

**Boulder City Council
STUDY SESSION**

**Tuesday
April 12, 2016
6-9 PM**

**Development-Related Impact Fees
and Excise Taxes**

**Council Chambers
Municipal Building
1777 Broadway**

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

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**Study Session
MEMORANDUM**

TO: Members of Council

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DATE: April 12, 2016

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

I. PURPOSE & EXECUTIVE SUMMARY

The purpose of this study session is to solicit council feedback on work to-date on the development related impact fees and excise tax studies prior to final reports and recommendations. The project includes four components related to implementation of Boulder Valley Comprehensive Plan Policy 1.30 (that new growth pay its fair share of new facility costs):

- 1. Capital Facilities Impact Fees** (Human Services, Library, Parks & Recreation, Municipal Facilities, Police, Fire) – This component is an update to the existing fees, with some small revisions to address capital needs identified since the fees were last updated in 2009.
- 2. Multimodal Transportation** – This component includes both a capital and operating section. Work to date has focused on the funding for capital infrastructure, with two draft reports, one using an impact fee approach, and one using an excise tax approach. It is anticipated that the transportation operations and maintenance funding analysis will continue beyond this project as a part of the Transportation 2016-2017 work program.
- 3. Affordable Housing Linkage Fee (Impact Fee)** – This component is updating the existing linkage fee, using a jobs housing nexus analysis. This analysis yields a maximum fee level that is significantly higher than communities ultimately charge, and additional factors will need to be included to inform the final fee levels.

- 4. Requirement for private development to support public art** – This component is exploring how to support the implementation of the community cultural plan. The analysis to date has looked at other communities in Colorado and California, and has focused on using a land use regulation to produce on-site art as a part of new development, with a cash-in-lieu option.

The project began in the fall of 2015, and includes four phases, anticipated to be complete by the end of 2016.

Phase 1 – Background (August 2015 – February 2016)

- This included data gathering, development of land use assumptions, and best practices.
- City Council reviewed the scope and project approach in a study session on Oct. 13, 2015.

Phase 2 – Analysis (February 2016 – April 2016)

- This phase is just concluding, with the consultants completing draft reports for all components, and a technical working group of 13 members having met in five meetings to provide input to staff and the consultants.

Phase 3 – Recommendations & Decision Making (April 2016 – August 2016)

- This phase will include finalizing the reports, conducting a comparative analysis of current and proposed fees with other communities, and completing an economic impact analysis of new development to assist in informing potential fee levels.
- The technical working group will review and provide feedback to staff and the consultants in May.
- Council will review in a study session on June 14.
- Based on council comments, final recommendations or options will be presented to council on July 19 for a public hearing and decision.

Phase 4 – Implementation (August 2016 – 2017)

- Based on council's direction, staff will implement changes through the 2017 budget approval process in the fall of 2016, with a potential phase in or other implementation actions based on council direction.

Copies of all the draft reports and analysis, as well as the technical working group feedback are included as attachments to this memo.

II. QUESTIONS FOR COUNCIL

Staff is seeking council feedback on:

1. The draft capital facilities impact fee study
2. Utilizing an impact fee, excise tax or hybrid approach for multi-modal transportation capital funding
3. The policy considerations to be evaluated and accounted for in setting the affordable housing commercial linkage fee
4. Moving this work effort back into the Community Cultural Plan implementation efforts, including further exploration of alternative funding approaches following the development of the public art policy and implementation plans

III. BACKGROUND

The city has a policy that new growth should pay its own way, which is articulated in the Boulder Valley Comprehensive Plan (BVCP). Policy 1.30 states:

1.30 Growth to Pay Fair Share of New Facility Costs

Since the public costs of annexation and developing several areas concurrently could prove excessive, the city will limit said costs to those, which can reasonably be accommodated within the Capital Improvements Program and are compatible with anticipated revenues. When permitting additional development or redevelopment, the city will consider whether public facilities and services are adequate to reasonably maintain current levels of service or service standards given the impacts of such additional development or committed funding sources for such adequate facilities are sufficient to ensure their provision in a timely fashion. Growth will be expected to pay its own way, with the requirement that new development pay the cost of providing needed facilities and an equitable share of services including affordable housing, and to mitigate negative impacts such as those to the transportation system.

This policy is implemented through the BVCP Service Standards and Criteria, (BVCP Policy 1.27) Departmental Master Plans, regulations, and development excise taxes, impact fees, city sales and use tax, and user fees.

Current Excise Taxes and Impact Fees

The City of Boulder currently charges new development impact fees and excise taxes, depending on the type of development. Current Excise Taxes include:

1. Housing Excise Tax – funds construction, rehabilitation and acquisition of affordable housing; charged on residential and non-residential development.
2. Development Excise Tax
 - 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.

Currently, the city's Housing Excise Tax is at the maximum rate approved by voters, and the Development Excise Tax (DET) for transportation and park land is at the maximum approved by the voters for non-residential development, but due to the shift of many of the general fund departments from DET to Impact Fees in 2010 additional taxing capacity remains for residential development.

Current Capital Facility Impact Fees include:

1. *Library Impact Fee* – funds library facilities and materials in the library's collections, charged on residential development.
2. *Parks & Recreation Impact Fee* - funds outdoor parks, recreation center and pool facilities, and support facilities; charged on residential development.
3. *Human Services Impact Fee* - funds senior center facilities and the Children, Youth and Family Center facility; charged on residential development.

4. *Municipal Facilities Impact Fee* – funds municipal building space; charged on residential and non-residential development.
5. *Police Impact Fee* - funds police station facilities, and communication center space; charged on residential and non-residential development.
6. *Fire Impact Fee* - funds fire station facilities, land, and fire apparatus; charged on residential and non-residential development.
7. *Affordable Housing Linkage Fee* - funds additional affordable housing; charged on non-residential development.

