses, and replacement reserves. The project's net operating income (NOI) is then used to estimate the amount of private debt the project can support.

The assumption of 4% Tax Credits was made based on their more consistent availability as compared to 9% Tax Credits, which are highly competitive. While there are sometimes additional State and Federal sources of funds to finance affordable housing, it is not assured that these sources will be available in the future and accessing these sources is also highly competitive due to the limited supply.

The resulting affordability gaps are as follows:

#### Affordability Gap Calculation

Qualifying Income	Unit Value / Financing Sources*	Development Cost	Affordability Gap
<u>Affordable Rental Units</u>			
30% AMI and under	\$119,700	\$293,000	\$173,300
31% to 60% AMI	\$193,200	\$293,000	\$99,800
<u>Affordable Ownership Units</u>			
61% to 76.2% AMI	\$203,100	\$423,000	\$219,900
76.3% to 120% AMI	\$321,300	\$423,000	\$101,700

\*For rental units financing sources including supported private debt and the market value of 4% tax credits. With for-sale units, the unit value equals the affordable sales price.

Tables 6 and 7 at the end of this section present the detailed affordability gap calculations.

## Maximum Supported Fees

The last step in the nexus analysis calculates the cost of delivering affordable housing to the households created by new non-residential development.

Table 8 at the end of this section summarizes the analysis. The demand for affordable units in each income range that is generated per square foot of building area is drawn from Table 5 in the previous section. The “Maximum Fee per Square Foot” represents the results of the following calculation:

Affordability Gap (from above)	X	No. affordable units generated per square foot of building area. (from Table 5)	=	Maximum Fee Per Square Foot
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The maximum impact fees for the eight building types are as follows:

Building Type	Nexus Findings with 45% Commute Adjustment (per Sq. Ft.)
Office	\$58.40
Light Industrial	\$43.40
Retail	\$71.50
Hospital	\$58.40
Lodging	\$27.20
Warehouse	\$24.70
Institutional	\$20.40
Assisted Living	\$57.50

Note: Nexus findings are not recommended fee levels.  
See Table 8 for details by income category.

These totals represent the maximum impact fee that could be charged for new non-residential construction to mitigate its impacts on the need for affordable housing. The totals are not recommended fee levels; they represent only the maximums established by this analysis.

These total nexus or mitigation costs are high due to the low compensation levels of many jobs, coupled with the high cost of developing residential units. Higher employment densities also contribute to higher nexus costs. These factors are especially pronounced with the Office, Retail, Hospital and Assisted Living categories, yielding a very high nexus cost.

The City has a \$0.51 per square foot Housing Excise Tax (HET) applicable to all new non-residential development and used to fund affordable housing. If the HET continues to be collected, it will need to be considered along with the Affordable Housing fee in determining whether requirements are within the maximums supported by the nexus.

## Conservative Assumptions

In establishing the maximum impact fee, many conservative assumptions were employed in the analysis that result in a cost to mitigate affordable housing needs that may be considerably understated. These conservative assumptions include:

- A downward adjustment of 21% has been reflected in the analysis to account for declining industries and the potential that displaced workers from declining sectors of the economy will fill a portion of jobs in new workplace buildings. This is a conservative assumption because many displaced workers may exit the workforce entirely by retiring rather than seek a new job in one of the growing sectors of the economy. In addition, development of new workspace buildings will typically occur only to the extent net new demand exists after space vacated by businesses in declining sectors of the economy has been re-occupied. The 21% adjustment is conservative in that it is mainly necessary to cover a special case scenario in which buildings vacated by declining industries cannot be readily occupied by other users due to their special purpose nature or due to obsolescence.
- A downward adjustment of 55% has been reflected in the analysis to account for commuting. This is an optional adjustment that effectively removes over half of the affordable housing need from the analysis and resulting maximum impact fees.
- Annual incomes for workers reflect full time employment based upon the Bureau of Labor Statistics convention for reporting annual compensation information. In fact, many workers work less than full time; therefore, annual compensations used in the analysis are probably overstated, especially for Retail and Hotel, which tend to have a high number of part time employees.
- Only direct employees are counted in the analysis. Many contractual services related employees are also associated with each new workspace. Indirect / contract services employees in an office building, for example, include security, delivery personnel, building cleaning and maintenance personnel, and a whole range of others. Hotels do have many of these workers on staff, but hotels also “contract out” a number of services that are not taken into account in the analysis.

In summary, many less conservative assumptions could be made that would justify a much higher maximum linkage fee.

**TABLE 6**  
**AFFORDABILITY GAPS - EXTREMELY LOW AND LOW INCOME RENTAL (RENTAL PROTOTYPE)**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

Affordable Rental Prototype	2-Bedroom Apartments 800 sf	2-Bedroom Apartments 800 sf
	Extremely Low Income	Low Income
Unit Size	2-Bedroom	2-Bedroom
100% Median Income (3-Person)	\$89,500	\$89,500
% of AMI for pricing (not qualifying)	30.0%	50.0%
Household Income	\$26,850	\$44,750
<u>Unit Rents</u>		
Monthly Rent (2BR)	\$671	\$1,119
Utility Allowance (2BR)	(\$65)	(\$65)
Net Monthly Rent	\$606	\$1,054
<u>Operating Income</u>		
Net Rental Income - Annual	\$7,275	\$12,645
Other Income	\$100	\$100
(Less) Vacancy 5.0% <sup>(1)</sup>	(\$364)	(\$632)
(Less) Operating Expenses	(\$5,000)	(\$5,000)
(Less) Property Taxes	\$0	\$0
(Less) Replacement Reserves	(\$300)	(\$300)
NOI - Annual	\$1,711	\$6,813
(Less) Debt Service 1.20	(\$1,426)	(\$5,677)
Cash Flow after Debt	\$285	\$1,135
<u>Affordability Gap</u>		
Total Development Costs <sup>(2)</sup>	\$293,000	\$293,000
(Less) Supported Private Debt 4.0% 30 <sup>(3)</sup>	(\$24,700)	(\$98,200)
(Less) 4% Tax Credit Equity	(\$95,000)	(\$95,000)
Affordability Gap	\$173,300	\$99,800

<sup>(1)</sup> Vacancy rate range for Boulder affordable housing projects is 5% to 7%.

<sup>(2)</sup> Average of new construction projects only (excludes acq/rehab projects). Costs adjusted to net out deferred portion of developer fee.

<sup>(3)</sup> Tax exempt interest rate applicable to 4% tax credit projects.

**TABLE 7**  
**AFFORDABILITY GAPS - OWNERSHIP**  
**JOBS HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER, CO**

Affordable For-Sale Prototype		3-Bedroom Townhome 1,400 sf	3-Bedroom Townhome 1,400 sf
		Low/Mod Income	Middle Income
100% Area Median Income (3-Person)		\$89,500	\$89,500
<u>Affordable Sale Price Calculation <sup>(1)</sup></u>			
% of AMI for pricing (not qualifying)		66.2%	100.0%
Household Income		\$59,250	\$89,500
Available for Housing Cost	28.0%	\$16,590	\$25,060
(Less) HOA Dues	\$299	(\$3,588)	(\$3,588)
(Less) Taxes & Insurance	22%	(\$2,860)	(\$4,724)
Available for Mortgage		\$10,142	\$16,748
Mortgage	4.06%	\$175,746	\$290,234
Plus Downpayment	5.0%	\$9,250	\$15,275
Supported Sale Price - base unit size		\$184,996	\$305,510
Unit Size Adjustment		\$18,104	\$15,790
Supported Sale Price - adjusted unit size		\$203,100	\$321,300
<u>Development Costs</u>			
Land Acquisition <sup>(2)</sup>		\$100,000	\$100,000
Direct Construction (Sitework & Building)		\$240,000	\$240,000
Indirects		\$72,000	\$72,000
Financing		\$11,000	\$11,000
Total Development Costs		\$423,000	\$423,000
<u>Affordability Gap</u>			
Total Development Costs		\$423,000	\$423,000
(Less) Affordable Sale Price		(\$203,100)	(\$321,300)
Affordability Gap		\$219,900	\$101,700

<sup>(1)</sup> Affordable sale prices based on City's pricing methodology and assumptions for Q1 2016 (3br, 2.5ba).

<sup>(2)</sup> The land acquisition cost estimate was based on sales of both vacant and improved sites purchased for redevelopment. Land costs can be higher in certain parts of the City; therefore, this is considered to be a conservative cost estimate.

**TABLE 8  
TOTAL HOUSING NEXUS COST  
JOBS HOUSING NEXUS ANALYSIS  
CITY OF BOULDER, CO**

INCOME CATEGORY	Affordability Gap Per Unit	Nexus Cost Per Sq.Ft. of Building Area <sup>3</sup>							
		OFFICE	LIGHT INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	ASSISTED LIVING
Extremely Low (0% - 30% AMI)	\$173,300 <sup>1</sup>	\$3.40	\$4.10	\$25.10	\$2.70	\$11.00	\$4.70	\$3.20	\$12.20
Low Income (31% - 60% AMI)	\$99,800 <sup>1</sup>	\$15.00	\$13.00	\$27.00	\$16.00	\$10.00	\$9.10	\$6.80	\$21.30
Low to Moderate (61% to 76% AMI)	\$219,900 <sup>2</sup>	\$20.20	\$14.30	\$14.00	\$20.60	\$4.60	\$7.20	\$6.40	\$17.10
Middle Income (77% to 120% AMI)	\$101,700 <sup>2</sup>	\$19.80	\$12.00	\$5.40	\$19.10	\$1.60	\$3.70	\$4.00	\$6.90
<b>Total</b>		<b>\$58.40</b>	<b>\$43.40</b>	<b>\$71.50</b>	<b>\$58.40</b>	<b>\$27.20</b>	<b>\$24.70</b>	<b>\$20.40</b>	<b>\$57.50</b>
						\$16,300 Per Room <sup>(4)</sup>			\$23,000 Per Bed <sup>(4)</sup>

Notes:

(1) Assumes rental units. Affordability Gap reflected is the remaining gap after financing available through 4% tax credits.

(2) Assumes ownership unit.

(3) Calculated by multiplying housing demand factors from Table 5 by the affordability gaps from Table 6 and 7.

(4) Converted from square footage basis using an average of 600 square feet gross building area per room for the hotel and 400 square feet gross building area per bed for nursing home / assisted living.

## V. MATERIALS TO ASSIST IN ADJUSTING FEE LEVELS

The purpose of this section is to provide information that may be useful to policy makers in setting fee levels and designing the program. A particular focus is devoted to facilitating an understanding of whether fees are likely to alter development decisions, or drive activity to other jurisdictions.

As indicated at the end of the previous section, the nexus analysis establishes the maximum legally defensible fee levels supported by the analysis. Recognizing a variety of City objectives, policy makers may set the fees at any level below the maximum, and may design other program features to meet local goals and objectives.

The materials in this section are not part of the nexus analysis. Instead, this section provides an assembly of materials to provide context for the consideration of potential fee levels including a review of:

- **Market Context** – Section A. provides a general overview of the Boulder economy and real estate market;
- **Development Cost Context** – Section B. evaluates total development costs associated with five prototypical building types to facilitate an evaluation of whether fee amounts are likely to affect development decisions; and
- **Survey of other Linkage Fees Programs** - Section C. provides context regarding linkage fees adopted elsewhere.

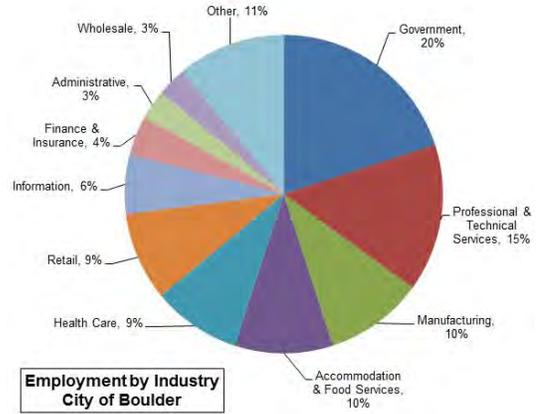
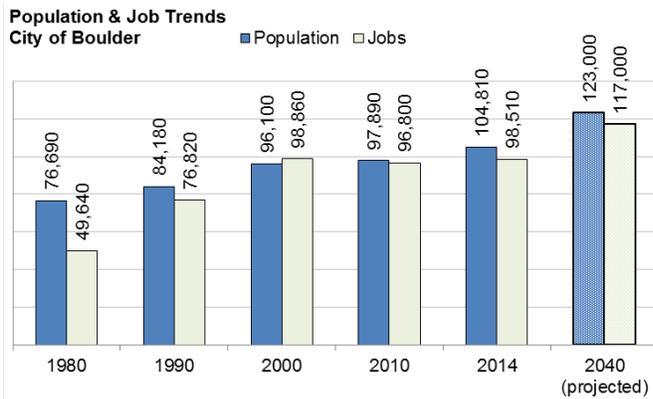
### A. MARKET CONTEXT

This section provides an overview of the Boulder economy and real estate market in order to provide context for the City's consideration of a linkage fee on new non-residential development projects. Local real estate and macro- economic conditions are among the factors that are often considered by policy makers in adopting new fees.

#### *Demographics & Economy*

As of 2014, the City of Boulder had a total population of 104,810. Since 2000, the population has grown at a compounded annual growth rate (CAGR) of about 0.6%. A similar growth rate is projected to the year 2040 when the population is projected to be 123,000 (see the chart below).

In terms of employment, the Boulder economy has grown jobs at a pace faster than population growth – since 1980 the total number of jobs in Boulder has doubled whereas the population has grown by slightly over one-third. In 2040, the jobs-to-population ratio is projected to be about the same as it is today.



Source: City of Boulder<sup>3</sup>; Colorado Department of Labor & Employment

The City of Boulder has a broad-based and diverse economy, with a relatively balanced mix of employment by industry sector. The top three sectors for employment, together representing nearly half of all jobs, are government, professional and technical services, and manufacturing. Boulder’s economy benefits from the presence of a number of federal laboratories as well as the University of Colorado Boulder, which makes the City a center for research and development. Boulder is also a center for business innovation and startups, has a high concentration of advanced industries such as aerospace, biosciences, and information technology, a balance of large and small businesses, and significant in-state and out-of-state visitors which makes tourism a major contributor to the local economy as well.

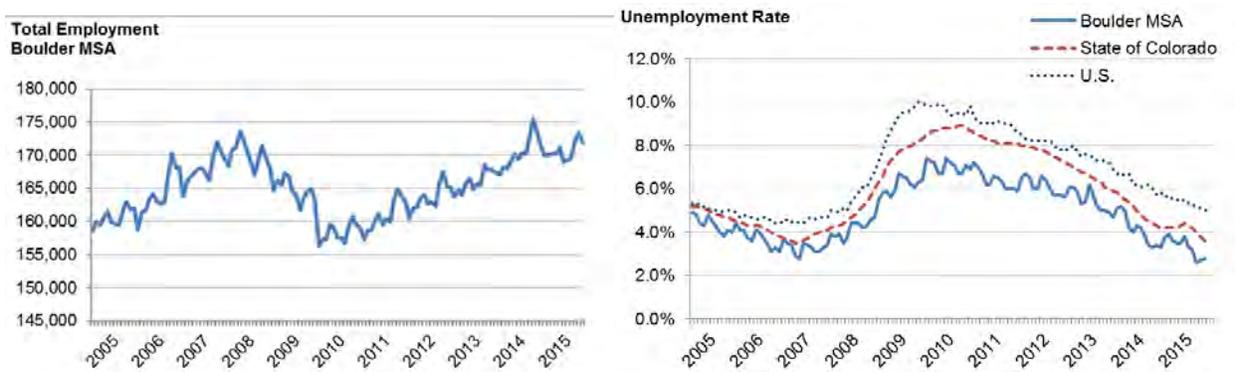
As of 2014, the top ten employers in Boulder were:

- Ball Aerospace
- Boulder Community Hospital
- Boulder County
- Boulder Valley School District
- City of Boulder
- Covidien
- IBM
- National Oceanic & Atmospheric Administration (NOAA)
- National Center for Atmospheric Research and University Corporation for Atmospheric Research (UCAR/NCAR)
- University of Colorado Boulder

The following charts depict the impact of the Great Recession on total employment and the unemployment rate in Boulder. Total employment dipped by about 10% from its pre-recession peak in late 2007 to its trough in late 2009. The monthly unemployment rate reached its pre-

<sup>3</sup> Note: the City’s job estimate methodology was revised in 2015; prior year job estimates in the above chart have not yet been updated for the revised methodology.

recession low in 2006 (2.8%) and its high in 2009 (7.4%). The resurgent economy since the recession is reflected in both the total employment numbers and the unemployment rate, both of which are now at or near peak pre-recession conditions.



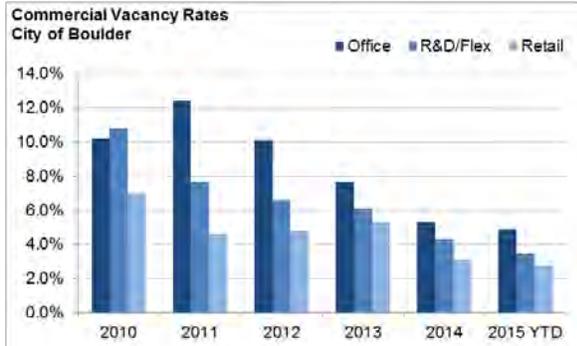
Source: Bureau of Labor Statistics

Among the strengths of the Boulder economy are its diversity, the presence of the university which generates a strong employment base and supplies a highly educated workforce, its natural setting, high quality of life, and its cultural and recreational amenities. These attributes have allowed Boulder's economy to weather market downturns better than other parts of the state and nation.

Median incomes for family households are currently 10% to 30% higher in Boulder than they are in Boulder County and the larger Denver-Aurora-Boulder region respectively but are slightly lower for non-family households. The latter is largely attributable to the influence of the City's sizable university student population which, at about 30,000, represents about 30% of Boulder's total population.

### *Real Estate Market Conditions*

As has been the case for the larger Boulder economy, real estate market conditions in the City experienced a period of depressed conditions during the Great Recession but have rebounded strongly in the last several years. One broad indicator of commercial real estate conditions is vacancy rates, which for office, R&D/flex, and retail projects have all been on a rapid downward trend since 2011. For the first half of 2015, the overall vacancy rate for office space was 4.9%, R&D/flex space was 3.5%, and retail space was 2.8%. These low vacancy rates have had the effect of driving up rental rates and, combined with other factors such as the low cost of capital, stimulating investment in new development projects in the City. Other indicators of strengthening commercial market conditions include increasing hotel occupancy and room rates and increasing taxable retail sales.