Current Study Update

At the January 2015 Council Retreat, updating the 2009 Impact Fee and Excise Taxes was placed on the city work plan. On [Feb. 3, 2015 Council directed staff](#) to move forward with an update to the development-related impact fees and excise taxes, and to bring forward an ordinance to impose an affordable housing linkage fee (impact fee) on non-residential development. The affordable housing linkage fee Ordinance No. 8034 was [adopted on May 19, 2015](#).

On [May 5, 2015 council provided feedback](#) and the city issued an RFP on May 29, 2015, seeking consultants to prepare studies for one or all of the four components. The city hired two consultants to assist with the project, TischlerBise and Keyser Marston Associates. TischlerBise is conducting the update to the Impact Fee & Excise Tax Studies, as well as the Multimodal Transportation Study. Keyser Marston Associates, Inc. (KMA) is conducting the affordable housing linkage fee study, as well as the public art program study.

Staff presented an update on the project and the proposed approach and scope of work at a [study session on Oct. 13, 2015](#). Council asked several questions on each component, which are captured in the study session summary, accepted on [Nov. 10, 2015](#).

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. [A video of the presentation is available online](#) as well as the [handout](#) that was available at the meeting.

Technical Working Group selection & role

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 is not expected to come to consensus or otherwise come to an agreement or resolution, or to provide a recommendation. The role of the group is to provide a diverse range of opinions and perspectives to assist the city staff and consultants in the project. General input from the working group can be found in each component section in this memo, with all written comment included in **Attachment A**.

IV. CAPITAL FACILITIES IMPACT FEES UPDATE

General Approach

TischlerBise has completed a draft report updating all of the city's current capital facilities impact fees. Impact fees are fairly simple in concept, but complex in application. Generally, to impose the fee a jurisdiction must: (1) identify the purpose of the fee, (2) identify the use to which the fee is to be put, (3) show a direct relationship between the fee's use and the type of development project, (4) show a direct relationship between the type of city infrastructure to be constructed/expanded and the type of development being charged, and (5) account for and spend the fees collected only for the purpose(s) used in calculating the fee. In Colorado, impact fees are authorized by the Colorado Impact Fee Act (C.R.S. 29-20-104.5).

Reduced to its simplest terms, the process of calculating impact fees involves the following two steps:

1. Determine the cost of development-related improvements, and
2. Allocate those costs equitably to various types of development.

The factors that affect the calculation of impact fees, in terms of both the cost of development-related improvements as well as the development mix in Boulder have changed since the last study. The study update currently being conducted by TischlerBise is addressing these changes as they affect all of the city's capital facility impact fees (Fire, Human Services, Library, Municipal Services, Parks and Recreation, and Police).

Progress and Next Steps

TischlerBise and staff have been working together since late 2015 to collect and update the background information and assumptions that are used to calculate impact fees listed above. Land use assumptions were developed based off the city's land use, zoning, and growth projections recently developed as a part of the 2015 Boulder Valley Comprehensive Plan update. The Land Use Assumptions Appendix report is in **Attachment B**. The data in the report has been reviewed for consistency with the city's BVCP projections.

TischlerBise held meetings with each city department and collected background information on capital facility inventories and valuations, land cost estimates, public safety call data, city capital improvement plans, imputed service levels, and more. The collection and synthesis of this information forms the basis for the five necessary conditions for the imposition of impact fees. The effort so far has resulted in a draft impact fee report, provided in **Attachment C**, which provides updated fee calculations along with comparisons to current fee levels.

Analysis

Throughout this study update, TischlerBise has been assessing the state of Boulder's capital facilities and capital plans and selecting the appropriate methodology for calculating impact fees based upon how the city is planning to address development's impact. For the most part, TischlerBise has determined that the incremental expansion methodology is the most appropriate basis for calculation. This methodology assumes that the city will expand capacity in increments as the growth occurs to maintain current service levels. The only exceptions to this approach are found in relation to Municipal Facilities where: 1) a plan-based approach is used for the

additional Municipal Court space needs (Report page 35 of Attachment C) and; 2) a cost-recovery approach is used for the land component of the city's recent acquisition of the Boulder Community Hospital site (Report page 33 of Attachment C).

Key Changes proposed to the city's capital facility impact fees are:

- Addition of Municipal Court component to the Municipal Facilities Impact Fee due to the future relocation and expansion of the existing court
- Addition of a Municipal Facilities land component to the Municipal Facilities Impact Fee related to Boulder Community Hospital
- Addition of Police Radio Communications Infrastructure component to the Police Impact Fee due to the planned upgrade and replacement of the communications system
- Separation of the Fire facilities and fire land components in the Fire Impact Fee due to the planned relocation of Fire Station #3, Headquarters, and Storage Facility.

Administrative changes proposed to the capital facility impact fees (and would be applied to transportation and housing) include:

- Simplification of the non-residential land use categories used for the fee tables from 11 categories to 8 categories. This is recommended to assist in fee administration and is in line with other communities' practices.
- Collapsing of the residential fee tables from separate attached and detached housing units to one residential fee table. The table will still be based on square footage with increments as the fee table exists today, but will simplify the fee tables and is recommended to assist in fee administration in line with other communities' practices.

Technical Working Group Feedback

The technical working group has reviewed and discussed the approach and base assumptions used in the study update so far. The initial meetings were focused on the understanding of impact fees and development excise taxes within the broader context of Boulder's capital planning/funding process. Following the introductory session(s) and follow-up, the majority of the feedback from the working group was focused on the draft reports themselves and the questions were more technical in nature. The working group posed a number of questions about the calculation of specific impact fees and the input informed the clarification on the breakpoints provided in the updated impact fee schedule and the resulting comparisons to current fees. Specific written input is included in **Attachment A**.

Question for Council:

1. What feedback does council have on the draft capital facilities impact fee study?

V. MULTIMODAL TRANSPORTATION

General Approach

The Transportation component of the Impact Fee Study has two primary objectives:

1. Assess new growth's fair share of capital improvements to mitigate growth's impacts on Boulder's multimodal transportation system. The estimation of new growth's fair share of capital infrastructure costs is then used to formulate impact fee or excise tax levels for different types of new residential and commercial developments. To do this, two draft studies have been developed, one using an impact fee approach, and one using an excise tax approach.
2. Analyze funding options to address on-going transportation operations and maintenance (O&M) costs of our multimodal transportation system. The work to date has been focused on the capital infrastructure side at this time and will begin working on the O&M component after the April 12 Study Session. The analysis of O&M options and public process will take longer to complete and is anticipated as part of the city's 2016-17 work program.

Progress and Next Steps

TischlerBise has drafted three reports. The first is a report titled, *Legal Guidelines and Best Practices for Multimodal Transportation Funding Solutions* and is provided as **Attachment D**. This report focuses on opportunities and limitations related to Colorado law and evaluates the ways to approach multimodal transportation funding for both capital improvements and continued operations. This report outlines the foundation of "next generation" transportation funding solutions, and how to put next-generation into practice.

The next two draft reports describe different approaches, an impact fee methodology and an excise tax methodology, based on the next-generation multimodal funding approach for estimating the fair share of capital improvements related to new growth. One draft report follows an impact fee methodology – and would result in the creation of a new transportation impact fee. This draft report is entitled *2016 Transportation Development Impact Fee Study* and is provided as **Attachment E**. The other draft report follows an excise tax approach and would utilize the existing transportation development excise tax. The report is entitled *2016 Transportation Development Excise Tax Study* and provided as **Attachment F**. Both analyses use a similar methodology, but the key difference is the range of planned projects that can be covered by the two approaches. The impact fee analysis is more constrained due to impact fee legislation and includes capital projects under the Capital Improvement Program (CIP), while the excise tax analysis includes both the CIP and capital projects from the Action Plan Investment Program and is not constrained by the impact fee legislative requirements.

The city's Transportation Master Plan (TMP) includes three investment programs. The Current Funding Investment Program totals approximately \$635m (2014-2035) capital and operations and maintenance funding while the Action Plan Investment Program includes an additional \$85m of enhancements (and maintenance of those enhancements) over the same time period. The Vision Plan is a fiscally unconstrained investment program. A further description of the TMP investment programs can be found at: <https://bouldercolorado.gov/transportation/tmp>.

The purpose of the April 12 study session is to review these reports and different approaches with council and seek feedback on what approach (impact fee, excise tax, or a hybrid) should be analyzed further. Based on council feedback, a final study and recommended approach will be developed for review in June.

Additionally, the project team will begin working on the O&M component after the April Study Session with council. It is anticipated that the O&M side will continue into 2017 given its city-wide impact and the necessary public process and outreach. For that analysis, both the district approach and various regulatory approaches, such as a Transportation Demand Management (TDM) Plan ordinance and parking related requirements, will be analyzed as ways to fund ongoing O&M. In addition, the project team will also evaluate the viability, practicality, and legality of other funding options such as transportation maintenance fees, head taxes, or vehicle miles traveled (VMT) taxes.

Analysis

Boulder currently uses a development excise tax (DET) to collect revenue for capital improvements related to new development. Existing excise taxes are at the maximum voter approved rate for non-residential development, but additional taxing capacity remains for residential development.

Multimodal Funding Approach

The Legal Guidelines and Best Practices for Multimodal Transportation Funding Solutions report gives the background to how next-generation funding is “an important implementation mechanism in the smart governance toolbox...”. The proposed approach to funding capital infrastructure is moving away from constructing road lanes and moving more towards capital improvements for pedestrians and bicycles as well as capital investment in things such as capital equipment that will enhance the mass transit system. The new approach includes:

1. Better Assessment of Need: Old school fees are based on moving vehicles and adding lane miles. Next-generation fees need to have a broader inclusion of mobility needs, including multi-modal improvements, including walking, biking, transit, and vehicles. The 2014 Transportation Master Plan update has provided TischlerBise with this better assessment of the need, and the analysis includes all modes of travel.
2. Better Demonstration of Benefit: Old school fees derived a generic need for lane miles, and are not based on specific capital improvements tied to policy objectives. Next generation fees are plan based, with specific improvements identified in a capital improvement plan and address specific needs envisioned for the community. TischlerBise has based the new studies on the Transportation Master Plan and city Capital Improvement Program (CIP).
3. Better Allocation of Infrastructure Costs: Old school fees allocate costs based on vehicle trips. Next generation fees use a mixture of vehicle trips for vehicle related improvements, and a persons and jobs allocation for transit, bike, and walk trips. TischlerBise has used this approach in the studies, allocating the specific improvements to the mode of travel.
4. Specific Improvements and Funding Strategy: The “need” for transportation improvements is different than other capital infrastructure. The difference is that a transportation network is an “open” system, with the demand for street capacity extending beyond the jurisdiction. TischlerBise notes on report page 34 of Attachment D *Multimodal Funding Solutions Report* “transportation capacity is consumed by drivers changing their time, route, and mode of

travel, with the latter being more significant in urban areas.” And congestion is relative and a more subjective measure linked to the concept of “willingness to pay”. TischlerBise advises that a community consider “what improvements are we willing to fund?”, and factor in the fiscal realities of revenue through a cash flow analysis as a part of establishing multimodal funding. This is especially applicable in Boulder, with a mature transportation system and the TMP focuses using the existing infrastructure more efficiently rather than focusing on expanding the system by adding vehicular capacity or lane miles. TischlerBise has included this cash flow analysis in the draft reports, and this will be an important consideration when selecting a funding solution and funding level.

Impact Fee Analysis

The impact fee analysis, provided in **Attachment E**, uses a methodology that can be implemented as either an excise tax or an impact fee. The impact fee methodology described is a plan-based approach related to the city’s Transportation Master Plan (TMP) and Capital Improvement Program (CIP) that includes both a vehicle trip component based on vehicle miles of travel (VMT) and a person trip component based on a functional population analysis of residents and employees.