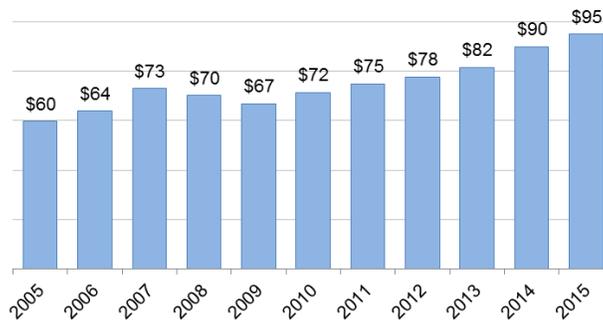


Source: Boulder Economic Council (June 2015)



Source: Boulder Conventions & Visitors Bureau

Retail Sales Taxes (\$millions)  
City of Boulder



Source: City of Boulder; Boulder Economic Council

### Regional Context

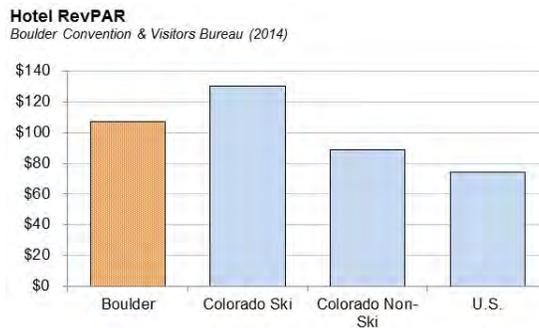
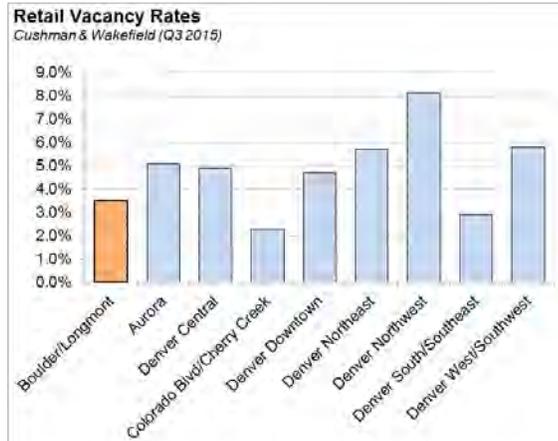
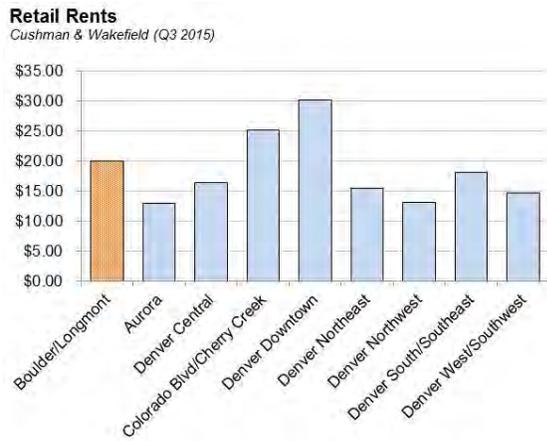
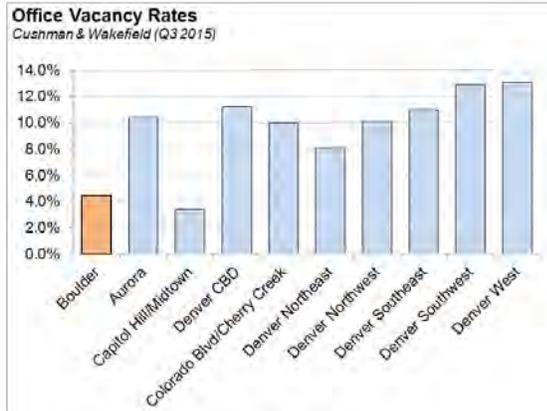
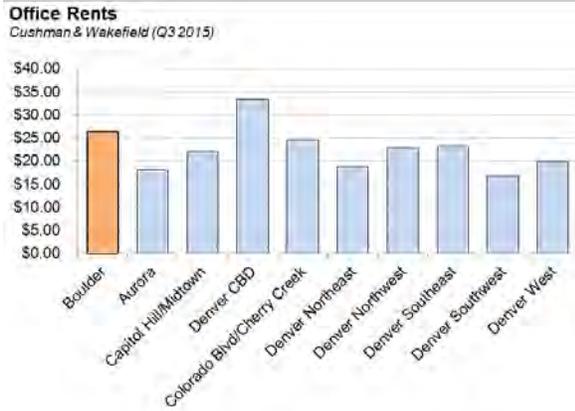
Overall, the local Boulder economy and commercial market conditions compare favorably to the larger Boulder County, Denver metro area, and state. The population of Boulder tends to be younger (due to the presence of the university), has a more educated workforce, and has higher incomes overall. Office and retail rents and vacancy rates in Boulder are strong relative to most submarkets in the Denver region and hotel rates (RevPAR<sup>4</sup>) are high in comparison to non-ski destinations in the state.

#### Demographic Snapshot

	Boulder City	Boulder County	Colorado
Median Age	27.7	36.3	36.4
% Family Households	39.8%	57.8%	63.9%
Education: Bachelor's Degree or Higher	75.0%	58.5%	37.8%
Per Capita Income	\$38,840	\$38,538	\$31,421
Median Family Income	\$107,181	\$92,363	\$72,043

Source: American Community Survey 2013

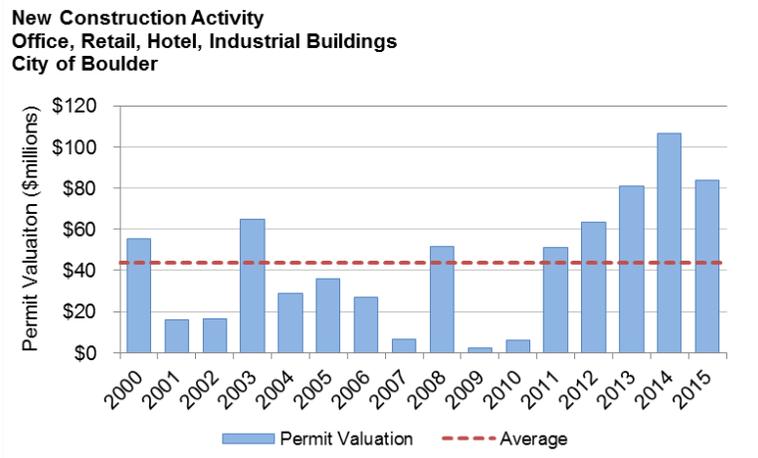
<sup>4</sup> Revenue per available room (RevPAR) is the average daily hotel room rate multiplied by the occupancy rate.



*Real Estate Development Activity*

The improvement in real estate market conditions in Boulder has resulted in the financial viability of many new development projects in recent years. As shown in the following chart, the last several years have seen an uptick in building permit activity for commercial development projects. On average, the City of Boulder experiences investment in new office, retail, hotel, and

industrial projects of just over \$40 million per year in building permit valuation (for the period from 2000 to 2015)<sup>5</sup>.



### Summary

In summary, Boulder’s economy and commercial market conditions compare favorably to other submarkets in the Boulder County and Denver metro regions. In addition, Boulder’s diverse economy and high quality of life have historically made the City a desirable place to live and work and will likely continue to do so for the foreseeable future.

<sup>5</sup> New building construction only; does not include renovations.

## B. DEVELOPMENT COST CONTEXT

Policy makers may establish linkage fees at any level below the maximum nexus cost for the building types addressed in the analysis. One approach to establishing fee amounts is based on an understanding of the relative cost burdens that a new fee can have on new commercial development projects. This is one of a variety of factors that policy makers often wish to consider in setting new fee amounts.

The City of Boulder has a wide range of development densities and prototypes for commercial projects. For example, office buildings can range from lower density one- to two- story structures with surface parking to higher density multiple story buildings with underground parking. In addition, land costs vary significantly from one part of Boulder to another, with the higher values associated with the downtown and nearby areas such as the transit district. In order to cover the range of project densities and costs, this analysis assembled prototypes for the following five commercial uses:

- Flex Commercial (R&D/light industrial)
- Hotel
- Retail
- Lower Density Office
- High Density Office (downtown & vicinity)

For purposes of the development cost assessment, it is not necessary to analyze every variation of project density or building prototype being built in Boulder today. The utility of the analysis lies with an understanding of the general range of development costs for new commercial projects in Boulder and the impact that a new linkage fee can have relative to those costs.

In assembling the development cost estimates, KMA utilized a variety of data sources, including the following:

- Land appraisals;
- Third party construction cost data sources such as RS Means and Engineering News Record (ENR);
- Pro forma data shared by local developers for current development projects<sup>6</sup>;
- Pro forma data shared by the City of Boulder for projects done in partnership with local developers;
- Local broker reports;
- Local news articles from BizWest, the Daily Camera, the Denver Business Journal, etc.

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<sup>6</sup> Developers interviewed for this assignment include Element Properties, Allison Management, WW Reynolds, Del Mar Interests (Michael Boyers), and LJD Enterprises (Lou DellaCava).

The development cost estimates are broken into four major categories: land acquisition costs, direct construction costs (including tenant improvement costs and hotel FF&E), indirect costs of development (such as architecture and engineering, municipal fees and permits costs, taxes, insurance, marketing/leasing, etc.), and debt financing costs. In preparing these cost estimates, it is recognized that there is wide variation of projects in Boulder, each with its own set of unique circumstances and unique costs; therefore the estimates prepared for this analysis are only intended to reflect general orders of magnitude. It is also recognized that development costs are constantly evolving due to changes in the market; for example, the large volume of new construction activity in Boulder has resulted in significant construction cost escalations in recent years.

As shown in the following table, the total development costs of the commercial prototypes chosen for this analysis are estimated to range from a low of about \$200/square foot for the flex commercial prototype to a high of almost \$500/square foot for the high density office prototype. The costs are generally lower for the flex commercial and suburban prototypes due to the lower land costs, simpler building types, and surface parking. The high density office project has the highest costs due to high land costs in the downtown and surrounding areas and because of the high costs of building underground and other structured parking garages. While office is the only land use analyzed in a high density format, it is recognized that a high density hotel or retail/mixed use project in the downtown would also have high costs for the same reasons.

**Development Costs for Commercial Building Prototypes**

Program	Flex Commercial (R&D/Lt Industrial)		Hotel		Retail		Lower Density Office		High Density Office (DT & Vicinity)							
	Building Area	Stories	FAR	Acres	Building Area	Stories	FAR	Acres	Building Area	Stories	FAR	Acres				
Building Area	50,000 GSF	1 story	0.50 FAR	2.3 acres	65,000 GSF	2-3 stories	0.75 FAR	2.0 acres	50,000 GSF	3 stories	0.50 FAR	2.3 acres	50,000 GSF	3-4 stories	2.00 FAR	0.6 acres
Development Costs	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total	\$/GSF	Total
Land Acquisition	\$24	\$1,200,000	\$34	\$2,180,000	\$60	\$3,000,000	\$50	\$2,500,000	\$75	\$3,750,000	\$189	\$12,260,000	\$184	\$9,200,000	\$227	\$11,350,000
Directs (incl. TI's)	\$165	\$8,250,000	\$15	\$980,000	\$15	\$740,000	\$14	\$680,000	\$29	\$1,460,000	\$10	\$500,000	\$21	\$1,060,000	\$21	\$1,060,000
Indirects	\$10	\$500,000	\$10	\$680,000	\$9	\$440,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000
Financing	\$7	\$340,000	\$10	\$680,000	\$9	\$440,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000	\$10	\$500,000
Total	\$206	\$10,290,000	\$248	\$16,100,000	\$268	\$13,380,000	\$301	\$15,030,000	\$489	\$24,470,000	\$489	\$24,470,000	\$489	\$24,470,000	\$489	\$24,470,000

Note: Except for High Density Office, all the prototypes assume surface parking.  
 GSF = gross building square feet; FAR = floor area ratio.

From the above cost estimates, potential commercial linkage fee levels can be expressed as a percentage of total development costs in order to see the relative cost burdens. For example, a \$10/square foot fee would have a fee burden equal to approximately 2% of total development cost for the high density office prototype but a much higher burden, about 5% of cost, for the flex commercial prototype. It is for this reason that some cities scale their fees according to the type of project being built. The following table provides an illustration of how this concept might apply to the five commercial prototypes analyzed. The table also indicates that Boulder's current commercial linkage fees represent between 0.7% and 3.2% of total development costs.

**Relative Fee Burdens on Commercial Prototypes**

<i>(Fee amounts are rounded)</i>	Flex Commercial (R&D/Lt Industrial)	Hotel	Retail	Lower Density Office	High Density Office (DT & Vicinity)
<b>Total Development Cost</b>	\$206 /SF	\$248 /SF	\$268 /SF	\$301 /SF	\$489 /SF
<b>Illustrative Fee Scenarios</b>					
2% of Development Cost	\$4.10 /SF	\$5.00 /SF	\$5.40 /SF	\$6.00 /SF	\$9.80 /SF
3% of Development Cost	\$6.20 /SF	\$7.40 /SF	\$8.00 /SF	\$9.00 /SF	\$14.70 /SF
4% of Development Cost	\$8.20 /SF	\$9.90 /SF	\$10.70 /SF	\$12.00 /SF	\$19.60 /SF
<b>Current Fees</b>					
Current Fees	\$5.62 /SF	\$1.78 /SF*	\$6.96 /SF	\$9.53 /SF	\$9.53 /SF
% of Development Cost	2.7%	0.7%	2.6%	3.2%	1.9%

\* The current fee is \$1,072/hotel room. The fee per square foot above is illustrative and assumes 600 square feet per hotel room.

Finally, for purposes of context it can sometimes be instructive to see the relationship between potential fee amounts and the various elements of a project's development economics. Quantifying these relationships allows one to see how newly adopted fees can be absorbed by relatively minor improvements in development economics over time. The following table indicates that every \$1/square foot in new fees could be absorbed by a corresponding increase in rents or decrease in development costs (or a combination thereof). As one example, a newly added fee of \$10/square foot for the high density office prototype could be absorbed by any one of a roughly 2% increase in rental income (10 x 0.2%), a roughly 3% decrease in direct construction costs (10 x 0.3%), or a roughly 13% decrease in land values (10 x 1.3%).

**Potential Market Adjustments to Absorb Every \$1/SF Fee**

<i>All figures are approximate</i>	Flex Commercial (R&D/Lt Industrial)	Hotel	Retail	Lower Density Office	High Density Office (DT & Vicinity)
Increase in Rents/Income	0.4%	0.4%	0.3%	0.3%	0.2%
Decrease in Direct Costs	0.6%	0.5%	0.5%	0.4%	0.3%
Decrease in Land Values	4.2%	3.0%	1.7%	2.0%	1.3%

With regard to land costs, developers purchase sites at values that will allow for financially feasible projects. If a new fee is put in place, developers will "price in" the requirement when evaluating a project's economics and negotiating the purchase price for development sites. Given that the fees will apply to all or most projects in Boulder, it is possible that downward pressure on land costs could result as developers adjust what they can afford to pay for land. This downward pressure on land prices can, at least to some degree, bring costs back into better balance with the overall economics supported by projects. However, it is also recognized that some property owners may decide to hold their properties off the market until such time as market conditions will support the price they are seeking.

As a final comment regarding land costs, it is acknowledged that one of the challenges facing the financial feasibility of new projects in Boulder is the dwindling number of vacant

development sites. According to the Boulder Valley Comprehensive Plan Trends Report, less than 1% of vacant land exists today in urbanized Boulder (Area I). Consequently, much of the future development opportunities in the City will come through redevelopment of older, underutilized properties in infill locations. Development of such properties can face challenges including the possible need to buy out existing income-generating uses, and the costs of parcel assemblage, demolition, tenant relocation, offsite infrastructure upgrades, hazardous remediation and other environmental mitigations, and historic preservation. Therefore, for many potential development sites there are limitations to how much the land values can be downwardly adjusted.

### **C. SURVEY OF OTHER LINKAGE FEE PROGRAMS**

Information on linkage fee programs adopted elsewhere is often helpful context in considering updated fees. The following section provides information assembled regarding other programs within Colorado and nationally.

#### **Colorado**

At this time, Boulder is the only jurisdiction on the Front Range that has an adopted commercial linkage fee. Denver is currently in the process of exploring a new program. Several mountain / ski-resort communities have affordable housing requirements applicable to non-residential development, including Aspen and Vail which were surveyed as part of the KMA work scope. The Aspen and Vail programs are not affordable housing impact fees, rather they are structured as regulatory requirements to provide affordable housing or pay an in-lieu fee instead (much like Boulder's Inclusionary Housing program). While these resort communities are not comparable to Boulder, the programs represent precedents for non-residential affordable housing requirements in Colorado.

#### **Outside of Colorado**

More than 30 cities and counties in California have commercial linkage fees, with the majority of programs within the San Francisco Bay Area and Sacramento region. In the Boston area, several communities have linkage fees, including Boston and Cambridge. Seattle recently expanded its linkage fee City-wide with fee levels varying by zone and ranging from \$0 to \$17.50 within the downtown and South Lake Union areas and \$5 to \$10 outside the downtown. Portland is also beginning a process of exploring a linkage fee adoption.

Berkeley, Palo Alto, and Cambridge, MA were the only examples identified of college / university towns with linkage fees. All located within high-cost metropolitan areas.

The table on the following page provides selected fee level examples with a more complete listing included in Table 9 at the end of this section. There are a wide range of fee levels

represented among the adopted programs. The communities with the highest fees nationally are in Silicon Valley and San Francisco where the strength of the local real estate market is able to support high fee levels.

**Affordable Housing Fee Levels in Selected Communities**

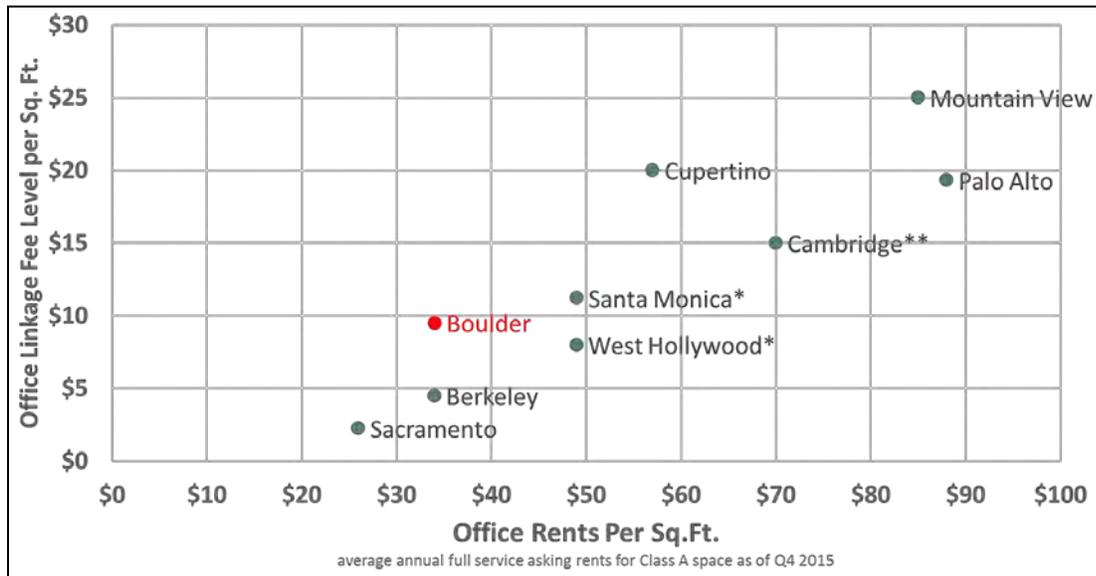
City	Office \$/SF	Retail \$/SF	Hotel \$/SF
<b>Boulder Current Fees</b>	\$9.53	\$6.96	\$1.79*
<b><u>Linkage Fee Programs</u></b>			
Mountain View, CA	\$25.00	\$2.60	\$2.60
Cupertino, CA	\$20.00	\$10.00	\$10.00
Palo Alto, CA	\$19.31	\$19.31	\$19.31
Cambridge, MA**	\$15.00	\$15.00	\$15.00
Santa Monica, CA	\$11.21	\$9.75	\$3.07
West Hollywood, CA	\$8.00	\$8.00	\$8.00
Berkeley, CA	\$4.50	\$4.50	\$4.50
Emeryville, CA	\$4.10	\$4.10	\$4.10
Sacramento, CA	\$2.25	\$1.80	\$2.14
San Diego, CA	\$1.76	\$1.06	\$1.06
Seattle: Downtown/S. Lake Union	ranges from \$0 - \$17.50 based on zone		
Seattle: Outside Downtown	ranges from \$5 - \$10 based on zone		
<b><u>Mountain Resort Programs</u></b>			
(fees are alternative to providing units)			
Aspen, CO	\$629	\$629	\$134
Vail, CO	\$48	\$36 - \$101	\$17

\* Per room fee expressed on a per square foot basis assuming 600 SF per room.

\*\* Currently \$12. Increase to \$15 (+CPI) phased in over next three years.