The differences among each of the proposed next-generation approach and a traditional “old-school” approach is that this analysis takes into account both vehicle trips and person trips in relationship to projected growth in population and employment’s impact on our multimodal transportation system instead of focusing only on vehicle trip generation and traffic impacts.

Given the expectation that Boulder will add walkable urban development, rather than drivable suburban development, the TMP establishes a rationale nexus to the need for future capital improvements. It is consistent with federal transportation planning requirements that acknowledge fiscal realities, by asking the important question “What are we willing to pay for?” The TMP also contains aggregate performance measures that are useful for monitoring, evaluating, and refining the plan over time. It is not necessary to have project-level performance measures in the impact fee methodology, which is focused on system improvements.

Impact fee methodology is a conservative approach with greater legal restrictions and includes only projects currently included in the current CIP program. The city cannot charge new developments for their fair share of a project unless funding is currently available to cover the non-growth related cost. The TMP’s two additional funding programs, the Action Plan and the Vision Plan, cannot be paid for under current projected revenue.

There are four major steps of the multimodal cost allocation methodology:

1. Identify capital improvement projects in CIP that are growth-related (Figure T3, report page 9 of Attachment E)
2. For each project, differentiate growth cost from non-growth cost.
3. Subtotal growth cost of multimodal (walk/bike/transit) improvements versus street (vehicular) improvements
 - a. Allocate multimodal growth cost based on functional population of residents and employees (Figure T4, report page 11 of Attachment E)
 - b. Allocate street improvements growth cost based on VMT (Figure T7, report page 15 Attachment E)

4. Apply growth costs of multimodal improvements and vehicular improvements to service units per development units, i.e. dwelling unit for residential or square feet for commercial (Figure 4, report page 5 of Attachment E)

Based on the draft impact fee methodology, the city would collect less revenue compared to the current excise tax. Under the city's current excise tax rates, it is estimated that \$11.51m would be raised over the next ten years, compared to approximately \$9.9m that would be raised by an impact fee under the draft methodology. While the revenue from an impact fee under this draft methodology would reduce the overall funds collected, the amount would be sufficient to cover the costs of new growth's fair share of the ten-year CIP.

Excise Tax Analysis

Based on the findings of the impact fee analysis the project team decided to conduct a second analysis using an excise tax approach, provided in **Attachment F**. As a revenue raising mechanism, an excise tax has less restrictive legal constraints than an impact fee and the analysis incorporates the TMP Action Plan funding program. The ten-year growth-related costs of multimodal improvements including the Action Plan Investment program are approximately \$33.6m (Figure T3 of Attachment F). The city's current DET rates of \$2.48 per square foot of nonresidential and \$2,227 per detached and \$1,650 per attached dwelling unit would yield approximately \$11.5 million in DET revenue over the next ten years. Therefore, to fully fund the Action Plan capital improvements, the current DET levels would need to be increased.

Currently, the transportation DET rates are set at the maximum voter approved level for non-residential development, but taxing capacity remains for residential development. If the residential rates were increased by the voters to the maximum supportable fees based on this study, that new DET rate schedule would raise approximately \$31.5m over the next ten years based on projected residential and non-residential development.

Next Steps of Analysis

Additional work is needed to refine the analyses of both the impact fee and excise tax methodologies and specifically in regard to allocating new growth's fair share of the projects contained in Current Funding and Action Plan Investment programs of the TMP. Additional future work will focus on the identification and evaluation of policy options. For example, based on the draft analysis to date, policy decisions could include:

1. Switching from a DET to a Transportation Impact Fee
2. Staying with current DET rates
3. Maximizing current DET rates to voter-approved levels, or reallocate other DET to an impact fee to increase capacity
4. Request voter approval to Increase DET rates above current voter-approved levels through a future ballot item
5. Developing a hybrid option that combines the current DET with a new impact fee.

For the June Study Session with council, the project team will prepare an evaluation and recommendation of policy options for council's consideration.

Future O&M Analysis

The analysis of funding options for on-going O&M is not included in impact fee studies since there are no legal options to assess a fee or a tax solely on new developments for ongoing O&M and possible limits to regulatory requirements. Impact fees are intended to recoup the fair share from new development for necessary capital costs in the form of a one-time payment. Currently, the vast majority of transportation O&M is funded through the city's dedicated sales tax of 0.75 percent. Beyond the dedicated sales tax, the city uses a variety of other mechanisms to fund O&M. For example, in the downtown Central Area General Improvement District (CAGID) and Boulder Junction, taxing districts also provide funding for on-going TDM programs, like the Eco Pass. In CAGID parking revenue is used to purchase Eco Pass for all full time employees, and the Boulder Junction Transportation Demand Management (TDM) Access District collects property taxes to purchase Eco Pass for all employees and residents of the district and to subsidize carshare and bikeshare memberships. Through the Site Review process, a regulatory approach is often used to require new developments to fund TDM programs for a limited period. For example, many residential developments are often required to purchase Eco Passes for residents for a period of three years. After that initial three years, residents can voluntarily choose to continue the program.

Through the Access Management and Parking Strategies (AMPS) work program, city staff is currently investigating a possible ordinance for new development that would require TDM Plan implementation and on-going compliance to vehicle trips standards as well as parking-related requirements. This regulatory approach would effectively require continuous funding of TDM programs and services to meet trip generation targets. For this study, both the district approach and various regulatory approaches, such as a TDM Plan ordinance and/or parking requirements, will be analyzed as ways to fund ongoing O&M. In addition, the project team will evaluate other funding options such as transportation maintenance fees, head taxes, or VMT taxes.

The first deliverables of the O&M component will include a report on current Transportation O&M revenue and expenditures and an evaluation of possible finance mechanisms to fund city-wide O&M.

Technical Working Group Feedback

The content of all reports have been provided to and discussed with the members of the technical working group in two general meetings and two special meetings focused on the transportation component. The first technical working group meeting focused on the project scope, timeline and approach to studying both the capital and on-going operational components. The second meeting with the group was dedicated to reviewing the proposed multimodal methodology for capital improvements. At the first transportation-only meeting, the discussion focused on the assumptions and draft inputs of the methodology that form the basis of the excise tax/impact fee analysis and an initial conversation about potential funding mechanisms to fund on-going O&M. At the second transportation-only meeting, the discussion focused on the two draft reports - impact fee and excise tax approaches. The group discussed the differences in the approaches, and the advantages or disadvantages of each approach. Written input is included in **Attachment A**.

Question for Council:

2. What feedback does council have on utilizing an impact fee, excise tax or hybrid approach for multi-modal transportation capital funding?

VI. AFFORDABLE HOUSING LINKAGE FEE

General Approach

KMA has prepared a jobs housing nexus study in support of the city's Affordable Housing Linkage Fee provided in **Attachment G**. The study demonstrates the relationships between the construction of new workspace buildings in the City of Boulder, the resulting impact on the need for affordable housing, and the costs to mitigate the increased affordable housing need. The nexus analysis establishes a set of maximum supported fee levels applicable to each of a series of non-residential building types. The maximum supported fees are typically very substantial and do not represent recommended fee levels for adoption. The city has flexibility to consider a broad range of policy objectives in setting fee levels anywhere below the identified maximums. Given the high degree of flexibility the nexus findings provide, in addition to the nexus analysis itself, a range of supplemental materials have been prepared as additional context for policy decisions. Supplemental materials address factors communities often wish to consider in the selection of fee levels including information on fees that have been adopted in other communities, context regarding economic conditions, and the relationship between potential fee levels and the cost to develop various types of non-residential buildings.

Progress and Next Steps

To guide the city's effort to design an Affordable Housing Linkage Fee program and determine feasible fee levels, KMA has completed the draft *Nexus Analysis Technical Tables* (Report page 4 of Attachment G) establishing a set of maximum supportable fee levels applicable to a variety of commercial (non-residential) building types. The maximum supported fee levels incorporate the findings of the *Mitigation Cost/Affordability Gap analysis* (Report page 39 of Attachment G) analyzing the net cost of providing each new unit of affordable housing, referred to as the affordability gap.

KMA has also prepared additional analyses and materials intended to provide context for potential fee levels the City may wish to consider:

The *Development Cost Context* (Report page 45 of Attachment G) informs establishing fee amounts based on the relative cost burdens that a new fee can have on new commercial development projects. KMA assessed the costs associated with the development of five non-residential building types including the cost of land and direct and indirect development costs. KMA also evaluated the impact of fees on commercial rent levels and land values. In addition to the costs associated with development, the setting of fees often takes into account local real estate and macro-economic conditions which KMA has presented in the *Market Context* (Report page 50 of Attachment G). Finally, to demonstrate how fees are assessed in other jurisdictions,

KMA has compiled a summary titled *Fees in Other Jurisdictions* (Report page 56 of Attachment G).

KMA's next task will be to incorporate revisions to the draft materials based on feedback and prepare a complete draft report.

Analysis

The attached draft Nexus Analysis Technical Tables establishes a ceiling or maximum fee that could be potentially charged, but do not represent recommended fee levels. As anticipated, the draft nexus analysis identifies high maximum supportable fee levels (see the attached Nexus Analysis Technical Table 1 on report page 4 of Attachment G). The high results provide significant discretion to consider a range of policy objectives in setting the fees anywhere up to the identified maximums. The maximum fee levels reflect the cost to provide housing to workers in new commercial buildings earning incomes ranging from 0 percent up to 120 percent of the Area Median Income (AMI).

Starting with the maximum supportable fee level and considering the context provided by KMA, there are several policy considerations to be explored in designing the fee program and determining fee levels. Staff is requesting initial council feedback on the factors that should be considered in establishing affordable housing fee levels appropriate for Boulder:

1. Commute Adjustment: Adjust findings based on the current 39 percent share of Boulder's workforce that lives in the city.

In addition to the total nexus cost findings presented on Table 1, which are reflective of housing needs for ALL workers. Table 1 also presents findings after making an optional "commute adjustment" which reduces the findings based on the current 39 percent share of Boulder's workforce housed within the city. The city's housing and employment projections, which are based on the city's land use and zoning, do not indicate an increase in the percentage of the city's workforce being housed in the city. Therefore, an adjustment based on the percentage of the workforce housed in the city would be consistent with the land use assumptions being used to inform all of the studies.

2. Market Strength/ Development Feasibility: Set fees within a range that is not expected to significantly alter development decisions or direct development to other jurisdictions.

Information regarding overall market conditions and market strength are often viewed as important context in conjunction with the consideration of new or increased fees. The KMA analysis provides an overview of Boulder's current economy and commercial market conditions which compare favorably to other submarkets in the county and Denver metro region. Boulder's diverse economy and high quality of life position the community as a desirable place to live and work.

Many communities consider the relative cost burden that a new or increased fee will have on development. This information can be used to assist in understanding the likelihood that fees will affect development decisions. Development cost information can also be used to scale potential fee levels based on costs of developing various types of non-residential buildings. KMA has estimated development costs for five non-residential building prototypes. KMA

also identified illustrative fee levels at varying percentages of development costs and analyzed the potential market adjustments including changes in market rents, land costs, or construction costs that would be sufficient to absorb each \$1 / SF in increased fees. This information can be used to assist in understanding the likelihood that increased fees will impact development decisions.

The analysis indicates Boulder's fully phased in commercial linkage fees (to occur on June 6, 2016) range from a low of approximately 0.7 percent of development costs for hotels to a high of 3.2 percent of development costs for lower density office buildings. Linkage fees in other jurisdictions vary widely by jurisdiction and range up to approximately 5 percent of development costs.