As a way to provide context in terms of the market conditions in each of the communities, a separate chart is also provided that shows office linkage fees (the building type that usually has the highest fees) for selected communities in relation to office rents by city. Office rents are an indicator of market strength and key driver of real estate values.

### Office Linkage Fees vs. Average Office Rents in Selected Communities



\*Office rents are for "West. L.A." West Hollywood Fee will increase from \$4 to \$8 in FY 16-17 per staff. Shown in chart at \$8.

\*\*currently \$12, increases to \$15 (+CPI) over next 3 years. Shown in chart at \$15.

Sources: Office rents from research reports prepared by Colliers International and Cushman and Wakefield

### Ordinance or Program Features

Linkage fee programs often includes features to address a jurisdiction's policy objectives or specific concerns. The most common are:

- Minimum Threshold Size** – A minimum threshold sets a building size over which fees are in effect. Boulder does not currently have a minimum threshold for application of the fee. Programs with low fees often have no thresholds and all construction is subject to the fee. Thresholds, which reduce fees for smaller projects, are more common for programs with more significant fees. Some jurisdictions establish a building size over which the fee applies. Sometimes the fee applies to the whole building over the threshold, and sometimes the fee applies only to the square foot area over the threshold. Thresholds are often employed to minimize costs for small infill projects in older commercial areas, when such infill is a policy objective. There is also some savings in administrative costs. The disadvantage is lost revenue. Cambridge, Aspen, Seattle, and Berkeley are examples of communities employing thresholds; many other cities do not. Mountain View has a reduced charge on the first 10,000 square feet of office space and for the first 25,000 square feet of retail or hotel development.
- Geographic Area Variations and Exemptions** – Some cities with linkage fee programs exclude specific areas such as redevelopment areas or have fees that vary based on geography. A geographic area variation can also be used to adjust the fee in jurisdictions where there is a broad difference in economic health from one subarea to the next. This is most common among large cities with a diverse range of conditions.

- **Specific Use Exemptions** – Some cities charge all building types while others choose to exempt specific uses. A common exemption is for buildings owned by non-profits which typically encompasses religious, educational/institutional, and hospital building types. Some programs identify specific uses as exempt such as schools and child care centers.

A more complete listing of the programs surveyed along with information about ordinance features such as exemptions and thresholds is contained in Table 9 at the end of this section.

**TABLE 9  
JOBS HOUSING LINKAGE FEE PROGRAMS**

Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
<b>COLORADO, MASSACHUSETTS, WASHINGTON</b>						
Seattle, WA Population: 638,000	Citywide Expansion Adopted 2015	Fees vary by geographic area / zone: Downtown and S. Lake Union \$0 - \$17.50 (fees vary by specific zoning district) Outside Downtown: Low Fee Areas \$5 Medium Fee Areas \$7 High Fee Areas \$8 IC 85-160 zone \$10	4,000 SF threshold; Exemptions include (1) a number of specific zoning districts; (2) for structures with at least 50 percent residential use: up to 4,000 SF street-level retail, restaurant, arts, entertainment; (3) commercial uses within affordable projects.	Yes	Very Substantial	Fee is indexed based on CPI.
Cambridge, MA Population: 107,000	1998 Updated 2015	Nonresidential Dvlpmt \$12.00 Increases to \$15 (+CPI) by 2018	30,000 gsf threshold municipal and governmental facilities are exempt	No	Very Substantial	Fee is indexed based on CPI.
Aspen, CO Population: 7,000 (not a linkage fee)	Updated 2015 2002, 2007	Fees in-lieu of providing affordable units have been converted to estimated square foot equivalent: Commercial \$629 Mixed Use \$482 Service Commercial/Industrial \$522 Public \$683 Hotel \$134	500 gsf threshold Essential public facilities exempt. Lodging requirement reduced by 50% for lodge preservation units. Basements and upper floor areas requirements reduced by 25%.	Primary requirement is to provide units. Fees in-lieu of units - 50% by right, 50% with approval.	Very Substantial	Fee is adjusted based on Engineering News Record index.
Vail, CO Population: 5,000 (not a linkage fee)	2007	Fees in-lieu of providing affordable units is subject to approval and have been converted to square foot equivalent: Office \$48 Retail / Service (varies by type) \$36-\$101 Hotel \$17	None	Primary requirement is to provide units. May petition to pay fee in-lieu of providing units.	Very Substantial	Fee is adjusted based on a three year average affordability gap computed at 120% AMI.

Note: This chart has been assembled to present an overview, and as a result, terms are simplified. The information is recent but not all data has been updated as of the date of this report. In some cases, fees are adjusted by an index (such as CPI) which may not be reflected. For use other than general comparison, please consult the code and staff of the jurisdiction.

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<b>CALIFORNIA - SAN FRANCISCO, PENINSULA, SANTA CLARA COUNTY</b>						
San Francisco Population: 829,000	1981 Updated 2002, 2007	Retail / Entertainment \$22.96 Hotel \$18.42 Production Dist. Repair \$19.34 Office \$24.61 Research and Development \$16.39 Small Enterprise Workspace \$19.34	25,000 gsf threshold Exempt: freestanding pharmacy < 50,000 SF; grocery < 75,000	Yes, may contribute land for housing.	Very Substantial	Fee is adjusted annually based on the construction cost increases.
City of Palo Alto Population: 66,000	1984 Updated 2002	Nonresidential Dvlpmnt \$19.85	Churches; universities; recreation; hospitals, private educational facilities, day care and nursery school, public facilities are exempt	Yes	Very Substantial	Fee is adjusted annually based on CPI.
City of Menlo Park Population: 33,000	1998	Office & R&D \$15.57 Other com./industrial \$8.45	10,000 gross SF threshold Churches, private clubs, lodges, fraternal orgs, public facilities and projects with few or no employees are exempt.	Yes, preferred. May provide housing on- or off-site.	Very Substantial	Fee is adjusted annually based on CPI.
City of Sunnyvale Population: 146,000	1984 Updated 2003 and 2015.	Industrial, Office, R&D: \$15.00 Retail, Hotel \$7.50	Office fee is 50% on the first 25,000 SF of building area. Exemptions for Child care, education, hospital, non-profits, public uses.	N/A	Very Substantial	Fee is adjusted annually based on CPI.
Redwood City Population: 80,000	2015	Office \$20.00 Hotel \$5.00 Retail & Restaurant \$5.00	5,000 SF threshold 25% fee reduction for projections paying prevailing wage. Schools, child care centers, public uses exempt.	Yes. Program specifies number of units per 100,000 SF.	Very Substantial	Fee is adjusted annually based on ENR.
City of Mountain View Population: 77,000	Updated 2002 / 2012 /2014	Office/High Tech/Indust. \$25.00 Hotel/Retail/Entertainment. \$2.68	Fee is 50% on building area under thresholds:  Office <10,000 SF Hotel <25,000 SF Retail <25,000 SF	Yes	Very Substantial	Fee is adjusted annually based on CPI.
City of Cupertino Population: 60,000	1993, 2015	Office/Industrial/R&D \$20.00 Hotel/Commercial/Retail \$10.00	No minimum threshold.	N/A	Very Substantial	Fee is adjusted annually based on CPI.
Note: This chart has been assembled to present an overview, and as a result, terms are simplified. The information is recent but not all data has been updated as of the date of this report. In some cases, fees are adjusted by an index (such as CPI) which may not be reflected. For use other than general comparison, please consult the code and staff of the jurisdiction.						

**TABLE 9  
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<b>CALIFORNIA - EAST BAY</b>						
City of Walnut Creek Population: 66,000	2005	Office, retail, hotel and medical \$5.00	First 1,000 SF no fee applied.	Yes	Very Substantial	Reviewed every five years.
City of Oakland Population: 402,000	2002	Office/ Warehouse \$5.24	25,000 SF exemption	Yes - Can build units equal to total eligible SF times .00004	Substantial	Fee due in 3 installments. Fee adjusted with an annual escalator tied to residential construction cost increases.
City of Berkeley Population: 116,000	1993 2014	Office \$4.50 Retail/Restaurant \$4.50 Industrial/Manufacturing \$2.25 Hotel/Lodging \$4.50 Warehouse/Storage \$2.25 Self-Storage \$4.37 R&D \$4.50	7,500 SF threshold.	Yes	Substantial	Annual CPI increase. May negotiate fee downward based on hardship or reduced impact.
City of Emeryville	2014	All Commercial \$4.10	Schools, daycare centers.	Yes	Substantial	Fee adjusted annually.
City of Alameda Population: 76,000	1989	Retail \$2.30 Office \$4.52 Warehouse \$0.78 Manufacturing \$0.78 Hotel/Motel \$1,108	No minimum threshold	Yes. Program specifies # of units per 100,000 SF	Moderate	Fee may be adjusted by CPI.
City of Pleasanton Population: 73,000	1990	Commercial, Office & Industrial \$3.04	No minimum threshold	Yes	Moderate	Fee adjusted annually.
City of Dublin Population: 50,000	2005	Industrial \$0.49 Office \$1.27 R&D \$0.83 Retail \$1.02 Services & Accommodation \$0.43	20,000 SF threshold	N/A	Moderate	
City of Newark Population: 44,000	2014	Commercial \$3.59 Industrial \$0.69	No min threshold Schools, recreational facilities, religious institutions exempt.	Yes	Moderate	Revised annually
City of Livermore Population: 84,000	1999	Retail \$1.19 Service Retail \$0.90 Office \$0.76 Hotel \$583/ rm Manufacturing \$0.37 Warehouse \$0.11 Business Park \$0.76 Heavy Industrial \$0.38 Light Industrial \$0.24	No minimum threshold Church, private or public schools exempt.	Yes; negotiated on a case-by- case basis.	Moderate	
Note: This chart has been assembled to present an overview, and as a result, terms are simplified. The information is recent but not all data has been updated as of the date of this report. In some cases, fees are adjusted by an index (such as CPI) which may not be reflected. For use other than general comparison, please consult the code and staff of the jurisdiction.						

**TABLE 9  
JOBS HOUSING LINKAGE FEE PROGRAMS**

Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
<b>CALIFORNIA - MARIN, NAPA, SONOMA COUNTIES</b>						
County of Marin Population: 257,000	2003	Office/R&D \$7.19 Retail/Rest. \$5.40 Warehouse \$1.94 Hotel/Motel \$1,745/rm Manufacturing \$3.74	No minimum threshold	Yes, preferred.	Substantial	
San Rafael Population: 59,000	2005	Office/R&D \$7.64 Retail/Rest./Pers. Services \$5.73 Manufacturing/LI \$4.14 Warehouse \$2.23 Hotel/Motel \$1.91	5,000 SF threshold. Mixed use projects that provide affordable housing are exempt.	Yes. Program specifies number of units per 1,000 SF.	Substantial	
Town of Corte Madera Population: 9,000	2001	Office \$4.79 R&D lab \$3.20 Light Industrial \$2.79 Warehouse \$0.40 Retail \$8.38 Com Services \$1.20 Restaurant \$4.39 Hotel \$1.20 Health Club/Rec \$2.00 Training facility/School \$2.39	No minimum threshold	N/A	Substantial	
City of St. Helena Population: 6,000	2004	Office \$4.11 Comm./Retail \$5.21 Hotel \$3.80 Winery/Industrial \$1.26	Small childcare facilities, churches, non-profits, vineyards, and public facilities are exempt.	Yes, subject to City Council approval.	Substantial	
City of Petaluma Population: 59,000	2003	Commercial \$2.19 Industrial \$2.26 Retail \$3.78	N/A	Yes, subject to City Council approval.	Moderate/ Substantial	Fee adjusted annually by ENR construction cost index.
County of Sonoma Population: 492,000	2005	Office \$2.64 Hotel \$2.64 Retail \$4.56 Industrial \$2.72 R&D Ag Processing \$2.72	First 2,000 SF exempt Non-profits, redevelopment areas exempt	Yes. Program specifies number of units per 1,000 SF.	Moderate	Fee adjusted annually by ENR construction cost index.
City of Cotati Population: 7,000	2006	Commercial \$2.08 Industrial \$2.15 Retail \$3.59	First 2,000 SF exempt Non-profits exempt.	Yes. Program specifies number of units per 1,000 SF	Moderate	Fee adjusted annually by ENR construction cost index.
County of Napa Population: 139,000	Updated 2014	Office \$5.25 Hotel \$9.00 Retail \$7.50 Industrial \$4.50 Warehouse \$3.60	No minimum threshold Non-profits are exempt	Units or land dedication; on a case by case basis.	Moderate / Substantial	
City of Napa Population: 79,000	1999	Office \$1.00 Hotel \$1.40 Retail \$0.80 Industrial, Wine Pdn \$0.50 Warehouse (30-100K) \$0.30 Warehouse (100K+) \$0.20	No minimum threshold Non-profits are exempt	Units or land dedication; on a case by case basis.	Moderate/ Substantial	Fee has not changed since 1999. Increases under consideration.

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
<b>CALIFORNIA - SACRAMENTO AREA</b>						
City of Sacramento Population: 476,000	1989 Most recent update, 2005	Office \$2.25 Hotel \$2.14 R&D \$1.91 Commercial \$1.80 Manufacturing \$1.41 Warehouse/Office \$0.82	No minimum threshold Mortuary, parking lots, garages, RC storage, Christmas tree lots, B&Bs, mini-storage, alcoholic beverage sales, reverse vending machines, mobile recycling, and small recyclable collection facilities	Pay 20% fee plus build at reduced nexus (not meaningful given amount of fee)	Moderate	North Natomas area has separate fee structure
City of Folsom Population: 73,000	2002	Office, Retail, Lt Industrial, and Manufacturing \$1.54 Up to 200,000 SF, 100% of fee; 200,000-250,000 SF, 75% of fee; 250,000-300,000 SF, 50% of fee; 300,000 and up, 25% of fee.	No minimum threshold Select nonprofits, small child care centers, churches, mini storage, parking garages, private garages, private schools exempt.	Yes Provide new or rehab housing affordable to very low income households. Also, land dedication.	Moderate/ Substantial	Fee is adjusted annually based on construction cost index
County of Sacramento Population: 1,450,000	1989	Office \$0.97 Hotel \$0.92 R&D \$0.82 Commercial \$0.77 Manufacturing \$0.61 Indoor Recreational Centers \$0.50 Warehouse \$0.26	No minimum threshold Service uses operated by non-profits are exempt	N/A	Moderate	
City of Elk Grove Population: 158,000	1989 (inherited from County when incorporated)	Office none Hotel \$1.87 Commercial \$0.64 Manufacturing \$0.72 Warehouse \$0.77	No minimum threshold Membership organizations (churches, non- profits, etc.), mini storage, car storage, marinas, car washes, private parking garages and agricultural uses exempt	N/A	Moderate	Office fee currently waived due to market conditions.
Citrus Heights Population: 85,000	1989 (inherited from County when incorporated)	Office \$0.97 Hotel \$0.92 R&D \$0.82 Commercial \$0.77 Manufacturing \$0.61 Indoor Recreational Centers \$0.50 Warehouse \$0.26	No minimum threshold Membership organizations (churches, non- profits, etc.), mini storage, car storage, marinas, car washes, private parking garages and agricultural uses exempt	N/A	Moderate	
Rancho Cordova Population: 67,000	1989 (inherited from County when incorporated)	Office \$0.97 Hotel \$0.92 R&D \$0.82 Commercial \$0.77 Manufacturing \$0.61 Indoor Recreational Centers \$0.50 Warehouse \$0.26	No minimum threshold Membership organizations (churches, non- profits, etc.), mini storage, car storage, marinas, car washes, private parking garages and agricultural uses exempt	N/A	Moderate	

Note: This chart has been assembled to present an overview, and as a result, terms are simplified. The information is recent but not all data has been updated as of the date of this report. In some cases, fees are adjusted by an index (such as CPI) which may not be reflected. For use other than general comparison, please consult the code and staff of the jurisdiction.

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<b>SOUTHERN CALIFORNIA</b>							
City of Santa Monica Population: 92,000	1984 Updated 2002, 2015	Retail	\$9.75	1,000 SF threshold Private schools, city projects, places of worship, commercial components of affordable housing developments exempt.	N/A	Very Substantial	Fees adjusted annually based on construction cost index.
		Office	\$11.21				
		Hotel/Lodging	\$3.07				
		Hospital	\$6.15				
		Industrial	\$7.53				
		Institutional	\$10.23				
		Creative Office	\$9.59				
Medical Office	\$6.89						
City of West Hollywood Population: 35,000	1986	Non-Residential (per staff increase from \$4 to \$8 anticipated for FY16-17)	\$8.00	N/A	N/A	Substantial	Fees adjusted by CPI annually
City of San Diego Population: 1,342,000	1990 Updated 2014	Office	\$1.76	No minimum threshold Industrial/ warehouse, non-profit hospitals exempt.	Can dedicate land or air rights in lieu of fee	Substantial	
		Hotel	\$1.06				
		R&D	\$0.80				
		Retail	\$1.06				
<p>Note: This chart has been assembled to present an overview, and as a result, terms are simplified. The information is recent but not all data has been updated as of the date of this report. In some cases, fees are adjusted by an index (such as CPI) which may not be reflected. For use other than general comparison, please consult the code and staff of the jurisdiction.</p>							

**APPENDIX A: DISCUSSION OF VARIOUS FACTORS IN RELATION TO NEXUS CONCEPT**

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This appendix provides a discussion of various specific factors and assumptions in relation to the nexus concept to supplement the overview provided in Section II.

### **The Relationship Between Job Growth and Population Growth**

A major social issue driving this analysis is growth in low and middle income households. New population growth in most U.S. regions occurs primarily as a result of job growth. Over the long term, the vast majority of growth in the State of Colorado and its sub-regions is job driven. Many people coming to the region would not come if they could not expect to find a job. People born in the local area would not stay without jobs. This is the long-term pattern. In the short-term, economic cycles and other factors can result in population growth without jobs to support the growth. If an economic region in the U.S. does not maintain job growth, there is an out-migration to regions where job growth is occurring. Many cities in the Midwest during the 70's and 80's are examples of this outmigration, and some U.S. cities have continued to lose population in more recent decades.

Not all population growth in Boulder is the result of new jobs in the region. Retirees, students, and others who are not part of the workforce all generate demand for housing. However non-working households are not included in the analysis since the purpose is to demonstrate the linkage between new buildings, new workers, and demand for housing. Since only working households are part of this equation, the demand for housing generated by non-working households is excluded.

### **The Relationship Between Construction and Job Growth**

Employment growth does not have one cause. Many factors underlie the reasons for growth in employment in a given region; these factors are complex, interrelated, and often associated with forces at the national and international levels. One of the factors is the delivery of new workspace buildings. The nexus argument does not make the case that the construction of new buildings is solely responsible for growth. However, new construction is uniquely important, first, as one of a number of parallel factors contributing to growth, and second, as a unique and essential condition precedent to growth.

As to the first, construction itself encourages growth. When the state economy is growing, the most rapidly growing areas in the state are those where new construction is vigorous as a vital industry. In economies such as Boulder and the greater Denver metropolitan area where multiple forces of growth exist, new development can attract growth by providing new work spaces, particularly those of a speculative nature. The development industry frequently serves as a proactive force inducing growth to occur or be attracted to specific geographic areas or locations.

Second, workplace buildings bear a special relationship to growth, different from other parallel causes, in that buildings are a *condition precedent* to growth. Job growth does not occur in modern service economies without buildings to house new workers. Unlike other factors that are

responsible for growth, buildings play the additional unique role that growth cannot occur without them for a sustained period of time. Conversely, it is well established that the inability to construct new workplace buildings will constrain or even halt job growth.

This impact fee analysis, as with the parallel impact fee studies under concurrent preparation, treats new workplace buildings as a unique contributing cause and condition precedent to employment growth and the increased workforce housing needs that are directly related to that growth.