3. Fees in Other Communities: Set fees within range of linkage fee levels in neighboring and peer cities.

KMA prepared a report detailing the application of linkage fee and affordable housing mitigation programs in cities comparable to Boulder, including Cambridge, MA, Vail and Aspen, plus 33 cities and counties in California.

The information includes fee levels by use and other requirements. Evaluation of linkage fee programs in comparative jurisdictions provides a general comparison of linkage fees across political and economic environments. With regards to the programs established in Aspen and Vail it is important to note that these are not impact fees rather a growth management policy requiring the production of employee housing designed to address the unique needs of these geographically isolated, mountain/ski resort communities. Denver is also exploring the adoption of a commercial linkage fee program and information will be available as their program evolves. As for the California programs, most jurisdictions pair linkage fee with inclusionary housing programs.

Evaluation of Affordable Housing Linkage Fee programs active in comparable cities demonstrates that Boulder's current fee when fully phased in will fall between high fee communities and medium fee jurisdictions. As an example, high fee levels relating to office uses range from \$12 to \$25 per Sq. Ft. with Boulder's phased in fee currently at \$9.53 per Sq. Ft. Medium fee levels ranged from \$4 to \$5 per Sq. Ft.

4. Mitigation Impacts: The KMA report calculates the cost to mitigate 100 percent of the affordability gap needed to provide each new unit of housing. Given the city's Inclusionary Housing program already generates funds to meet the affordable housing needs of the city, fees can be set to account for the revenue generated from the Inclusionary Housing ordinance. Or the fee level can be informed based on a plan or goal- based approach.

KMA Mitigation Gap/Affordability Gap Study identifies the gap between what households can afford and the cost of producing new housing in Boulder (known as the Affordability Gap). This represents the subsidy needed to create affordable units to house a growing workforce. The analysis identifies the net cost to serve various income levels ranging from 0 percent AMI to 120 percent AMI. The analysis assumes affordable rental units are provided to address affordable housing needs up through 60 percent AMI and reflects the availability

of federal 4 percent tax credits to offset the cost of providing affordable rental units to households within this income range. For households from 61 percent AMI up through 120 percent AMI, the analysis assumes an affordable ownership unit would be provided. The resulting subsidy needed to produce affordable units for worker households with incomes from 0 percent AMI to 60 percent AMI ranged from \$99,800 - \$173,300. The subsidy needed to produce affordable units for households with incomes from 61 percent AMI to 120 percent AMI ranged from \$101,700 - \$219,900.

This analysis calculates the cost to mitigate 100 percent of the identified affordability gap, however, the city could mitigate a specified percentage of impacts and/ or adjust for a share of needs met through the Inclusionary Housing program. Alternatively, the city could take a plan or goal based approach. For example, the city currently has a goal that at least 10 percent of the total existing housing stock will be permanently affordable to low- and moderate-income households. The current fee was based on calculating new commercial development's proportionate share of achieving that goal. It does not include a component for middle income housing. A goal based approach could also be based on preserving the existing income diversity in the community by housing a similar share of new workers from 0-120 percent of AMI as are currently housed in Boulder.

Technical Working Group Feedback

The technical working group spent time with the KMA consultants and staff to understand the many variables and assumptions that have driven KMA's analysis and preliminary findings. The conversation focused on walking the working group through the technical analysis to ensure they understood the methodology and preliminary findings to their satisfaction. Specific questions were asked about the interrelationship between a linkage fee program and the city's Inclusionary Housing program, understanding the broader housing program of the city and the eventual use of the funds. KMA and staff addressed these and other questions and are preparing additional information to inform further discussion.

The general consensus of the working group was an understanding of the methodology and acceptance of the preliminary findings. As the project progresses including City Council's direction pertaining to the identified policy considerations, the technical working group will be asked to continue to provide feedback in the developing the recommendations ultimately presented to council for consideration. Written feedback is included in **Attachment A**.

Question for Council:

3. What feedback does council have on the policy considerations to be evaluated and accounted for in setting the affordable housing commercial linkage fee?

VII. PRIVATE SECTOR ARTS REQUIREMENT

Background & General Approach

The city council adopted the [Community Cultural Plan](#) on Nov. 17, 2015. Among many other initiatives, programs, and improvements, the Cultural Plan sets objectives for reinventing Boulder's Public Art Program, and highlights the community priority to focus on the expression of culture and creativity in the public realm.

The first phase of reinventing our public art program includes the development of a permanent Public Art policy and sustainable funding mechanism for municipal commissioning of public artworks (Cultural Plan, p. 55). The public art policy is currently under development and is anticipated to be finished in the third quarter of this year. This policy will include a general funding strategy and art selection process and approval process for temporary and permanent works of art. Following the Public Art policy, Public Art Implementation Plans will be drafted. These implementation plans will be a series of annual documents which give guidance to the sites, selection processes, funding levels, and schedules for each anticipated project.

The plan envisions an overall program to commission works of public art (Cultural Plan, p. 22, § A). It is anticipated that funding will need to come from a variety of funding, including public and private sources. Consideration of municipal public art funding sources and mechanisms is anticipated as part of the 2018 budget process.

As the city was developing its scope of work for the revisions to the capital facilities impact fee in May of 2015, the work on the Community Cultural Plan was underway, and the development fees project offered a first opportunity to look at funding portions of the Public Art priority. A component was included in the project request for proposals to hire a consultant to prepare a study to create a public art program for new development. The purpose of the study was stated to identify best practices across the country including both regulatory and fee based approaches, and recommend options for the city to develop a program. Through the proposal process, Keyser Marston Associates (KMA) was selected to assist the city in the art component.

KMA's scope of service is designed to assist the city in establishing the basic framework for a private sector requirement for art-in-public-places. The analysis has included identifying best practices from programs around the country that have established a land use regulation requiring that private development projects provide on-site art for public enjoyment. Most typically the art must be valued at a percent of building permit valuation, with options available to the developer of commissioning artwork or paying an in lieu fee towards the city's Public Art Program.

Progress

KMA has been working with staff to investigate the most prominent private development art-in-public-places programs and evaluate the variety of approaches that might be useful to understanding what value such a program would bring to the Boulder community. This investigation has been honed to focus on the regulatory landscape among our peer communities in Colorado, a comparison to the cities benchmarked in the Cultural Plan, and research on the most sophisticated and established programs across the country, which happen to be

concentrated in California. Each individual program has proven to be tailored specifically to its community, although common trends and best practices have emerged overall.

The draft report provided in **Attachment H**, and analysis to date has focused on a private art-in-public-places requirement as a land use regulation: a requirement similar to the city's inclusionary housing program. In this way, qualifying private developments would be required to install publically accessible works of art or pay a cash-in-lieu fee towards the city's Public Art Program for the oversight and installation of artworks elsewhere.

As envisioned by the Community Cultural Plan, this type of program would be ground-breaking among Colorado municipalities. Nine programs in other communities were studied, Colorado programs include Aurora, Wheat Ridge, and Vail. The programs in Pasadena and Santa Monica, California are the most applicable to Boulder.

Analysis and Next Steps

KMA recommends the city consider:

- Design a program that has a clear goal. Some programs aim to add capacity to a city program, while others are primarily oriented toward installations on the site of the development (Report page 1 of Attachment G).
- Establish a program that bases the level of the requirement as a percentage of building permit valuation (Report page 4 of Attachment G).
- Establish clear triggers and thresholds. KMA suggests that we thoughtfully consider what types and scales of development trigger the rules, and how different categories of developments might be served by several tiers of regulation. For instance, should industrial or residential development be included? Are there developments that are so small as to be exempt from the rules? Are there developments of significance that should require a closer collaboration with city officials? (Report page 6 of Attachment G).
- Definitions of what is permissible as art-in-public-places are critical. The Community Cultural Plan suggests that commissions of performance, music, digital-media, design, landscapes, and temporary artworks are valuable to the public art program that our community demands. Consideration must be given to the nature of such commissions, and how it affects the ability for developers to take advantage of the asset they would acquire. Also, for this proposed regulation, it may be helpful to consider the development of cultural assets, for example a performing arts venue or gallery, as meeting the requirement. (Report page 10 of Attachment G).

At this point, staff believes KMA's report should be considered in the context of the overall Community Cultural Plan implementation efforts, and be separated from the development-related impact fees and excise tax project update. This recommendation would allow the funding tools to be considered after the development of the public art policy, and the establishment of goals and objectives for public art. An evaluation of the funding tools can be conducted, including:

1. A land use requirement for art-in-public-places, as described above.
2. Excise Tax: Staff has discussed the option of using an excise tax to create a revenue raising mechanism for public art purchase and installation. Under this scenario, the existing development excise tax would be expanded to include a public art excise tax,

which would require new development to pay a one-time fee to support public art throughout the community. This would likely require voter approval to establish.

3. Re-evaluation of an impact fee: Once the public art program is established and the municipal art component is created through the annual capital improvement program, re-assess if an impact fee on new development could be utilized for supporting public art. This could occur in 2017 or 2018.

Technical Working Group Feedback

The technical working group discussed the public art component at two meetings. The group focused the discussion on the purpose and intent of private development supporting public art. The group questioned how art would be defined, how art would be selected, and what goal is trying to be achieved through this approach. The group reviewed the analysis of a private land use requirement, and some members provided direct feedback to staff.

Question for Council:

4. What feedback does council have on moving this work effort into the Community Cultural Plan implementation efforts, including further exploration of alternative funding approaches following the development of the public art policy and implementation plans?

VIII. PUBLIC PROCESS

On Monday, Feb 1, 2016, staff held an Introductory Seminar on development-related impact fees and excise taxes, which was held in the city council chambers and live-streamed on the city's website. A video of the presentation and questions and answer period is available [online here](#).

The development-related impact fees and excise taxes [project website](#) includes links to videos, the technical working group meeting information and materials, as well as background information and project links.

The technical working group meetings are advertised on the city website calendar and project website, and are open for anyone to observe.

Staff has also provided outreach and briefings to organizations by request, including the Boulder Chamber Community Affairs Council and PLAN-Boulder County board members.

IX. NEXT STEPS

Based on the feedback from city council, staff and the consultants will be developing final drafts of the reports, developing recommendations on fee levels, and compiling a comparative analysis of development-related fees from surrounding communities. The working group will review the information and provide feedback to staff on May 9, 2016. Taking into consideration the

technical working group's input, materials will be developed for a council study session on June 14. A public information session is tentatively scheduled for June 13. A public hearing before the city council is tentatively scheduled for July 19.

Based on council feedback at the October 2015 study session and technical working group and public feedback, staff has added the development of an economic impact analysis to the project scope. An economic impact analysis is an evaluation of the economic benefit of an entity or industry on a defined geographic location—either with regard to its presence, expansion, or contraction. The key components of any economic impact analysis are typically measured by increases in personal income, value added (or gross regional product), business output, and/or job creation. The analysis will look at the direct, indirect, and induced effects of development, and summarize the citywide gross economic impacts. The report will also include summary multipliers by industry and activity where possible. This report will be completed prior to the July 19 city council public hearing.

X. ATTACHMENTS

- A** – Technical working group members & written feedback submitted
- B** – Land Use Assumptions appendix
- C** – Draft Development Impact Fee Study for Capital Facilities
- D** – Legal Guidelines and Best Practices for Multimodal Transportation Funding
- E** – Draft Transportation Development Impact Fee Study
- F** – Draft Transportation Development Excise Tax Study
- G** – Draft Affordable Housing Linkage Fee analyses
- H** – Draft Private Sector Arts Requirement report

Technical Working Group Feedback

Capital Facility Impact Fees Component

Written Comment #1

1. Regarding housing, transportation, and arts fees: are these a given? Will we be asked if there should be fees in relation to these items? Or will we be simply looking at how much these fees should be and how to calculate them?
2. Who (how) determines cost of replacing facilities? Regionally adjusted? Local?
3. Why does population include CU student body?