### **Addressing the Housing Needs of a New Population vs. the Existing Population**

This nexus analysis assumes there is no excess supply of affordable housing available to absorb or offset new demand; therefore, new affordable units are needed to mitigate the new affordable housing demand generated by development of new workplace buildings. Based on a review of the current Census information for Boulder, conditions are consistent with this underlying assumption. According to the Census (2009 to 2013 ACS), approximately 43% of all households in the City were paying thirty percent or more of their income on housing.

This nexus study does not address the housing needs of the existing population. Rather, the study focuses exclusively on documenting and quantifying the housing needs created by development of a new workplace building.

Local analyses of housing conditions have found that new housing affordable to households from 0% to 120% of area median income is not being added to the supply in sufficient quantity to meet the needs of new employee households. If this were not the case and significant numbers of units were being added to the supply to accommodate these households, or if residential units were experiencing significant long term vacancy levels, particularly in affordable units, then the need for new units would be questionable.

### **Substitution Factor**

Any given new building in Boulder may be occupied partly, or even perhaps totally, by employees relocating from elsewhere in the City or region. Buildings are often leased entirely to firms relocating from other buildings in the same jurisdiction. However, when a firm relocates to a new building from elsewhere in the region, there is a space in an existing building that is vacated and occupied by another firm. That building in turn may be filled by some combination of newcomers to the area and existing workers. Somewhere in the chain there are jobs new to the region. The net effect is that new buildings accommodate new employees, although not necessarily inside the new buildings themselves.

### **Indirect Employment and Multiplier Effects**

The multiplier effect refers to the concept that the income generated by a new job recycles through the economy and results in additional jobs. The total number of jobs generated is

broken down into three categories – direct, indirect and induced. In the case of the nexus analysis, the direct jobs are those located in the new workspace buildings that would be subject to the linkage fee. Multiplier effects encompass indirect and induced employment. Indirect jobs are generated by suppliers to the businesses located in the new workspace buildings. Induced jobs are generated by local spending on goods and services by employees.

Multiplier effects vary by industry. Industries that draw heavily on a network of local suppliers tend to generate larger multiplier effects. Industries that are labor intensive also tend to have larger multiplier effects as a result of the induced effects of employee spending.

Theoretically, a jobs-housing nexus analysis could consider multiplier effects although the potential for double-counting exists to the extent indirect and induced jobs are added in other new buildings in jurisdictions that have jobs housing linkage fees.

In addition, the nexus analysis addresses direct “inside” employment only. In the case of an office building, for example, direct employment covers the various managerial, professional and clerical people that work in the building; it does not include the security guards, the delivery services, the landscape maintenance workers, and many others that are associated with the normal functioning of an office building. In other words, any analysis that ties lower income housing to the number of workers inside buildings will continue to understate the demand. Thus, confining the analysis to the direct employees does not address all the lower income workers associated with each type of building and understates the impacts.

Another type of indirect impact stems from addition of new jobs that are relatively high paying. Higher income workers compete for a limited supply of housing and can contribute to increased home prices and rents, thus reducing the affordability of the overall housing stock. This type of indirect impact can be especially pronounced in regions that experience strong job and income growth in some sectors of the economy such as finance or technology while income growth in other sectors like retail do not keep pace.

KMA chose to omit indirect and multiplier effects to make the analysis more conservative and to ensure the analysis adheres to Colorado’s statute which requires fees to reflect only impacts “directly related” to proposed development.

### **Changes in Labor Force Participation**

In the 1960s through the 1980s, there were significant increases in labor force participation, primarily among women. As a result, some of the new workers were reentering the labor force and already had local housing, thus reducing demand for housing associated with job growth. In earlier nexus analyses, KMA would adjust the analysis to account for this. However, increases in participation rates by women have stabilized and even declined slightly and labor force participation rates for men have been on a downward trajectory since 1970. As such, an adjustment for increases in labor force participation is no longer warranted in a nexus analysis.

## Economic Cycles

An impact analysis of this nature is intended to support a one-time impact requirement to address impacts generated over the life of a project (generally 40 years or more). Short-term conditions, such as a recession or a vigorous boom period, are not an appropriate basis for estimating impacts over the life of the building. These cycles can produce impacts that are higher or lower on a temporary basis.

Development of new workspace buildings tends to be minimal during a recession and generally remains minimal until conditions improve or there is confidence that improved conditions are imminent. When this occurs, the improved economic condition will absorb existing vacant space and underutilized capacity of existing workers, employed and unemployed. By the time new buildings become occupied, current conditions will have likely improved.

To the limited extent that new workspace buildings are built during a recession, housing impacts from these new buildings may not be fully experienced immediately, but the impacts will be experienced at some point. New buildings delivered during a recession can sometimes sit vacant for a period after completion. Even if new buildings are immediately occupied, overall absorption of space can still be zero or negative if other buildings are vacated in the process. Jobs added may also be filled in part by unemployed or underemployed workers who are already housed locally. As the economy recovers, firms will begin to expand and hire again filling unoccupied space as unemployment is reduced. New space delivered during the recession still adds to the total supply of employment space in the region. Though the jobs are not realized immediately, as the economy recovers and vacant space is filled, this new employment space absorbs or accommodates job growth. Although there may be a delay in experiencing the impacts, the fundamental relationship between new buildings, added jobs, and housing needs remains over the long term.

In contrast, during a vigorous economic boom period, conditions exist in which elevated impacts are experienced on a temporary basis. As an example, compression of employment densities can occur as firms add employees while making do with existing space. Compressed employment densities mean more jobs added for a given amount of building area. Boom periods also tend to go hand-in-hand with rising development costs and increasing home prices. These factors can bring market rate housing out of reach from a larger percentage of the workforce and increase the cost of delivering affordable units.

While the economic cycles can produce impacts that are temporarily higher or lower than normal, an impact fee is designed to be collected once, during the development of the project. Over the lifetime of the project, the impacts of the development on the demand for affordable housing will be realized, despite short-term booms and recessions.

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**APPENDIX B: SUPPORTING NEXUS TABLES**

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**APPENDIX TABLE 1**  
**2014 NATIONAL OFFICE WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<b>Major Occupations (2% or more)</b>	<b>2014 National Office Industry Occupation Distribution</b>	
Management Occupations	2,554,418	8.3%
Business and Financial Operations Occupations	3,559,105	11.6%
Computer and Mathematical Occupations	6,515,380	21.2%
Architecture and Engineering Occupations	1,556,164	5.1%
Arts, Design, Entertainment, Sports, and Media Occupations	1,105,961	3.6%
Healthcare Practitioners and Technical Occupations	1,727,677	5.6%
Healthcare Support Occupations	944,890	3.1%
Building and Grounds Cleaning and Maintenance Occupations	780,138	2.5%
Sales and Related Occupations	2,139,354	6.9%
Office and Administrative Support Occupations	6,344,580	20.6%
Production Occupations	628,187	2.0%
All Other Office Occupations	<u>2,937,955</u>	<u>9.5%</u>
<b>INDUSTRY TOTAL</b>	30,793,808	100.0%

Industries weighted to reflect City of Boulder industry mix.

**APPENDIX TABLE 2**  
**AVERAGE ANNUAL COMPENSATION, 2014**  
**OFFICE WORKER OCCUPATIONS**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Office Workers</u>
<b>Page 1 of 3</b>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	27.9%	2.3%
Marketing Managers	\$146,800	6.4%	0.5%
Sales Managers	\$137,700	6.1%	0.5%
Computer and Information Systems Managers	\$150,800	18.2%	1.5%
Financial Managers	\$137,700	9.4%	0.8%
Architectural and Engineering Managers	\$159,300	4.4%	0.4%
Property, Real Estate, and Community Association Managers	\$57,800	4.4%	0.4%
Managers, All Other	\$129,500	5.0%	0.4%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>18.3%</u>	<u>1.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$133,500</b>	<b>100.0%</b>	<b>8.3%</b>
<i>Business and Financial Operations Occupations</i>			
Human Resources Specialists	\$65,800	5.8%	0.7%
Management Analysts	\$114,400	15.1%	1.7%
Market Research Analysts and Marketing Specialists	\$77,300	13.3%	1.5%
Business Operations Specialists, All Other	\$75,300	11.3%	1.3%
Accountants and Auditors	\$76,300	18.0%	2.1%
Financial Analysts	\$82,800	6.2%	0.7%
Personal Financial Advisors	\$79,800	5.3%	0.6%
All Other Business and Financial Operations (Avg. All Categories)	<u>\$74,700</u>	<u>25.0%</u>	<u>2.9%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$81,600</b>	<b>100.0%</b>	<b>11.6%</b>
<i>Computer and Mathematical Occupations</i>			
Computer Systems Analysts	\$87,800	12.1%	2.6%
Computer Programmers	\$95,100	11.7%	2.5%
Software Developers, Applications	\$106,600	28.6%	6.1%
Software Developers, Systems Software	\$119,300	12.3%	2.6%
Network and Computer Systems Administrators	\$82,600	5.7%	1.2%
Computer User Support Specialists	\$54,800	11.8%	2.5%
All Other Computer and Mathematical Occupations (Avg. All Categories)	<u>\$93,700</u>	<u>17.8%</u>	<u>3.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$94,800</b>	<b>100.0%</b>	<b>21.2%</b>
<i>Architecture and Engineering Occupations</i>			
Architects, Except Landscape and Naval	\$64,100	9.1%	0.5%
Civil Engineers	\$78,400	16.7%	0.8%
Computer Hardware Engineers	\$117,400	5.5%	0.3%
Electrical Engineers	\$98,500	6.5%	0.3%
Electronics Engineers, Except Computer	\$114,000	4.2%	0.2%
Mechanical Engineers	\$109,900	8.6%	0.4%
Architectural and Civil Drafters	\$53,200	8.2%	0.4%
All Other Architecture and Engineering Occupations (Avg. All Categories)	<u>\$95,900</u>	<u>41.1%</u>	<u>2.1%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$89,900</b>	<b>100.0%</b>	<b>5.1%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Study

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Office Workers</u>
<i>Arts, Design, Entertainment, Sports, and Media Occupations</i>			
Multimedia Artists and Animators	\$55,700	5.8%	0.2%
Graphic Designers	\$53,100	17.8%	0.6%
Interior Designers	\$52,400	4.1%	0.1%
Reporters and Correspondents	\$53,000	6.3%	0.2%
Public Relations Specialists	\$46,700	13.7%	0.5%
Editors	\$74,500	15.4%	0.6%
Technical Writers	\$75,400	7.4%	0.3%
Photographers	\$43,400	7.0%	0.3%
All Other Arts, Design, Entertainment, Sports, and Media Occupations (Avg. All Categories)	<u>\$53,300</u>	<u>22.5%</u>	<u>0.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$56,700</b>	<b>100.0%</b>	<b>3.6%</b>
<i>Healthcare Practitioners and Technical Occupations</i>			
Physicians and Surgeons, All Other	\$261,600	5.0%	0.3%
Physical Therapists	\$73,300	7.8%	0.4%
Veterinarians	\$77,100	6.7%	0.4%
Registered Nurses	\$72,800	9.9%	0.6%
Dental Hygienists	\$79,400	8.3%	0.5%
Veterinary Technologists and Technicians	\$28,700	10.1%	0.6%
Licensed Practical and Licensed Vocational Nurses	\$45,900	4.3%	0.2%
All Other Healthcare Practitioners and Technical Occupations (Avg. All Categories)	<u>\$79,700</u>	<u>47.9%</u>	<u>2.7%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$80,900</b>	<b>100.0%</b>	<b>5.6%</b>
<i>Healthcare Support Occupations</i>			
Physical Therapist Assistants	\$55,800	6.7%	0.2%
Physical Therapist Aides	\$30,000	5.4%	0.2%
Massage Therapists	\$45,500	5.1%	0.2%
Dental Assistants	\$37,500	23.4%	0.7%
Medical Assistants	\$34,500	33.3%	1.0%
Veterinary Assistants and Laboratory Animal Caretakers	\$25,400	13.3%	0.4%
All Other Healthcare Support Occupations (Avg. All Categories)	<u>\$33,800</u>	<u>12.9%</u>	<u>0.4%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$35,600</b>	<b>100.0%</b>	<b>3.1%</b>
<i>Building and Grounds Cleaning and Maintenance Occupations</i>			
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$27,600	51.9%	1.3%
Maids and Housekeeping Cleaners	\$20,400	9.7%	0.2%
Landscaping and Groundskeeping Workers	\$27,900	26.8%	0.7%
All Other Building and Grounds Cleaning and Maintenance Occupations (Avg. All Categories)	<u>\$27,400</u>	<u>11.6%</u>	<u>0.3%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$27,000</b>	<b>100.0%</b>	<b>2.5%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Sutdy

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Office Workers</u>
<i>Sales and Related Occupations</i>			
First-Line Supervisors of Non-Retail Sales Workers	\$87,900	4.5%	0.3%
Advertising Sales Agents	\$67,100	9.7%	0.7%
Insurance Sales Agents	\$56,400	5.4%	0.4%
Securities, Commodities, and Financial Services Sales Agents	\$73,100	6.9%	0.5%
Sales Representatives, Services, All Other	\$69,400	24.4%	1.7%
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Prod	\$75,700	13.2%	0.9%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scienti	\$80,400	7.3%	0.5%
Real Estate Sales Agents	\$53,100	5.7%	0.4%
All Other Sales and Related Occupations (Avg. All Categories)	<u>\$49,200</u>	<u>23.0%</u>	<u>1.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$65,600</b>	<b>100.0%</b>	<b>6.9%</b>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	7.0%	1.4%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	8.1%	1.7%
Customer Service Representatives	\$35,200	12.7%	2.6%
Receptionists and Information Clerks	\$29,300	8.1%	1.7%
Executive Secretaries and Executive Administrative Assistants	\$52,800	5.0%	1.0%
Medical Secretaries	\$31,200	4.1%	0.8%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$36,500	11.9%	2.5%
Office Clerks, General	\$40,400	14.4%	3.0%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>28.7%</u>	<u>5.9%</u>
<i>Production Occupations</i>			
First-Line Supervisors of Production and Operating Workers	\$63,600	4.9%	0.1%
Team Assemblers	\$30,500	14.1%	0.3%
Assemblers and Fabricators, All Other	\$43,100	6.1%	0.1%
Printing Press Operators	\$34,500	8.8%	0.2%
Inspectors, Testers, Sorters, Samplers, and Weighers	\$44,000	15.0%	0.3%
Packaging and Filling Machine Operators and Tenders	\$25,300	5.8%	0.1%
Helpers--Production Workers	\$32,700	9.4%	0.2%
Production Workers, All Other	\$30,800	5.9%	0.1%
All Other Production Occupations (Avg. All Categories)	<u>\$37,600</u>	<u>30.0%</u>	<u>0.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$37,300</b>	<b>100.0%</b>	<b>2.0%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$74,000</b>		90.5%

<sup>1</sup> Including occupations representing 4% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 3**  
**2014 NATIONAL LIGHT INDUSTRIAL WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<b>Major Occupations (2% or more)</b>	<b>2014 National Light Industrial Industry Occupation Distribution</b>	
Management Occupations	688,797	9.1%
Business and Financial Operations Occupations	509,481	6.7%
Computer and Mathematical Occupations	560,373	7.4%
Architecture and Engineering Occupations	1,027,730	13.5%
Sales and Related Occupations	381,312	5.0%
Office and Administrative Support Occupations	971,641	12.8%
Installation, Maintenance, and Repair Occupations	487,142	6.4%
Production Occupations	2,292,821	30.2%
Transportation and Material Moving Occupations	357,112	4.7%
All Other Light Industrial Occupations	<u>311,353</u>	<u>4.1%</u>
<b>INDUSTRY TOTAL</b>	7,587,762	100.0%

Industries weighted to reflect City of Boulder industry mix.

**APPENDIX TABLE 4  
AVERAGE ANNUAL COMPENSATION, 2014  
LIGHT INDUSTRIAL WORKER OCCUPATIONS  
JOBS-HOUSING NEXUS ANALYSIS  
CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Light Industrial Workers</u>
<b>Page 1 of 3</b>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	24.1%	2.2%
Marketing Managers	\$146,800	5.8%	0.5%
Sales Managers	\$137,700	6.1%	0.6%
Computer and Information Systems Managers	\$150,800	8.1%	0.7%
Financial Managers	\$137,700	6.5%	0.6%
Industrial Production Managers	\$110,700	12.3%	1.1%
Architectural and Engineering Managers	\$159,300	15.8%	1.4%
Managers, All Other	\$129,500	5.4%	0.5%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>16.0%</u>	<u>1.5%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>9.1%</b>
<i>Business and Financial Operations Occupations</i>			
Purchasing Agents, Except Wholesale, Retail, and Farm Products	\$68,800	18.5%	1.2%
Human Resources Specialists	\$65,800	5.7%	0.4%
Logisticians	\$69,100	6.6%	0.4%
Management Analysts	\$114,400	7.0%	0.5%
Market Research Analysts and Marketing Specialists	\$77,300	11.6%	0.8%
Business Operations Specialists, All Other	\$75,300	12.1%	0.8%
Accountants and Auditors	\$76,300	15.0%	1.0%
Financial Analysts	\$82,800	6.6%	0.4%
All Other Business and Financial Operations Occupations (Avg. All Categories)	<u>\$74,700</u>	<u>16.9%</u>	<u>1.1%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>6.7%</b>
<i>Computer and Mathematical Occupations</i>			
Computer Systems Analysts	\$87,800	8.5%	0.6%
Computer Programmers	\$95,100	4.1%	0.3%
Software Developers, Applications	\$106,600	26.8%	2.0%
Software Developers, Systems Software	\$119,300	34.3%	2.5%
Network and Computer Systems Administrators	\$82,600	6.0%	0.4%
Computer User Support Specialists	\$54,800	7.8%	0.6%
All Other Computer and Mathematical Occupations (Avg. All Categories)	<u>\$93,700</u>	<u>12.5%</u>	<u>0.9%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>7.4%</b>

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<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Light Industrial Workers</u>
<b>Page 2 of 3</b>			
<i>Architecture and Engineering Occupations</i>			
Aerospace Engineers	\$137,200	4.4%	0.6%
Computer Hardware Engineers	\$117,400	4.6%	0.6%
Electrical Engineers	\$98,500	14.4%	1.9%
Electronics Engineers, Except Computer	\$114,000	11.5%	1.6%
Industrial Engineers	\$90,100	15.7%	2.1%
Mechanical Engineers	\$109,900	12.7%	1.7%
Electrical and Electronics Engineering Technicians	\$56,300	11.0%	1.5%
Industrial Engineering Technicians	\$65,700	4.4%	0.6%
All Other Architecture and Engineering Occupations (Avg. All Categories)	<u>\$95,900</u>	<u>21.4%</u>	<u>2.9%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$96,300</b>	<b>100.0%</b>	<b>13.5%</b>
<i>Sales and Related Occupations</i>			
First-Line Supervisors of Non-Retail Sales Workers	\$87,900	4.7%	0.2%
Retail Salespersons	\$30,600	5.6%	0.3%
Sales Representatives, Services, All Other	\$69,400	5.3%	0.3%
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Pro	\$75,700	21.8%	1.1%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scient	\$80,400	28.3%	1.4%
Sales Engineers	\$104,100	7.9%	0.4%
Telemarketers	\$25,200	13.2%	0.7%
All Other Sales and Related Occupations (Avg. All Categories)	<u>\$49,200</u>	<u>13.2%</u>	<u>0.7%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$66,800</b>	<b>100.0%</b>	<b>5.0%</b>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	5.9%	0.7%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	8.1%	1.0%
Customer Service Representatives	\$35,200	20.8%	2.7%
Production, Planning, and Expediting Clerks	\$53,200	7.8%	1.0%
Shipping, Receiving, and Traffic Clerks	\$32,400	10.0%	1.3%
Stock Clerks and Order Fillers	\$29,100	5.4%	0.7%
Executive Secretaries and Executive Administrative Assistants	\$52,800	4.6%	0.6%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$36,500	8.3%	1.1%
Office Clerks, General	\$40,400	11.3%	1.5%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>17.7%</u>	<u>2.3%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$39,600</b>	<b>100.0%</b>	<b>12.8%</b>
<i>Installation, Maintenance, and Repair Occupations</i>			
First-Line Supervisors of Mechanics, Installers, and Repairers	\$76,800	8.3%	0.5%
Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$58,200	7.8%	0.5%
Automotive Body and Related Repairers	\$60,900	11.2%	0.7%
Automotive Service Technicians and Mechanics	\$42,900	26.9%	1.7%
Industrial Machinery Mechanics	\$55,000	9.0%	0.6%
Maintenance and Repair Workers, General	\$38,900	13.8%	0.9%
All Other Installation, Maintenance, and Repair Occupations (Avg. All Categories)	<u>\$46,400</u>	<u>23.0%</u>	<u>1.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$50,200</b>	<b>100.0%</b>	<b>6.4%</b>

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<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Light Industrial Workers</u>
<b>Page 3 of 3</b>			
<i>Production Occupations</i>			
First-Line Supervisors of Production and Operating Workers	\$63,600	7.2%	2.2%
Electrical and Electronic Equipment Assemblers	\$36,300	18.2%	5.5%
Electromechanical Equipment Assemblers	\$34,600	4.3%	1.3%
Team Assemblers	\$30,500	14.8%	4.5%
Machinists	\$49,200	6.1%	1.9%
Inspectors, Testers, Sorters, Samplers, and Weighers	\$44,000	7.5%	2.3%
Packaging and Filling Machine Operators and Tenders	\$25,300	4.6%	1.4%
All Other Production Occupations (Avg. All Categories)	<u>\$37,600</u>	<u>37.4%</u>	<u>11.3%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$38,700</b>	<b>100.0%</b>	<b>30.2%</b>
<i>Transportation and Material Moving Occupations</i>			
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	\$50,700	4.3%	0.2%
Driver/Sales Workers	\$27,000	4.2%	0.2%
Heavy and Tractor-Trailer Truck Drivers	\$44,700	5.2%	0.2%
Light Truck or Delivery Services Drivers	\$34,900	5.6%	0.3%
Automotive and Watercraft Service Attendants	\$24,200	6.4%	0.3%
Industrial Truck and Tractor Operators	\$36,600	8.6%	0.4%
Cleaners of Vehicles and Equipment	\$24,100	22.7%	1.1%
Laborers and Freight, Stock, and Material Movers, Hand	\$28,000	23.2%	1.1%
Packers and Packagers, Hand	\$21,800	12.1%	0.6%
All Other Transportation and Material Moving Occupations (Avg. All Categories)	<u>\$38,800</u>	<u>7.9%</u>	<u>0.4%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$29,900</b>	<b>100.0%</b>	<b>4.5%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$81,000</b>		<b>95.9%</b>

<sup>1</sup> Including occupations representing 4% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 5**  
**2014 NATIONAL RETAIL/RESTAURANT/SERVICE WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

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<b>Major Occupations (2% or more)</b>	<b>2014 National Retail/Restaurant/Service Occupation Distribution</b>	
Management Occupations	628,384	2.3%
Food Preparation and Serving Related Occupations	12,261,041	45.3%
Personal Care and Service Occupations	841,689	3.1%
Sales and Related Occupations	7,745,429	28.6%
Office and Administrative Support Occupations	2,276,526	8.4%
Installation, Maintenance, and Repair Occupations	624,841	2.3%
Production Occupations	545,610	2.0%
Transportation and Material Moving Occupations	1,128,168	4.2%
All Other Retail/Restaurant/Service Occupations	<u>992,258</u>	<u>3.7%</u>
<b>INDUSTRY TOTAL</b>	27,043,945	100.0%

Industries weighted to reflect City of Boulder industry mix.

**APPENDIX TABLE 6**  
**AVERAGE ANNUAL COMPENSATION, 2014**  
**RETAIL/RESTAURANT/SERVICE WORKER OCCUPATIONS**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Retail Workers</u>
<i>Page 1 of 2</i>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	49.6%	1.2%
Sales Managers	\$137,700	11.7%	0.3%
Food Service Managers	\$64,400	29.9%	0.7%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>8.8%</u>	<u>0.2%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$111,200</b>	<b>100.0%</b>	<b>2.3%</b>
<i>Food Preparation and Serving Related Occupations</i>			
First-Line Supervisors of Food Preparation and Serving Workers	\$37,700	7.1%	3.2%
Cooks, Fast Food	\$19,300	5.2%	2.4%
Cooks, Restaurant	\$24,100	10.1%	4.6%
Food Preparation Workers	\$22,500	6.2%	2.8%
Bartenders	\$25,900	4.1%	1.9%
Combined Food Preparation and Serving Workers, Including Fast Food	\$20,900	28.1%	12.7%
Waiters and Waitresses	\$22,900	21.6%	9.8%
Dishwashers	\$22,400	4.1%	1.8%
All Other Food Preparation and Serving Related Occupations (Avg. All Categories)	<u>\$23,700</u>	<u>13.5%</u>	<u>6.1%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$23,500</b>	<b>100.0%</b>	<b>45.3%</b>
<i>Personal Care and Service Occupations</i>			
First-Line Supervisors of Personal Service Workers	\$43,000	4.9%	0.2%
Nonfarm Animal Caretakers	\$28,500	10.1%	0.3%
Ushers, Lobby Attendants, and Ticket Takers	\$19,900	7.0%	0.2%
Hairdressers, Hairstylists, and Cosmetologists	\$33,000	48.6%	1.5%
Manicurists and Pedicurists	\$28,700	11.8%	0.4%
Skincare Specialists	\$49,800	4.3%	0.1%
All Other Personal Care and Service Occupations (Avg. All Categories)	<u>\$31,000</u>	<u>13.4%</u>	<u>0.4%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$32,100</b>	<b>100.0%</b>	<b>3.1%</b>
<i>Sales and Related Occupations</i>			
First-Line Supervisors of Retail Sales Workers	\$51,100	11.5%	3.3%
Cashiers	\$23,200	33.7%	9.6%
Retail Salespersons	\$30,600	49.3%	14.1%
All Other Sales and Related Occupations (Avg. All Categories)	<u>\$49,200</u>	<u>5.6%</u>	<u>1.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$31,500</b>	<b>100.0%</b>	<b>28.6%</b>

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<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Retail Workers</u>
<b>Page 2 of 2</b>			
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	5.6%	0.5%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	7.5%	0.6%
Customer Service Representatives	\$35,200	11.5%	1.0%
Receptionists and Information Clerks	\$29,300	4.6%	0.4%
Shipping, Receiving, and Traffic Clerks	\$32,400	5.2%	0.4%
Stock Clerks and Order Fillers	\$29,100	46.0%	3.9%
Office Clerks, General	\$40,400	8.7%	0.7%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>10.9%</u>	<u>0.9%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$34,200</b>	<b>100.0%</b>	<b>8.4%</b>
<i>Installation, Maintenance, and Repair Occupations</i>			
First-Line Supervisors of Mechanics, Installers, and Repairers	\$76,800	8.0%	0.2%
Computer, Automated Teller, and Office Machine Repairers	\$44,300	5.8%	0.1%
Automotive Body and Related Repairers	\$60,900	5.2%	0.1%
Automotive Service Technicians and Mechanics	\$42,900	44.0%	1.0%
Tire Repairers and Changers	\$27,400	5.9%	0.1%
Maintenance and Repair Workers, General	\$38,900	7.2%	0.2%
All Other Installation, Maintenance, and Repair Occupations (Avg. All Categories)	<u>\$46,400</u>	<u>23.9%</u>	<u>0.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$46,200</b>	<b>100.0%</b>	<b>2.3%</b>
<i>Production Occupations</i>			
First-Line Supervisors of Production and Operating Workers	\$63,600	6.9%	0.1%
Bakers	\$24,700	19.0%	0.4%
Butchers and Meat Cutters	\$33,600	24.6%	0.5%
Meat, Poultry, and Fish Cutters and Trimmers	\$24,000	5.1%	0.1%
Laundry and Dry-Cleaning Workers	\$22,200	12.8%	0.3%
Pressers, Textile, Garment, and Related Materials	\$26,100	5.2%	0.1%
All Other Production Occupations (Avg. All Categories)	<u>\$37,600</u>	<u>31.6%</u>	<u>0.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$34,600</b>	<b>105.2%</b>	<b>2.1%</b>
<i>Transportation and Material Moving Occupations</i>			
Driver/Sales Workers	\$27,000	21.1%	0.9%
Light Truck or Delivery Services Drivers	\$34,900	15.2%	0.6%
Parking Lot Attendants	\$21,300	6.8%	0.3%
Cleaners of Vehicles and Equipment	\$24,100	7.8%	0.3%
Laborers and Freight, Stock, and Material Movers, Hand	\$28,000	19.6%	0.8%
Packers and Packagers, Hand	\$21,800	17.0%	0.7%
All Other Transportation and Material Moving Occupations (Avg. All Categories)	<u>\$38,800</u>	<u>12.5%</u>	<u>0.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$28,400</b>	<b>100.0%</b>	<b>4.2%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$30,000</b>		96.4%

<sup>1</sup> Including occupations representing 4% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 7  
2014 NATIONAL HOSPITAL WORKER DISTRIBUTION BY OCCUPATION  
JOBS-HOUSING NEXUS ANALYSIS  
CITY OF BOULDER**

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<b>Major Occupations (3% or more)</b>	<b>2014 National Hospital Industry Occupation Distribution</b>	
Management Occupations	293,157	4.2%
Community and Social Service Occupations	424,853	6.1%
Healthcare Practitioners and Technical Occupations	3,510,432	50.5%
Healthcare Support Occupations	821,410	11.8%
Office and Administrative Support Occupations	1,020,448	14.7%
All Other Hospital Occupations	<u>874,847</u>	<u>12.6%</u>
<b>INDUSTRY TOTAL</b>	6,945,148	100.0%

Industries weighted to reflect City of Boulder industry mix.

**APPENDIX TABLE 8**  
**AVERAGE ANNUAL COMPENSATION, 2014**  
**HOSPITAL WORKER OCCUPATIONS**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Hospital Workers</u>
<i>Page 1 of 2</i>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	12.0%	0.5%
Administrative Services Managers	\$91,600	6.6%	0.3%
Financial Managers	\$137,700	6.1%	0.3%
Medical and Health Services Managers	\$111,000	54.1%	2.3%
Managers, All Other	\$129,500	4.1%	0.2%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>17.0%</u>	<u>0.7%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$117,000</b>	<b>100.0%</b>	<b>4.2%</b>
<i>Community and Social Service Occupations</i>			
Substance Abuse and Behavioral Disorder Counselors	\$40,600	13.5%	0.8%
Mental Health Counselors	\$48,800	16.1%	1.0%
Child, Family, and School Social Workers	\$49,100	5.5%	0.3%
Healthcare Social Workers	\$58,200	14.7%	0.9%
Mental Health and Substance Abuse Social Workers	\$41,700	15.4%	0.9%
Health Educators	\$62,000	5.2%	0.3%
Social and Human Service Assistants	\$30,200	12.4%	0.8%
All Other Community and Social Service Occupations (Avg. All Categories)	<u>\$45,700</u>	<u>17.2%</u>	<u>1.1%</u>
<i>Healthcare Practitioners and Technical Occupations</i>			
Registered Nurses	\$72,800	48.6%	24.6%
Emergency Medical Technicians and Paramedics	\$39,800	4.8%	2.4%
Licensed Practical and Licensed Vocational Nurses	\$45,900	4.2%	2.1%
All Other Healthcare Practitioners and Technical Occupations (Avg. All Categories)	<u>\$79,700</u>	<u>42.4%</u>	<u>21.4%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$73,000</b>	<b>100.0%</b>	<b>50.5%</b>
<i>Healthcare Support Occupations</i>			
Nursing Assistants	\$28,300	43.5%	5.1%
Orderlies	\$29,500	4.2%	0.5%
Medical Assistants	\$34,500	22.1%	2.6%
Medical Equipment Preparers	\$33,000	5.1%	0.6%
Phlebotomists	\$34,800	8.8%	1.0%
Healthcare Support Workers, All Other	\$31,800	4.9%	0.6%
All Other Healthcare Support Occupations (Avg. All Categories)	<u>\$33,800</u>	<u>11.4%</u>	<u>1.3%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$31,300</b>	<b>100.0%</b>	<b>11.8%</b>

# Attachment E - 2016 Jobs Housing Nexus Analysis Study

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Hospital Workers</u>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	7.0%	1.0%
Billing and Posting Clerks	\$41,500	7.0%	1.0%
Customer Service Representatives	\$35,200	7.4%	1.1%
Interviewers, Except Eligibility and Loan	\$26,400	6.6%	1.0%
Receptionists and Information Clerks	\$29,300	9.0%	1.3%
Medical Secretaries	\$31,200	16.7%	2.4%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$36,500	9.0%	1.3%
Office Clerks, General	\$40,400	11.5%	1.7%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>25.8%</u>	<u>3.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$36,800</b>	<b>100.0%</b>	<b>14.7%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$62,000</b>		87.4%

<sup>1</sup> Including occupations representing 4% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boudler County.

**APPENDIX TABLE 9**  
**2014 NATIONAL LODGING WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

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<b>Major Occupations (3% or more)</b>	<b>2014 National Lodging Occupation Distribution (1)</b>	
Management Occupations	68,960	4.5%
Food Preparation and Serving Related Occupations	379,520	24.7%
Building and Grounds Cleaning and Maintenance Occupations	489,570	31.9%
Personal Care and Service Occupations	61,530	4.0%
Office and Administrative Support Occupations	310,980	20.3%
Installation, Maintenance, and Repair Occupations	76,990	5.0%
All Other Lodging Related Occupations	<u>147,010</u>	<u>9.6%</u>
<b>INDUSTRY TOTAL</b>	1,534,560	100.0%

Notes

(1) Excludes casino hotels

**APPENDIX TABLE 10**  
**AVERAGE ANNUAL COMPENSATION, 2014**  
**LODGING WORKER OCCUPATIONS**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Lodging Workers</u>
<i>Page 1 of 2</i>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	22.9%	1.0%
Sales Managers	\$137,700	9.3%	0.4%
Administrative Services Managers	\$91,600	3.9%	0.2%
Financial Managers	\$137,700	4.4%	0.2%
Food Service Managers	\$64,400	11.1%	0.5%
Lodging Managers	\$73,500	40.2%	1.8%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>8.3%</u>	<u>0.4%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>4.5%</b>
<i>Food Preparation and Serving Related Occupations</i>			
First-Line Supervisors of Food Preparation and Serving Workers	\$37,700	5.3%	1.3%
Cooks, Restaurant	\$24,100	13.8%	3.4%
Bartenders	\$25,900	7.8%	1.9%
Combined Food Preparation and Serving Workers, Including Fast Food	\$20,900	3.6%	0.9%
Waiters and Waitresses	\$22,900	29.5%	7.3%
Food Servers, Nonrestaurant	\$24,400	8.3%	2.1%
Dining Room and Cafeteria Attendants and Bartender Helpers	\$19,800	10.5%	2.6%
Dishwashers	\$22,400	6.5%	1.6%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	\$21,900	3.4%	0.9%
All Other Food Preparation and Serving Occupations (Avg. All Categories)	<u>\$23,700</u>	<u>11.0%</u>	<u>2.7%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>24.7%</b>
<i>Building and Grounds Cleaning and Maintenance Occupations</i>			
First-Line Supervisors of Housekeeping and Janitorial Workers	\$42,500	5.8%	1.9%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$27,600	6.1%	1.9%
Maids and Housekeeping Cleaners	\$20,400	85.1%	27.1%
All Other Building and Grounds Occupations (Avg. All Categories)	<u>\$27,400</u>	<u>3.0%</u>	<u>1.0%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>31.9%</b>
<i>Personal Care and Service Occupations</i>			
First-Line Supervisors of Personal Service Workers	\$43,000	4.3%	0.2%
Amusement and Recreation Attendants	\$23,100	15.0%	0.6%
Locker Room, Coatroom, and Dressing Room Attendants	\$22,300	3.8%	0.2%
Baggage Porters and Bellhops	\$20,000	34.4%	1.4%
Concierges	\$27,300	17.8%	0.7%
Fitness Trainers and Aerobics Instructors	\$45,500	3.0%	0.1%
Recreation Workers	\$29,500	9.8%	0.4%
Personal Care and Service Workers, All Other	\$29,000	3.4%	0.1%
All Other Personal Care and Service Occupations (Avg. All Categories)	<u>\$31,000</u>	<u>8.4%</u>	<u>0.3%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>4.0%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Study

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Lodging Workers</u>
<b>Page 2 of 2</b>			
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	7.5%	1.5%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	5.2%	1.1%
Hotel, Motel, and Resort Desk Clerks	\$22,300	71.8%	14.5%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>15.5%</u>	<u>3.1%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$28,200</b>	<b>100.0%</b>	<b>20.3%</b>
<i>Installation, Maintenance, and Repair Occupations</i>			
First-Line Supervisors of Mechanics, Installers, and Repairers	\$76,800	8.0%	0.4%
Maintenance and Repair Workers, General	\$38,900	89.8%	4.5%
All Other Installation, Maintenance, and Repair Occupations (Avg. All Categories)	<u>\$46,400</u>	<u>2.1%</u>	<u>0.1%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$42,100</b>	<b>100.0%</b>	<b>5.0%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$29,000</b>		90.4%

<sup>1</sup> Including occupations representing 3% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 11  
2014 NATIONAL WAREHOUSING WORKER DISTRIBUTION BY OCCUPATION  
JOBS-HOUSING NEXUS ANALYSIS  
CITY OF BOULDER**

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<b>Major Occupations (3% or more)</b>	<b>2014 National Warehousing Occupation Distribution</b>	
Management Occupations	25,100	3.5%
Office and Administrative Support Occupations	161,880	22.3%
Installation, Maintenance, and Repair Occupations	23,190	3.2%
Production Occupations	29,150	4.0%
Transportation and Material Moving Occupations	438,040	60.3%
All Other Warehousing Related Occupations	<u>48,730</u>	<u>6.7%</u>
<b>INDUSTRY TOTAL</b>	726,090	100.0%

APPENDIX TABLE 12  
 AVERAGE ANNUAL COMPENSATION, 2014  
 WAREHOUSING WORKER OCCUPATIONS  
 JOBS-HOUSING NEXUS ANALYSIS  
 CITY OF BOULDER

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Warehousing Workers</u>
<i>Page 1 of 2</i>			
<i>Management Occupations</i>			
General and Operations Managers	\$130,500	37.2%	1.3%
Sales Managers	\$137,700	4.9%	0.2%
Administrative Services Managers	\$91,600	5.3%	0.2%
Transportation, Storage, and Distribution Managers	\$102,700	36.1%	1.2%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>16.6%</u>	<u>0.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$118,000</b>	<b>100.0%</b>	<b>3.5%</b>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	5.4%	1.2%
Customer Service Representatives	\$35,200	8.5%	1.9%
Order Clerks	\$32,700	3.2%	0.7%
Production, Planning, and Expediting Clerks	\$53,200	3.7%	0.8%
Shipping, Receiving, and Traffic Clerks	\$32,400	21.2%	4.7%
Stock Clerks and Order Fillers	\$29,100	34.5%	7.7%
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	\$33,800	3.2%	0.7%
Office Clerks, General	\$40,400	6.0%	1.3%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>14.2%</u>	<u>3.2%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$34,900</b>	<b>100.0%</b>	<b>22.3%</b>
<i>Installation, Maintenance, and Repair Occupations</i>			
First-Line Supervisors of Mechanics, Installers, and Repairers	\$76,800	9.1%	0.3%
Bus and Truck Mechanics and Diesel Engine Specialists	\$57,900	7.7%	0.2%
Industrial Machinery Mechanics	\$55,000	3.3%	0.1%
Maintenance and Repair Workers, General	\$38,900	61.6%	2.0%
All Other Installation, Maintenance, and Repair Occupations (Avg. All Categories)	<u>\$46,400</u>	<u>18.3%</u>	<u>0.6%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$45,700</b>	<b>100.0%</b>	<b>3.2%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Sutdy

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Warehousing Workers</u>
<b>Page 2 of 2</b>			
<i>Production Occupations</i>			
First-Line Supervisors of Production and Operating Workers	\$63,600	8.3%	0.3%
Team Assemblers	\$30,500	19.1%	0.8%
Inspectors, Testers, Sorters, Samplers, and Weighers	\$44,000	21.9%	0.9%
Packaging and Filling Machine Operators and Tenders	\$25,300	17.1%	0.7%
Helpers--Production Workers	\$32,700	9.8%	0.4%
Production Workers, All Other	\$30,800	3.8%	0.2%
All Other Production Occupations (Avg. All Categories)	<u>\$37,600</u>	<u>20.0%</u>	<u>0.8%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>4.0%</b>
<i>Transportation and Material Moving Occupations</i>			
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	\$50,700	4.9%	2.9%
Heavy and Tractor-Trailer Truck Drivers	\$44,700	8.1%	4.9%
Industrial Truck and Tractor Operators	\$36,600	21.0%	12.7%
Laborers and Freight, Stock, and Material Movers, Hand	\$28,000	42.8%	25.8%
Machine Feeders and Offbearers	\$26,500	5.4%	3.2%
Packers and Packagers, Hand	\$21,800	10.4%	6.3%
All Other Transportation and Material Moving Occupations (Avg. All Categories)	<u>\$38,800</u>	<u>7.4%</u>	<u>4.5%</u>
	<b>Weighted Mean Annual Wage</b>	<b>100.0%</b>	<b>60.3%</b>
	<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$37,000</b>	<b>93.3%</b>

<sup>1</sup> Including occupations representing 3% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 13**  
**2014 NATIONAL INSTITUTION WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

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<b>Major Occupations (3% or more)</b>	<b>2014 National Institutional Industry Occupation Distribution</b>	
Management Occupations	935,617	5.7%
Business and Financial Operations Occupations	513,524	3.1%
Community and Social Service Occupations	1,501,829	9.1%
Education, Training, and Library Occupations	5,276,525	32.0%
Arts, Design, Entertainment, Sports, and Media Occupations	581,622	3.5%
Personal Care and Service Occupations	3,379,576	20.5%
Office and Administrative Support Occupations	1,689,737	10.3%
All Other Institutional Occupations	<u>2,601,967</u>	<u>15.8%</u>
<b>INDUSTRY TOTAL</b>	16,480,396	100.0%

Industries weighted to reflect City of Boulder industry mix.

**APPENDIX TABLE 14**  
**AVERAGE ANNUAL COMPENSATION, 2014**  
**INSTITUTIONAL WORKER OCCUPATIONS**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Institutional Workers</u>
<b>Page 1 of 2</b>			
<i>Management Occupations</i>			
Chief Executives	\$202,400	4.3%	0.2%
General and Operations Managers	\$130,500	28.3%	1.6%
Education Administrators, Preschool and Childcare Center/Program	\$46,300	14.4%	0.8%
Education Administrators, Elementary and Secondary School	\$93,500	6.5%	0.4%
Education Administrators, All Other	\$75,100	6.7%	0.4%
Social and Community Service Managers	\$81,300	16.1%	0.9%
All Other Management Occupations (Avg. All Categories)	<u>\$126,000</u>	<u>23.6%</u>	<u>1.3%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$106,300</b>	<b>100.0%</b>	<b>5.7%</b>
<i>Business and Financial Operations Occupations</i>			
Human Resources Specialists	\$65,800	10.1%	0.3%
Management Analysts	\$114,400	5.1%	0.2%
Fundraisers	\$57,400	8.0%	0.2%
Training and Development Specialists	\$65,600	22.0%	0.7%
Market Research Analysts and Marketing Specialists	\$77,300	6.5%	0.2%
Business Operations Specialists, All Other	\$75,300	19.5%	0.6%
Accountants and Auditors	\$76,300	14.2%	0.4%
All Other Business and Financial Operations (Avg. All Categories)	<u>\$74,700</u>	<u>14.6%</u>	<u>0.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$72,900</b>	<b>100.0%</b>	<b>3.1%</b>
<i>Community and Social Service Occupations</i>			
Educational, Guidance, School, and Vocational Counselors	\$53,800	8.8%	0.8%
Mental Health Counselors	\$48,800	5.5%	0.5%
Rehabilitation Counselors	\$39,400	8.4%	0.8%
Child, Family, and School Social Workers	\$49,100	18.5%	1.7%
Mental Health and Substance Abuse Social Workers	\$41,700	4.1%	0.4%
Social and Human Service Assistants	\$30,200	29.3%	2.7%
Community and Social Service Specialists, All Other	\$42,100	5.4%	0.5%
All Other Business and Financial Operations (Avg. All Categories)	<u>\$45,700</u>	<u>20.0%</u>	<u>1.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$41,800</b>	<b>100.0%</b>	<b>9.1%</b>
<i>Education, Training, and Library Occupations</i>			
Vocational Education Teachers, Postsecondary	\$53,100	5.2%	1.7%
Preschool Teachers, Except Special Education	\$35,400	18.4%	5.9%
Elementary School Teachers, Except Special Education	\$55,900	5.9%	1.9%
Secondary School Teachers, Except Special and Career/Technical Education	\$56,700	4.2%	1.3%
Self-Enrichment Education Teachers	\$41,800	17.1%	5.5%
Teachers and Instructors, All Other, Except Substitute Teachers	\$42,800	11.9%	3.8%
Teacher Assistants	\$32,300	16.1%	5.2%
All Other Education, Training, and Library Occupations (Avg. All Categories)	<u>\$58,100</u>	<u>21.3%</u>	<u>6.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$44,700</b>	<b>100.0%</b>	<b>32.0%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Sutdy

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Institutional Workers</u>
<b>Page 2 of 2</b>			
<i>Arts, Design, Entertainment, Sports, and Media Occupations</i>			
Coaches and Scouts	\$36,400	65.4%	2.3%
Public Relations Specialists	\$46,700	7.5%	0.3%
All Other Arts, Design, Entertainment, Sports, and Media Occupations (Avg. All Categories)	<u>\$53,300</u>	<u>27.0%</u>	<u>1.0%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$41,700</b>	<b>100.0%</b>	<b>3.5%</b>
<i>Personal Care and Service Occupations</i>			
Childcare Workers	\$24,300	39.1%	8.0%
Personal Care Aides	\$23,900	42.2%	8.6%
Fitness Trainers and Aerobics Instructors	\$45,500	4.5%	0.9%
Recreation Workers	\$29,500	5.5%	1.1%
All Other Personal Care and Service Occupations (Avg. All Categories)	<u>\$31,000</u>	<u>8.7%</u>	<u>1.8%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$26,000</b>	<b>100.0%</b>	<b>20.5%</b>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	6.1%	0.6%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	9.4%	1.0%
Customer Service Representatives	\$35,200	7.2%	0.7%
Receptionists and Information Clerks	\$29,300	9.0%	0.9%
Executive Secretaries and Executive Administrative Assistants	\$52,800	4.9%	0.5%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$36,500	22.7%	2.3%
Office Clerks, General	\$40,400	25.8%	2.6%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>14.9%</u>	<u>1.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$39,300</b>	<b>100.0%</b>	<b>10.3%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$44,000</b>		84.2%

<sup>1</sup> Including occupations representing 4% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 15**  
**2014 NATIONAL ASSISTED LIVING WORKER DISTRIBUTION BY OCCUPATION**  
**JOBS-HOUSING NEXUS ANALYSIS**  
**CITY OF BOULDER**

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<b>Major Occupations (3% or more)</b>	<b>2014 National Assisted Living Occupation Distribution</b>	
Healthcare Practitioners and Technical Occupations	589,856	16.9%
Healthcare Support Occupations	1,224,897	35.0%
Food Preparation and Serving Related Occupations	498,540	14.3%
Building and Grounds Cleaning and Maintenance Occupations	223,572	6.4%
Personal Care and Service Occupations	422,542	12.1%
Office and Administrative Support Occupations	176,069	5.0%
All Other Assisted Living Related Occupations	<u>359,935</u>	<u>10.3%</u>
<b>INDUSTRY TOTAL</b>	3,495,411	100.0%

Industries weighted to reflect City of Boulder industry mix.

APPENDIX TABLE 16  
 AVERAGE ANNUAL COMPENSATION, 2014  
 ASSISTED LIVING WORKER OCCUPATIONS  
 JOBS-HOUSING NEXUS ANALYSIS  
 CITY OF BOULDER

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Assisted Living Workers</u>
<i>Page 1 of 2</i>			
<i>Healthcare Practitioners and Technical Occupations</i>			
Registered Nurses	\$72,800	34.7%	5.9%
Licensed Practical and Licensed Vocational Nurses	\$45,900	50.2%	8.5%
All Other Healthcare Practitioners and Technical Occupations (Avg. All Categories)	<u>\$79,700</u>	<u>15.1%</u>	<u>2.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$60,300</b>	<b>100.0%</b>	<b>16.9%</b>
<i>Healthcare Support Occupations</i>			
Home Health Aides	\$27,700	20.9%	7.3%
Nursing Assistants	\$28,300	74.2%	26.0%
All Other Healthcare Support Occupations (Avg. All Categories)	<u>\$33,800</u>	<u>4.9%</u>	<u>1.7%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$28,400</b>	<b>100.0%</b>	<b>35.0%</b>
<i>Food Preparation and Serving Related Occupations</i>			
First-Line Supervisors of Food Preparation and Serving Workers	\$37,700	5.8%	0.8%
Cooks, Institution and Cafeteria	\$27,200	25.5%	3.6%
Food Preparation Workers	\$22,500	10.4%	1.5%
Combined Food Preparation and Serving Workers, Including Fast Food	\$20,900	7.3%	1.0%
Waiters and Waitresses	\$22,900	7.9%	1.1%
Food Servers, Nonrestaurant	\$24,400	29.0%	4.1%
Dining Room and Cafeteria Attendants and Bartender Helpers	\$19,800	3.9%	0.6%
Dishwashers	\$22,400	6.3%	0.9%
All Other Food Preparation and Serving Related Occupations (Avg. All Categories)	<u>\$23,700</u>	<u>3.8%</u>	<u>0.5%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$25,000</b>	<b>100.0%</b>	<b>14.3%</b>
<i>Building and Grounds Cleaning and Maintenance Occupations</i>			
First-Line Supervisors of Housekeeping and Janitorial Workers	\$42,500	6.3%	0.4%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$27,600	15.3%	1.0%
Maids and Housekeeping Cleaners	\$20,400	75.0%	4.8%
All Other Building and Grounds Cleaning and Maintenance Occupations (Avg. All Ca	<u>\$27,400</u>	<u>3.4%</u>	<u>0.2%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$23,100</b>	<b>100.0%</b>	<b>6.4%</b>
<i>Personal Care and Service Occupations</i>			
First-Line Supervisors of Personal Service Workers	\$43,000	4.2%	0.5%
Personal Care Aides	\$23,900	71.6%	8.7%
Recreation Workers	\$29,500	17.8%	2.1%
Residential Advisors	\$34,100	3.2%	0.4%
All Other Personal Care and Service Occupations (Avg. All Categories)	<u>\$31,000</u>	<u>3.3%</u>	<u>0.4%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$26,300</b>	<b>100.0%</b>	<b>12.1%</b>

Attachment E - 2016 Jobs Housing Nexus Analysis Study

<u>Occupation</u> <sup>1</sup>	<u>2014 Avg. Compensation</u> <sup>2</sup>	<u>% of Total Occupation Group</u> <sup>3</sup>	<u>% of Total Assisted Living Workers</u>
<i>Office and Administrative Support Occupations</i>			
First-Line Supervisors of Office and Administrative Support Workers	\$56,300	8.2%	0.4%
Switchboard Operators, Including Answering Service	\$24,900	3.4%	0.2%
Bookkeeping, Accounting, and Auditing Clerks	\$39,400	8.6%	0.4%
Payroll and Timekeeping Clerks	\$39,900	3.3%	0.2%
Receptionists and Information Clerks	\$29,300	25.9%	1.3%
Executive Secretaries and Executive Administrative Assistants	\$52,800	3.3%	0.2%
Medical Secretaries	\$31,200	4.3%	0.2%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$36,500	12.3%	0.6%
Office Clerks, General	\$40,400	17.2%	0.9%
All Other Office and Administrative Support Occupations (Avg. All Categories)	<u>\$38,100</u>	<u>13.6%</u>	<u>0.7%</u>
<b>Weighted Mean Annual Wage</b>	<b>\$37,400</b>	<b>100.0%</b>	<b>5.0%</b>
<b>Weighted Average Annual Wage - All Occupations</b>	<b>\$34,000</b>		89.7%

<sup>1</sup> Including occupations representing 3% or more of the major occupation group.

<sup>2</sup> The methodology utilized by the Bureau of Labor Statistics Occupational Employment Survey assumes that hourly paid employees are employed full-time. Annual compensation is calculated by multiplying hourly wages by 40 hours per work week by 52 weeks.

<sup>3</sup> Occupation percentages are based on the 2014 National Industry - Specific Occupational Employment survey compiled by the Bureau of Labor Statistics. Wages are based on the 2014 Occupational Employment Survey data applicable to Boulder County.

**APPENDIX TABLE 17  
INDUSTRY CATEGORIES BY BUILDING TYPE  
JOBS-HOUSING NEXUS ANALYSIS  
CITY OF BOULDER**

Industry Employment by Building Type Weighted to Reflect the City of Boulder Employment Mix  
Based on QCEW Data for the City of Boulder.

<b>NAICS</b>	<b>Industry</b>	<b>Percent of Employment for Building Type</b>
<b>Office</b>		
511100	Newspaper, Periodical, Book, and Directory Publishers	3.3%
511200	Software Publishers	12.7%
517100	Wired Telecommunications Carriers	0.6%
517200	Wireless Telecommunications Carriers (except Satellite)	0.1%
518200	Data Processing, Hosting, and Related Services	0.8%
519100	Other Information Services	1.0%
522100	Depository Credit Intermediation	2.7%
522200	Nondepository Credit Intermediation	0.4%
523900	Other Financial Investment Activities	3.0%
524100	Insurance Carriers	0.7%
524200	Agencies, Brokerages, and Other Insurance Related Activities	1.0%
531100	Lessors of Real Estate	1.7%
531200	Offices of Real Estate Agents and Brokers	1.0%
531300	Activities related to Real Estate	1.2%
541100	Legal Services	2.9%
541200	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.9%
541300	Architectural, Engineering, and Related Services	7.9%
541400	Specialized Design Services	0.7%
541500	Computer Systems Design and Related Services	19.5%
541600	Management, Scientific, and Technical Consulting Services	5.9%
541800	Advertising and Related Services	2.2%
541900	Other Professional, Scientific, and Technical Services	4.1%
551100	Management of Companies and Enterprises	2.2%
561100	Office Administrative Services	0.3%
561300	Employment Services	4.3%
561500	Travel Arrangement and Reservation Services	0.6%
561600	Investigation and Security Services	0.2%
561700	Services to Buildings and Dwellings	2.0%
561900	Other Support Services	0.6%
621100	Offices of Physicians	4.7%
621200	Offices of Dentists	2.1%
621300	Offices of Other Health Practitioners	4.5%
813200	Grantmaking and Giving Services	0.5%
813300	Social Advocacy Organizations	1.5%
813900	Business, Professional, Labor, Political, and Similar Organizations	1.3%
	<b>Total</b>	<b>100%</b>
<b>Retail / Restaurant / Service</b>		
441100	Automobile Dealers	4.7%
441200	Other Motor Vehicle Dealers	0.2%
441300	Auto Parts, Accessories, and Tire Stores	0.9%
442100	Furniture Stores	0.4%
442200	Home Furnishings Stores	1.1%
443100	Electronics and Appliance Stores	2.3%
444100	Building Material and Supplies Dealers	3.4%
444200	Lawn & Garden Equipment/Supplies Stores	0.1%
445100	Grocery Stores	12.1%
445200	Specialty Food Stores	0.4%
445300	Beer, Wine, and Liquor Stores	1.4%
446100	Health and Personal Care Stores	2.5%
447100	Gasoline Stations	0.9%
448100	Clothing Stores	2.8%
448200	Shoe Stores	0.7%
448300	Jewelry, Luggage & Leather Goods Stores	0.3%
451100	Sporting Goods/Musical Instrument Stores	4.7%
451200	Book, Periodical, and Music Stores	0.8%
452100	Department Stores	2.9%
452900	Other General Merchandise Stores	0.2%
453100	Florists	0.3%
453200	Office Supply, Stationery & Gift Stores	1.2%
453300	Used Merchandise Stores	1.1%
453900	Other Miscellaneous Store Retailers	1.3%
722300	Special Food Services	1.5%
722400	Drinking Places (Alcoholic Beverages)	1.3%
722500	Restaurant and Other Eating Places	45.0%
812100	Personal Care Services	3.1%
812200	Death Care Services	0.2%
812300	Drycleaning and Laundry Services	0.7%
812900	Other Personal Services	0.8%
512130	Motion Picture and Video Exhibition	0.7%
	<b>Total</b>	<b>100%</b>

**APPENDIX TABLE 17  
INDUSTRY CATEGORIES BY BUILDING TYPE  
JOBS-HOUSING NEXUS ANALYSIS  
CITY OF BOULDER**

Industry Employment by Building Type Weighted to Reflect the City of Boulder Employment Mix  
Based on QCEW Data for the City of Boulder.

<b>NAICS</b>	<b>Industry</b>	<b>Percent of Employment for Building Type</b>
<b>Light Industrial</b>		
311400	Fruit and Vegetable Preserving and Specialty Food Manufacturing	1.4%
311500	Dairy Product Manufacturing	0.2%
311800	Bakeries and Tortilla Manufacturing	1.2%
311900	Other Food Manufacturing	1.2%
312100	Beverage Manufacturing	3.3%
323100	Printing and Related Support Activities	2.2%
325400	Pharmaceutical and Medicine Manufacturing	4.8%
325600	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	0.5%
325900	Other Chemical Product and Preparation Manufacturing	0.3%
332300	Architectural and Structural Metals Manufacturing	0.1%
332700	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2.1%
332800	Coating, Engraving, Heat Treating, and Allied Activities	0.6%
333200	Industrial Machinery Manufacturing	0.6%
333300	Commercial and Service Industry Machinery Manufacturing	4.6%
334200	Communications Equipment Manufacturing	4.0%
334500	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	54.9%
335900	Other Electrical Equipment and Component Manufacturing	0.2%
337100	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	0.2%
337900	Other Furniture Related Product Manufacturing	0.3%
339100	Medical Equipment and Supplies Manufacturing	1.1%
339900	Other Miscellaneous Manufacturing	4.7%
561400	Business Support Services	4.2%
811100	Automotive Repair and Maintenance	6.5%
811200	Electronic Equipment Repair/Maintenance	0.1%
811400	Personal and Household Goods Repair and Maintenance	0.4%
	<b>Total</b>	<b>100%</b>
<b>Hospital</b>		
621400	Outpatient Care Centers	26.2%
621500	Medical and Diagnostic Laboratories	0.8%
621900	Other Ambulatory Health Care Services	4.5%
622100	General Medical and Surgical Hospitals	68.5%
	<b>Total</b>	<b>100%</b>
<b>Lodging</b>		
721100	Traveler Accommodation	100%
<b>Warehouse</b>		
493100	Warehousing and Storage	100%
<b>Institutional</b>		
624100	Individual and Family Services	23.3%
624200	Community Food and Housing, and Emergency and Other Relief Services	5.4%
624300	Vocational Rehabilitation Services	4.3%
624400	Child Day Care Services	18.8%
611100	Elementary and Secondary Schools	11.4%
611400	Business Schools and Computer and Management Training	3.2%
611500	Technical and Trade Schools	4.0%
611600	Other Schools and Instruction	17.8%
611700	Educational Support Services	4.7%
813100	Religious Organizations	1.2%
813400	Civic and Social Organizations	5.0%
712100	Museums, Historical Sites, and Similar Institutions	1.0%
	<b>Total</b>	<b>100%</b>
<b>Assisted Living</b>		
623100	Nursing Care Facilities (Skilled Nursing Facilities)	45.0%
	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	4.2%
623200		
623300	Continuing Care Retirement Communities and Assisted Living	50.8%
	<b>Total</b>	<b>100%</b>

(1) Using data from the Quarterly Census of Employment and Wages (QCEW) , 2014 for the City of Boulder.  
NAICS = North American Industry Classification System



KEYSER MARSTON ASSOCIATES™  
ADVISORS IN PUBLIC/PRIVATE REAL ESTATE DEVELOPMENT

MEMORANDUM

ADVISORS IN:  
REAL ESTATE  
AFFORDABLE HOUSING  
ECONOMIC DEVELOPMENT

**To:** Chris Meschuk and Kristin Hyser  
City of Boulder

SAN FRANCISCO  
A. JERRY KEYSER  
TIMOTHY C. KELLY  
KATE EARLE FUNK  
DEBBIE M. KERN  
REED T. KAWAHARA  
DAVID DOEZEMA

**From:** David Doezema

**Date:** September 13, 2016

**Subject:** Affordable Housing Fee Options and Context Materials

LOS ANGELES  
KATHLEEN H. HEAD  
JAMES A. RABE  
GREGORY D. SOO-HOO  
KEVIN E. ENGSTROM  
JULIE L. ROMNEY

Keyser Marston Associates, Inc. (KMA) has prepared the following memorandum to assist in further defining the three options identified for affordable housing fees, review approaches to thresholds and exemptions and provide context regarding development costs and market adjustments sufficient to absorb proposed fees. In addition, economic and market factors frequently used to inform fee level selection are briefly reviewed and drawn upon in describing a recommended range for fees. The memorandum is organized into the following sections:

SAN DIEGO  
PAUL C. MARRA

- 1.0 Economic and Market Factors** – economic and market factors commonly considered in fee level selection are reviewed and drawn upon in recommending ranges within which to establish fees.
- 2.0 Fee Level Options** – fee levels for all building types are identified to accompany the three office fee options identified at the June study session.
- 3.0 Thresholds** – Provides information on thresholds for fee application used in other programs and summarizes information on development activity in Boulder that may be useful in selecting a threshold.
- 4.0 Exemptions** – Describes approaches to exemptions used in other programs.
- 5.0 Development Cost Context and Market Adjustments to Absorb Fees** – reviews fee options in the context of total development costs and provides an

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estimate of market adjustments that would be sufficient to absorb fees under each option.

Additionally, an appendix section provides information on development costs and land values in Silicon Valley as context for linkage fee levels adopted in the region.

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## 1.0 Economic and Market Factors for Fee Level Selection

Cities often take a range of economic and market factors into account in selecting affordable housing fee levels, often with an objective of setting fees at a level not expected to significantly alter development decisions. These factors include:

- 1) Market strength including real estate demand indicators such as rents and vacancy rates;
- 2) Development costs and relationships between fee levels and the development costs for various types of non-residential structures; and
- 3) Fees in other jurisdictions, both neighboring jurisdictions and those comparable in real estate demand.

The City Council has previously expressed interest in considering these factors as part of the decision making process for fee levels. The KMA Jobs Housing Nexus Report (“KMA Report”) provides an analysis and background information addressing these factors. Section 5 of this memorandum provides further context on development costs and market adjustments needed to absorb fees based upon the specific fee options described in Section 2. KMA’s thinking regarding fee levels based upon this analysis is outlined below.

### *Office*

The office market in Boulder is exhibiting clear signs of strength, especially within the Downtown where office rents for class A space are in the \$50 per square foot range.<sup>1</sup> This represents a premium over averages for Downtown Denver and is approaching levels in seen in some Silicon Valley cities that have linkage fees in the \$15 to \$20 per square foot range<sup>2</sup>. Total development costs for a higher density office project in the Downtown and vicinity are estimated at approximately \$500 per square foot.

For lower density office locations, outside the Downtown and Transit Village Area, Boulder’s office market is also robust. However, prevailing rents and land values are lower, and a lower density office project with surface parking in these locations would

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<sup>1</sup> Cushman and Wakefield, Office Snapshot 2Q 2016. Represents full service rental rates for Class A space.

<sup>2</sup> Office rents in Cupertino are \$58 PSF and the City has an adopted linkage fee of \$20 PSF. Sunnyvale has rents averaging \$54 PSF and an adopted linkage fee of \$15. Rents are full service Class A office as of 1<sup>st</sup> Quarter 2016 per the brokerage firm Colliers International.

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have a lower development cost, estimated at \$300 per square foot. This indicates a more moderate fee level may be appropriate for projects in these locations.

As one benchmark for potential fee levels, cities with exceptionally strong real estate markets have adopted linkage fees representing up to approximately 5% of development costs (a figure that considers linkage fees only, not total fees and permits). Applying this 5% figure to a high density office project in Boulder equates to a fee level of \$25 per square foot. For a lower density office project, applying the same metric yields \$15 per square foot as an upper end.

In recognition of the range of values and development costs in Boulder, the City may wish to consider differentiation of the office fee level such that higher value / higher density projects are subject to higher fees. Zoning designation, floor area ratio (FAR), and geography are potential mechanisms for differentiating the fee level that could be explored. With an FAR threshold, a higher rate might apply only to the portion of the building area in excess of the threshold.

If office fee levels will be differentiated, we suggest a higher rate of up to \$15 to \$20 per square foot be applied within the Downtown, potentially extending to other higher density locations. A lower rate would apply to other areas (or under an FAR threshold, if fees are distinguished by FAR). The lower fee rate could be set similar to or somewhat above that applicable to other non-residential development.

If a uniform rate for all office space is preferred, consideration of fees in a more moderate range of \$10 to \$15 per square foot is suggested.

#### *Other Non-Residential Development*

Boulder is an attractive location for non-residential development of all types. For uses including retail, hotel, flex commercial / R&D / light industrial space, fees in approximately the \$7 to \$10 per square foot range is suggested. This range reflects establishment of fees at approximately 3% to 5% of development costs. For warehouse, a lower fee in the \$3 to \$5 per square foot range is recommended based on the low cost / low rent nature of these buildings which make them more sensitive to fees.

These recommended ranges fall between levels applicable to Options 1 and 2 described next in Section 2.

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## 2.0 Fee Level Options

Three options for affordable housing linkage fee levels were defined at the June 14<sup>th</sup> study session: \$10, \$20, and \$35 per square foot of building area. We understand the three fee levels to be in reference to office uses. The table below outlines corresponding fees for the other building types to accompany the three options already defined for office.

- Option 1 (\$10 for office) - maintains fees near current levels.
- Option 2 (\$20 for office) – doubles the office fee.
- Option 3 (\$35 for office) –sets Boulder’s fees among the highest in the U.S.<sup>3</sup>

### Proposed Affordable Housing Fee Options

Building Type	Option #1	Option #2	Option #3	Existing Fees <sup>(1)</sup>
<i>Council defined options for office:</i> Office	\$10.00	\$20.00	\$35.00	\$9.53
<i>KMA identified options for discussion:</i> Other Non-Residential (retail, lodging, industrial, hospital)	\$7.00	\$12.00	\$20.00	retail: \$6.96 lodging: \$1.79 industrial: \$5.62 hospital: \$8.23
Warehouse	\$3.00	\$4.00	\$6.00	\$3.11
Institutional (Assisted living, other institutional)	\$3.00	\$6.00	\$10.00	As'd Living: \$2.19 schools: \$2.24

Note: fees are per square foot of gross building area excluding parking.

(1) Existing fees for lodging and nursing home / assisted living are converted to a square footage basis for ease of comparison. For lodging the conversion is based on an average room size of 600 square feet. The nursing home / assisted living fee is adjusted to a square footage basis using an estimated 400 square feet per bed on average.

The suggested range described in the prior section falls between the first two fee options.

<sup>3</sup> Option 3 would exceed all other currently adopted linkage fee programs that KMA is aware of. Palo Alto, CA will be considering a proposed increase to \$60 per square foot for office, \$30 for hotel, and \$20 for other uses. Vail and Aspen have requirements that exceed the \$35 PSF level but are not implemented as linkage fees.

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*Fee Categories*

Most linkage fee programs include some fee level distinctions by building type. Some programs have a relatively fine-grained schedule of fee categories. Others use just a few basic distinctions such as office and everything else. A few apply one fee level to everything. Boulder has broad flexibility on the approach as long as fees are within maximums supported by the nexus. Our suggestion, which is reflected in the options outlined above, is to include distinctions by building type to recognize varied market conditions and development costs. The four suggested categories are as listed below. Categories could be further refined or subdivided, if desired, as a reflection of City policy.

- (1) Office – office is identified as a separate and higher fee category to reflect the relative strength of this use and somewhat lower burden that fees represent relative to the higher development costs of office buildings.
- (2) Other Non-Residential –encompassing retail, hotel, light industrial, hospitals, and all other non-residential uses except office, warehouse and institutional.
- (3) Warehouse – warehouse is suggested as a separate fee level in recognition of the low cost / low rent nature of these buildings which make them more sensitive to fees. These buildings also have few employees, lessening their impact on affordable housing.
- (4) Institutional – This category groups institutional uses such as religious facilities, museums, schools, along with assisted living and other nursing care facilities. Although institutional uses are sometimes exempted, proposed fee levels are identified for this category consistent with current City practice to apply fees to these uses.

For purposes of the above categories, hospitals are placed in the “other non-residential” category given somewhat comparable existing fees to retail and light industrial and the fact that hospitals are major employment centers with significant affordable housing impacts. Development costs for hospital buildings also tend to be quite significant and so fees generally represent a lower percentage burden on development costs than, say, retail. Alternative approaches include placing hospitals in the institutional category, maintaining as a separate category, or exempting them as a number of programs do (see Section 4.0 for a discussion exemptions).

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*Net Change from Existing Fees*

The following table summarizes the net change in fees under the three options. The summary is inclusive of proposed transportation and capital facility impact fee changes. Appendix Table 1 provides the detail by type of fee.

**Summary of Net Change in Fees Per Square Foot by Option**

Building Type	Option #1	Option #2	Option #3
Office	\$1.46	\$11.46	\$26.46
Light Industrial	\$2.38	\$7.38	\$15.38
Retail	\$1.27	\$6.27	\$14.27
Hospital	-\$0.29	\$4.71	\$12.71
Lodging <sup>(1)</sup>	\$5.80	\$10.80	\$18.80
Warehouse	\$0.27	\$1.27	\$3.27
Institutional <sup>(2)</sup>	\$1.24	\$4.24	\$8.24
Assisted Living <sup>(1)</sup>	\$1.36	\$4.36	\$8.36

(1) Existing fees for lodging and nursing home / assisted living are converted to a square footage basis for ease of comparison. For lodging the conversion is based on an average room size of 600 square feet. For nursing home fee is adjusted to a square footage basis using an estimated 400 square feet per bed on average.

(2) Institutional category combines multiple existing categories. Net change computed based on existing fee for schools.

*Estimated Number of Affordable Units Produced*

The table below provides an estimate of the number of affordable units that could be produced using revenues generated under the three options over the next ten years.

**Estimated Number of Affordable Units Produced Over 10 Years with Linkage Fee Funds**

Option 1	Option 2	Option 3
190 Units	340 Units	590 Units

Development assumptions used for these estimates are from the TischlerBise fee analysis and are the same in all scenarios. No attempt is made to quantify how higher fee levels may affect development projections. Of course, if the pace of development is slowed, fee revenues and the number of affordable units produced would be lower. Details are provided in the table on the following page.

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**Estimated Number of Affordable Units Produced**

				Option 1	Option 2	Option 3		
	New Building Area <sup>(1)</sup>	Fee Levels						
<b>10-Year Revenue Estimate</b>	<u>2016-2025 (Sq.Ft.)</u>	<u>Op #1</u>	<u>Op #2</u>	<u>Op #3</u>				
Office and Institutional <sup>(2)</sup>	1,056,000	\$10	\$20	\$35	\$11	\$21	\$37	\$Million
Retail and Industrial	1,580,000	\$7	\$12	\$20	<u>\$11</u>	<u>\$19</u>	<u>\$32</u>	<u>\$Million</u>
					\$22	\$40	\$69	\$Million
<b>Est. of Affordable Units Funded Over 10 Years</b>	\$116,000 / Unit Cost <sup>(3)</sup>				190	340	590	Units

(1) Estimate from Tischler Bise Land Use Assumptions Appendix.

(2) TischlerBise Land Use Assumptions memo combines office and institutional categories. For purposes of revenue estimates, assumes primarily office.

(3) Reflects KMA affordability gap analysis w eighted by income tier based on income levels assisted from 2010-2015.

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### 3.0 Thresholds for Application of the Fee

The City may wish to establish a threshold for the minimum project size that will be subject to the fee or, alternatively, a threshold below which a reduced fee applies. Thresholds are a way to reduce the fee burden for smaller projects and additions.

Approaches to thresholds vary based on local objectives. Some programs have no thresholds and all construction is subject to the fee. Many have a minimum project size below which fees do not apply. A few programs reduce the fee under a certain size threshold.

Following is an overview of approaches to thresholds used by other communities with a focus on programs that have fees of \$10 per square foot or more. The KMA Report includes a more comprehensive summary of other linkage fee programs.

#### **Approaches to Thresholds** (square feet applicable to threshold identified in parentheses)

##### **No Threshold** - fee applies to all project sizes

Palo Alto  
Cupertino  
Vail

##### **Low Thresholds for Fee Application** - 5,000 SF or less

Aspen (500 SF)  
Santa Monica (1,000 SF)  
Seattle (4,000 SF)  
Redwood City (5,000 SF)

##### **High Thresholds for Fee Application** - 10,000 SF or more

San Francisco (25,000 SF)  
Cambridge (25,000 SF)  
Menlo Park (10,000 SF)

##### **Reduced Fees Under a Threshold**

Sunnyvale (50% fee reduction for first 25,000 SF)  
Mountain View (50% fee reduction for first 10,000 SF of office  
and first 25,000 SF of other non-residential)

To facilitate an understanding of how various thresholds could affect building activity subject to the fee, the table below summarizes non-residential building permit activity over a sixteen-year period by project size. The table shows, as an example, that while

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over half of non-residential projects are under 5,000 square feet, these smaller projects represented only about 4% of the total in terms of square feet. Mixed use residential / commercial projects were not included in the summary due to the difficulty of separating the residential from non-residential building area.

#### City of Boulder Non-Residential Space Permitted 2000 - 2015, by Size of Project

Non-Residential Projects Permitted, 2000-2015 By Net Added Sq.Ft.	Number of Projects (16 Year Total)			Aggregate Building Sq. Ft. (16 Year Total)		
	Per Category	Cumulative	Cum%	Per Category	Cumulative	Cum%
0 - 1,000 Sq.Ft.	133	133	36%	44,000	44,000	1%
1,001 - 5,000 Sq.Ft.	74	207	56%	163,000	207,000	4%
5,001 - 10,000 Sq.Ft.	38	245	67%	237,000	444,000	8%
10,001 - 25,000 Sq.Ft.	49	294	80%	681,000	1,125,000	21%
over 25,000 Sq.Ft.	73	367	100%	4,196,000	5,321,000	100%

Note: mixed use projects are not included given residential and non-residential square footage is not broken out in the City's permit database. This table is intended as an overview of the number and square footage size of projects potentially subject to the linkage fee. Projects specifically identified in the database as relating to parking, exterior areas, governmental uses, or remodels / tenant improvements are not included in these figures.

Source: KMA summary of City of Boulder Building Permit data.

For Boulder, the Mountain View and Sunnyvale models may be a fit. These programs require all project sizes to contribute but reserve the full fee rate for larger projects (applied to building area over the threshold). Based on historic permit data, if Boulder were to apply a reduced fee rate to, say, the initial 10,000 square feet of building area, roughly 2/3 of projects would be entirely at the lower rate and approximately 30% of total building area would be subject to the lower rate.

A Floor Area Ratio (FAR) threshold is another potential approach. Higher fees could be applied to floor area in excess of a certain threshold. The logic is that higher density projects generally have higher values and have higher development costs; therefore, fees represent a lower burden in percentage terms. As illustrated in Section 5.0, higher density office projects are also generally less sensitive to fees than lower density office projects. The concept would be similar to Boulder's initial linkage fee structure which applied fees only to FAR in excess of a threshold within a specific zoning district.

We understand Boulder's current practice is to credit space removed as part of a project in calculating fees. If a threshold is introduced, our suggestion is to apply the threshold to the gross building area of the project being constructed before applying any applicable fee credits.

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#### 4.0 Exemptions

Exemptions are a common feature of linkage fee programs. Exemptions can be a way of reducing costs for projects that meet a community need or satisfy other objectives. The downside is foregone fee revenue.

Common exemptions are for governmental buildings, schools, child care centers, religious facilities, institutional uses and hospitals.

In the neighborhood of 1/3 of programs have a blanket exemption for buildings owned by non-profits. Non-profit exemptions encompass most religious, educational, and hospital buildings. Many building types commonly covered under specific use exemptions would also qualify with a non-profit exemption. The concept of using the non-profit exemption is that non-profits have met a standard under the federal tax code as serving a charitable, religious, or other qualifying purpose. Non-profits generally must be owner-occupants of their buildings to receive the exemption.

Hospitals tend to be one of the more significant exemptions by project size. Hospitals usually also qualify under non-profit exemptions. In reviewing historic permit data for Boulder, hospitals and assisted living / residential care facilities are the two largest building types by square footage among those commonly exempted. Schools and religious facilities are a less significant component of development activity. University buildings are not included in the permit data since they do not fall under the City's land use regulations and permitting processes and would not be subject to the linkage fee.

While exemptions are common, there are programs that define them narrowly with fees applicable to most every type of non-residential space. This is the case for Boulder's program which currently exempts only libraries, community meeting space, public works / utilities structures, parking and miscellaneous exterior structures like decks and awnings. Governmental uses other than libraries and the public works / utility category are subject to the fee along with most every other type of non-residential building. Aspen is another example where requirements apply to nearly everything. There can be a perception of fairness in requiring all projects to contribute toward affordable housing.

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Following is a summary of exemptions used in selected programs with fees of \$10 or above. No particular priority is implied by the order.

Cambridge	Municipal and governmental facilities
Aspen	Essential public facilities.
Palo Alto	Churches, universities, recreation, hospitals <sup>4</sup> , private educational facilities, day care and nursery school, public facilities.
Seattle	Street level retail along designated pedestrian streets and the 1 <sup>st</sup> 4,000 square feet in mixed use buildings w/50% or more residential; commercial uses included within affordable housing developments.
San Francisco	Institutional uses (incl. schools, hospitals, childcare, residential care, religious and public facilities); production distribution and repair; freestanding pharmacies under 50,000 SF; grocery stores under 75,000 SF.
Menlo Park	Churches, private clubs, lodges, fraternal orgs, public facilities and projects with few or no employees are exempt.
Redwood City	Schools, child care centers, public buildings
Cupertino	Governmental and institutional buildings
Santa Monica	Private schools, city projects, places of worship, commercial components of affordable housing developments
Sunnyvale	Non-profits, child care, education, hospital, public uses.
Mountain View	Non-profits, governmental agencies

The KMA Report provides information on exemptions for a more comprehensive list of programs.

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<sup>4</sup> While hospitals are exempt in Palo Alto, the City negotiated an equivalent affordable housing payment for a recent major hospital project through a development agreement.

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## 5.0 Development Cost Context and Market Adjustments to Absorb Fees

KMA prepared estimates of total development cost for various types of non-residential development as context for consideration of updated fee levels. The development cost context analysis enables fees to be understood in terms of effects on the total cost of development. The analysis also quantifies the market adjustments, such as changes to land values, construction costs, or rents, that would be sufficient to absorb fees at various levels under consideration. The development cost analysis is included in the KMA Report and in draft materials previously provided to the Working Group and Council. Here the development cost analysis is applied to the three fee options described above.

### *Total Development Costs*

KMA estimated the total development cost associated with five prototypical building types and examined fee levels in the context of total costs. The prototypes include flex commercial / light industrial, hotel, retail, lower density office, and higher density office. All cost summaries assume lower density surface-parked projects with the exception of the higher density office project which includes the cost of structured parking and higher land costs associated with a downtown or other higher density location. The results are summarized below:

### Development Costs for Commercial Building Prototypes

Program	Flex Commercial (R&D/Lt Industrial)		Hotel		Retail		Lower Density Office		High Density Office (DT & Vicinity)	
Building Area	50,000 GSF		65,000 <sup>↑</sup> GSF		50,000 GSF		50,000 GSF		50,000 GSF	
Stories	1 story		2-3 stories		1 story		3 stories		3-4 stories	
FAR	0.50 FAR		0.75 <sup>↑</sup> FAR		0.30 FAR		0.50 <sup>↑</sup> FAR		2.00 <sup>↑</sup> FAR	
Acres	2.3 acres		2.0 acres		3.8 acres		2.3 acres		0.6 acres	
<b>Development Costs</b>	<b>\$/GSF</b>	<b>Total</b>	<b>\$/GSF</b>	<b>Total</b>	<b>\$/GSF</b>	<b>Total</b>	<b>\$/GSF</b>	<b>Total</b>	<b>\$/GSF</b>	<b>Total</b>
Land Acquisition	\$24	\$1,200,000	\$34	\$2,180,000	\$60	\$3,000,000	\$50	\$2,500,000	\$75 <sup>↑</sup>	\$3,750,000
Directs (incl. TI's)	\$165	\$8,250,000	\$189	\$12,260,000	\$184	\$9,200,000	\$227	\$11,350,000	\$364	\$18,200,000
Indirects	\$10	\$500,000	\$15	\$980,000	\$15	\$740,000	\$14	\$680,000	\$29 <sup>↑</sup>	\$1,460,000
Financing	\$7	\$340,000	\$10	\$680,000	\$9	\$440,000	\$10	\$500,000	\$21	\$1,060,000
<b>Total</b>	<b>\$206</b>	<b>\$10,290,000</b>	<b>\$248</b>	<b>\$16,100,000</b>	<b>\$268</b>	<b>\$13,380,000</b>	<b>\$301<sup>↑</sup></b>	<b>\$15,030,000</b>	<b>\$489</b>	<b>\$24,470,000</b>

Note: Except for High Density Office, all the prototypes assume surface parking.

GSF = gross building square feet; FAR = floor area ratio.

It is recognized that there is wide variation of projects in Boulder, each with its own set of unique circumstances and unique costs; therefore, the estimates prepared for this analysis are only intended to reflect general orders of magnitude.

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*Fees as a percentage of Development Costs*

The above cost estimates are used to place fees under the three options into context as a percentage of total development costs as shown in the table below.

**Proposed Fees as % of Development Costs**

Building Type	Flex Commercial (R&D / Light Industrial)	Hotel	Retail	Office	Office - Higher Density (Downtown and Vicinity)
Total Development Cost (\$/SF)	\$206	\$248	\$268	\$301	\$489
Affordable Housing Fees (\$/SF)					
Option 1	\$7	\$7	\$7	\$10	\$10
Option 2	\$12	\$12	\$12	\$20	\$20
Option 3	\$20	\$20	\$20	\$35	\$35
Other Impact Fees, Permit Fees and Taxes (\$/SF) <sup>(1)</sup>	\$7	\$8	\$9	\$10	\$13
<b>Affordable Housing Fees as % of Development Cost</b>					
Option 1	3%	3%	3%	3%	2%
Option 2	6%	5%	4%	7%	4%
Option 3	10%	8%	7%	12%	7%
<b>Affordable Housing + Other Fees and Taxes as % of Development Cost</b>					
Option 1	7%	6%	6%	7%	5%
Option 2	9%	8%	8%	10%	7%
Option 3	13%	11%	11%	15%	10%

(1) Reflects proposed capital and transportation impact fees using fees levels identified in the TischlerBise draft studies. Sales tax, permitting fees, and plant investment fees are approximated at 1.7% of cost based on a City-prepared analysis for office.

With Option 1, affordable housing fees would range from 2% to 3% of total development costs. Total fees and permit costs under would range from 5% to 7% of development costs.

For Option 2, affordable housing fees would range from 4% to 7% of cost. Combined fees and permit costs would total approximately 7% to 10% of development costs.

Under Option 3, affordable housing fees would range from 7% to 12% of total development costs, or 10% to 15% with consideration of other fees and permit costs.

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As one point of reference, cities with exceptionally strong real estate markets have adopted linkage fees representing up to approximately 5% of development costs (a figure that considers linkage fees only, not total fees and permits). Option 1 would be within this benchmark in all cases. Option 2 would exceed the 5% level for lower density office and flex commercial / light industrial but not for other building types. Option 3 would exceed the 5% level for all building types.

### *Market Adjustments to Absorb Fees*

It can also be instructive to consider the relationship between potential fee levels and the magnitude of market adjustments that are estimated to be sufficient to absorb the fees. The KMA Report quantifies potential adjustments to the economics of non-residential development projects sufficient to absorb each \$1 in additional fees. Adjustments in land values, rents, and direct construction costs are quantified as summarized in the table below:

#### **Potential Market Adjustments to Absorb Every \$1/SF Fee**

<i>All figures are approximate</i>	Flex Commercial (R&D/Lt Industrial)	Hotel	Retail	Lower Density Office	High Density Office (DT & Vicinity)
Increase in Rents/Income	0.4%	0.4%	0.3%	0.3%	0.2%
Decrease in Direct Costs	0.6%	0.5%	0.5%	0.4%	0.3%
Decrease in Land Values	4.2%	3.0%	1.7%	2.0%	1.3%

The illustrative market adjustments are not additive. Each would independently be sufficient to absorb new fees. Depending on the market cycle and other factors, a combination of the above market adjustments would be expected to contribute in absorbing a new fee.

Relationships for each \$1 in fees are applied to quantify market adjustments for the three options.

### *Land Value Adjustments*

Developers purchase sites at values that will allow for financially feasible projects. If a new fee is put in place, developers will “price in” the requirement when evaluating a project’s economics and negotiating the purchase price for development sites. Given fees will apply to all or most projects in Boulder, it is possible that downward pressure on land costs could result as developers adjust what they can afford to pay for land. This downward pressure on land prices can, at least to some degree, bring costs back into better balance with the overall economics supported by projects.

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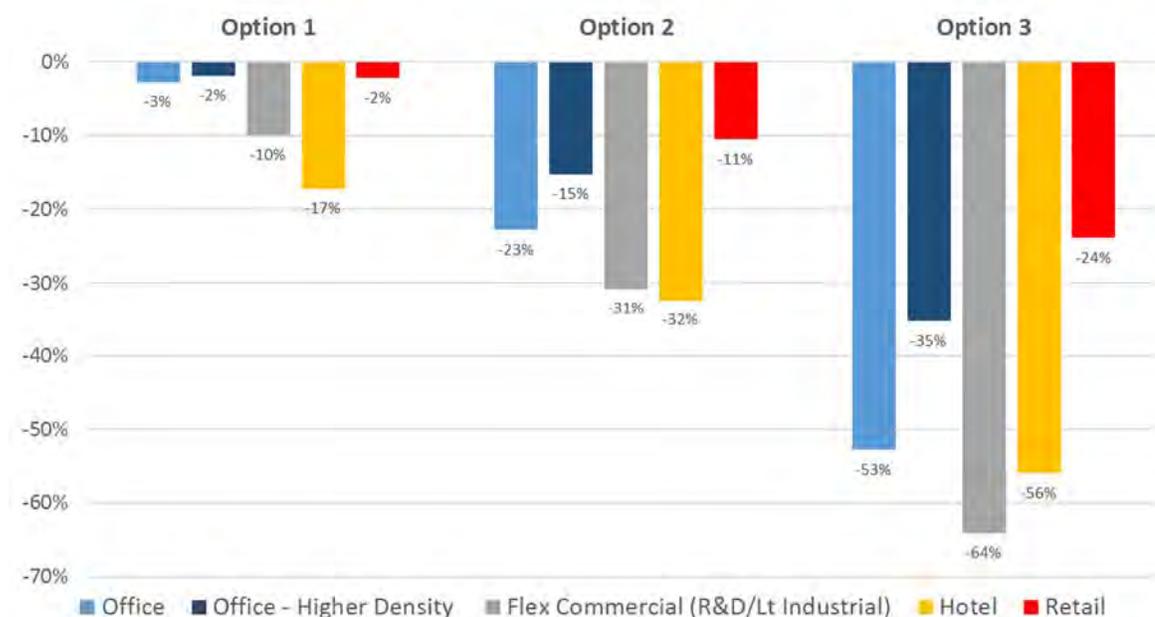
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In Boulder, future development opportunities are anticipated to primarily occur through redevelopment of older, underutilized properties in infill locations. Development of such properties can face challenges including the possible need to buy out existing income-generating uses, and the costs of parcel assemblage, demolition, tenant relocation, offsite infrastructure upgrades, hazardous remediation and other environmental mitigations, and historic preservation. Therefore, for many potential development sites there will be limitations to how much the land values can be downwardly adjusted. Rather than accept a reduced value, some property owners may decide to hold their properties off the market until such time as market conditions will support the price they are seeking.

The estimated percentage decrease in land values that would be sufficient to absorb increased fees under the three options are presented in the chart below:

**Land Values - %Decrease Sufficient to Absorb Proposed Fees**



Potential land value adjustments are expressed in dollar terms in the table on the next page.

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**Illustration of Land Value Adjustments Sufficient to Absorb Increased Fees**

Building Type	Representative Existing Land Values (Per Sq.Ft. of Land)	Land Values (\$/Sq.Ft. of Land) After Decrease Sufficient to Absorb Proposed Fees		
		Option 1	Option 2	Option 3
Office	\$25	\$24	\$19	\$12
Office - Higher Density (Downtown and Vicinity)	\$150	\$147	\$127	\$97
Flex Commercial (R&D / Light Industrial)	\$12	\$11	\$8	\$4
Hotel	\$25	\$21	\$17	\$11
Retail	\$18	\$18	\$16	\$14

Land value adjustments sufficient to absorb proposed fees are relatively modest under Option 1. Hotel is estimated as the largest adjustment at around 17%. Other building types are estimated to require an adjustment of 10% or less.

With Option 2, adjustments are estimated to range from 11% for retail to 32% for hotel.

Under Option 3, land values would need to decline by more than half to absorb proposed fees for lower density office, light industrial, and retail. For higher density office and retail, values would need to decline by approximately one third and one quarter, respectively.

As adjustments to land value become more significant, it becomes increasingly likely that land owners will elect to maintain current uses on their property or wait for improved market conditions that support a higher land value instead of accepting a reduced land price. This can affect the level of development activity as fewer projects are able to afford development sites.

*Rent Adjustments*

Rising commercial rents and declining vacancies over the past several years have contributed to favorable conditions for non-residential development. Should rents continue on an upward trajectory, it could help absorb the cost of a new fee. Of course, rents are always set by the market and landlords can only charge what the market will bear.

The chart below provides an illustration of increases in market rents sufficient to offset proposed fee increases under the three options.

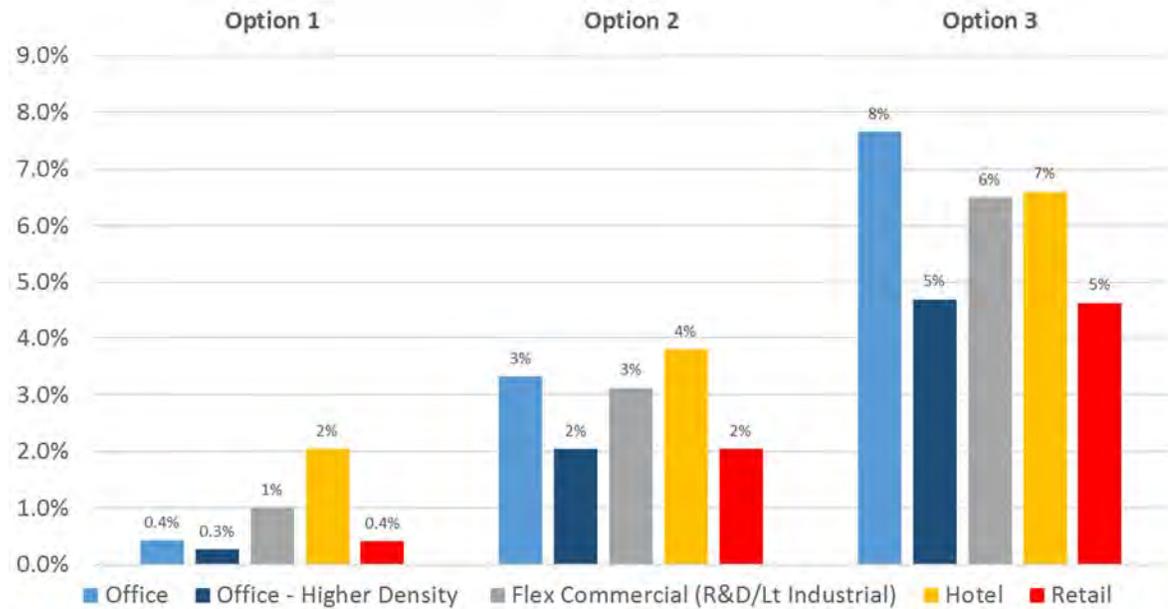
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**Commercial Rents - % Increase Sufficient to Absorb Proposed Fees**



In addition to the land value and rent adjustments quantified above, construction costs and developer profit can also adjust. Since declines in construction costs are more typical of a declining economy when fewer buildings are being built, the decision was made not to focus on this potential adjustment. Regarding the potential for adjustments to developer return (profit), developers and their equity partners usually have many choices about where to invest in order to achieve the risk-adjusted returns they are targeting and are not under an obligation to build within any particular jurisdiction. As a consequence, developers can be relatively inflexible regarding the return they are seeking going into a project. Adjustments to return expectations, when they occur, are often driven by broader market changes affecting the real estate investment climate (interest rates, capital flows into real estate, lender underwriting criteria, perception of future appreciation potential, etc.). In light of these considerations, this potential adjustment was not made a focus of the analysis.

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**Appendix A – Development Costs and Land Values in Silicon Valley**

This Appendix section provides information regarding development costs and land values in Silicon Valley as compared to Boulder. The purpose is to provide additional context for the affordable housing fee levels adopted by jurisdictions in Silicon Valley.

*Development Costs*

The following table compares the estimated total development cost range for non-residential projects in Boulder to a similar estimate prepared by KMA as representative for Silicon Valley. As indicated, development costs are generally higher in Silicon Valley.

**Representative Development Cost Ranges – Boulder and Silicon Valley**

Building Type	Representative Development Cost Range (\$/Sq.Ft.)	
	Boulder	Silicon Valley
High Density Office	\$475 - \$525 structured pkg	\$525 - \$625 structured pkg
Flex Commercial / Light Industrial	\$200 - \$225 surface parking	\$250 - \$300 surface parking
Retail	\$250 - \$300 surface parking	\$400 - \$500 surface parking
Hotel	\$225 - \$275 surface parking	\$325 - \$425 surface & structure pkg

*Land Values*

The table below compares representative land values for Boulder and Silicon Valley. Figures are based upon a review of appraisals and land sales occurring during 2014 and 2015. Land values identified for Boulder also reflect feedback received through developer interviews conducted last fall.

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**Representative Land Values – Boulder and Silicon Valley**

Building Type	Representative Land Values (\$/Sq.Ft. of Land)	
	Boulder	Silicon Valley
Office	\$25 - lower density \$150 - downtown and vicinity	\$115
Flex Commercial / Light Industrial	\$12	\$35
Retail	\$18	\$60
Hotel	\$25	\$45

Representative office land values for a high density location in Boulder are estimated to be in the same range or somewhat above Silicon Valley averages. Downtown Boulder would generally represent the upper end of the value range for a high density office site while values in Boulder Junction would generally be lower. For a lower density location in Boulder, office land values are estimated to be significantly less than Silicon Valley. Representative land values for industrial, retail, and hotel are around two to three times higher in Silicon Valley. The table on the following page provides additional supporting information on the Silicon Valley land sales.

**APPENDIX TABLE 1**  
**NET CHANGE IN NON-RESIDENTIAL FEES: DETAIL**  
**CITY OF BOULDER, CO**

Building Type	Affordable Housing Fees (\$/Sq.Ft.)							Capital Facilities Impact Fees (\$/Sq.Ft.)			Transportation Excise Tax / Impact Fee (\$/Sq.Ft.)		
	Existing	Option 1 Net		Option 2 Net		Option 3 Net		Existing	Proposed	Net Increase	Existing Excise Tax	Proposed (Excise Tax + Impact Fee)	Net Increase
		Option 1 Increase	Option 2 Increase	Option 3 Increase	Option 3 Increase								
Office	\$9.53	\$10.00	\$0.47	\$20.00	\$10.47	\$35.00	\$25.47	\$0.99	\$1.76	\$0.77	\$2.48	\$2.70	\$0.22
Light Industrial	\$5.62	\$7.00	\$1.38	\$12.00	\$6.38	\$20.00	\$14.38	\$0.26	\$1.12	\$0.86	\$2.48	\$2.62	\$0.14
Retail	\$6.96	\$7.00	\$0.04	\$12.00	\$5.04	\$20.00	\$13.04	\$1.05	\$1.75	\$0.70	\$2.48	\$3.01	\$0.53
Hospital	\$8.23	\$7.00	-\$1.23	\$12.00	\$3.77	\$20.00	\$11.77	\$0.86	\$1.54	\$0.68	\$2.48	\$2.74	\$0.26
Lodging <sup>(1)</sup>	\$1.79	\$7.00	\$5.21	\$12.00	\$10.21	\$20.00	\$18.21	\$0.24	\$0.56	\$0.32	\$2.48	\$2.76	\$0.28
Warehouse	\$3.11	\$3.00	-\$0.11	\$4.00	\$0.89	\$6.00	\$2.89	\$0.15	\$0.46	\$0.31	\$2.48	\$2.55	\$0.07
Institutional <sup>(2)</sup>	\$2.24	\$3.00	\$0.76	\$6.00	\$3.76	\$10.00	\$7.76	\$0.25	\$0.55	\$0.30	\$2.48	\$2.66	\$0.18
Assisted Living <sup>(1)</sup>	\$2.19	\$3.00	\$0.81	\$6.00	\$3.81	\$10.00	\$7.81	\$0.24	\$0.66	\$0.42	\$2.48	\$2.62	\$0.14

Building Type	Aggregate Net Increase (\$/Sq.Ft.)		
	Option 1	Option 2	Option 3
Office	\$1.46	\$11.46	\$26.46
Light Industrial	\$2.38	\$7.38	\$15.38
Retail	\$1.27	\$6.27	\$14.27
Hospital	-\$0.29	\$4.71	\$12.71
Lodging <sup>(1)</sup>	\$5.80	\$10.80	\$18.80
Warehouse	\$0.27	\$1.27	\$3.27
Institutional <sup>(2)</sup>	\$1.24	\$4.24	\$8.24
Assisted Living <sup>(1)</sup>	\$1.36	\$4.36	\$8.36

(1) Certain fees have been converted to a square footage basis for ease of comparison. For the Hotel, the conversion is made using an average room size of 600 square feet and the nursing home / assisted living fee is adjusted to a square footage basis using an estimated 400 square feet per bed on average.

(2) Institutional category combines multiple existing categories. Existing Fee identified represents the current fee for schools.

Source: TischlerBise, City of Boulder