Written Comment #2

1. How are other sources of revenue contributing to paying capital costs of services affected by growth? What are those sources and how much do they offset costs?
2. "Level of service" appears to be defined by current numbers of people served by city services. How is the quality of current services evaluated and factored into defining service levels?
3. For library and other services demanded mostly by residents, how are impact fees charged for mixed use developments? Are the residential elements of the project singled out for charges?
4. Most capital facility service standards and cost factors are based on replacement costs. What were the then current capital facility replacement costs in the 2009 study and how much have they risen?
5. How do marginal Persons per Housing Unit data differ from average Persons per Housing Unit data? Why not use marginal data?
6. How are outflows of commuters factored into calculating the nonresidential share factors? Thousands if not tens of thousands of residents work outside Boulder. Don't they offset some of the demand created by inflow commuters?
7. Could we have a copy or link to the Boulder specific data
8. How do Marginal costs per demand unit differ from average demand unit costs? Why not use marginal costs?
9. Employees per nonresidential land use/demand unit were derived from actual CO QCEW data for City of Boulder nonresidential buildings, correct? If so, the employees per demand unit presented in the reports represent averages? Marginal employees per demand unit would be much more representative of the service demands associated with new development. In office, industrial/flex and warehouse uses, averages from past occupancy patterns are not especially representative of occupancy in new buildings.

Written Comment #3

I understand that the City needs to look at creative ways to pay for the carrying costs for the BCH site, but I also do understand that the City has not yet begun the planning process for the site. Can you please explain to me the nexus between new development impacts and the BCH acquisition? Sorry if I missed this somewhere in the literature.

In the Introductory Seminar materials, there is a graph that shows how Boulder's impact fees/excise taxes compare to other municipalities. I'm wondering if there is any sort of information comparing total out of pocket costs paid to the City through entitlements? When making decisions on things like adding new fees (like public art requirements), I think its important to understand the total costs that a developer needs to pay to build in Boulder.

It is widely understood that the provision of affordable housing is one of the greatest needs in the community, and goals of the City. I encourage the City to evaluate (or re-evaluate) incentives or fee

waivers for affordable housing developers. The City of Fort Collins, Longmont, and other municipalities in Colorado provide incentive programs that can be researched.

Multimodal Transportation Component

Written Comment #1

How are outflows of commuters factored into calculating impacts of rip demand generated by new development projects? Thousands if not tens of thousands of residents work outside Boulder. Please provide documentation of 60/40 residential/nonresidential share. Please provide narrative explaining context of slides.

Written Comment #2

The fundamental problem with the work done so far on the transportation development impact fees (DIF) and related excise taxes (DET) is that there simply is no framework that would allow these and other charges and exactions to be accurately or equitably calculated. As a result, some potentially large fraction of the costs, both capital and operating, that are associated with mitigating the impacts of new development could end up being borne by the general public, which is exactly what the impact fee and related studies were supposed to prevent.

The problem seems to have begun with restricting the initial effort to capital side, and the use of the current 6 Year CIP and the 2014 TMP for identifying the appropriate capital improvements, but without having first defined the quantitative measurements – intersection congestion, arterial travel time, GHG and pollution emissions, and so on – to evaluate these improvements against, and that the citizens are concerned about. After all, this is why this whole process got started – because the residents and businesses in Boulder are impacted by the additional traffic generated by growth, and don't want to pay to solve the problems created by this growth.

The 6 Year CIP does not appear to have any necessary relationship to the needs generated by growth, and in any case is revenue constrained to currently expected taxes plus grants plus DET receipts even though the needs due to growth may be much larger. So although some of the items may be relevant, the list is almost certainly incomplete and inadequate for addressing the (capital) impacts of growth.

The TMP's Action and Vision Plans, and the TMP overall, say nothing about the extent to which any particular improvement, whether it is capital or operating based, will prevent degradation of any particular measurement. So the TMP's plans are not useful as plans on which to base the DIF analyses. And since the proposed DET analysis uses the same methodology but applies it to items not appropriate for impact fees, the same problems show up again. Again, so it's clear, I'm talking about both one time capital investments and ongoing operating programs.

The qualitative "goals" of the TMP need to be converted into appropriate quantitative measurements, whose maintenance can be used to legally (and equitably) justify impact fees, excise taxes, and ongoing development-specific exactions. Without that, the necessary the ability to calculate and defend these, both legally and equitably, is simply not there.

Also, given the addition funding requirements, estimated at +\$85M for the Action Plan and +\$459M for the Vision Plan over two decades, it appears that the Action Plan will almost certainly not maintain any of the appropriate measures in the face of growth, and that the Vision plan is probably somewhat more expensive than necessary to do so. So neither plan is appropriate for equitably calculating impact fees, excise taxes, and development specific exactions, whether one time or ongoing.

All of this reinforces the observation that to get this job done appropriately, what is needed is a plan that: (1) defines the appropriate quantitative levels of service measurements, especially those that are affected by the impacts of growth, such as daily VMT, intersection congestion, arterial travel time, and total emissions;

(2) lays out the list of improvements and programs, both capital and operating, that efficiently maintain these measurements at or above their current level of service in the face of the increased demands from growth,

(3) determines the costs those improvements and programs, both capital and operating, identified in the above step that are needed to mitigate the impacts of growth, and those portions that are over and above this amount, using the quantified measurements of levels of service,

(4) uses these revenue requirements as the basis for setting the DIFs for items that are obviously capital, using one of the allocation systems that already has been generated,

(5) supplements the DIF revenue stream with the DET to help fund growth related non-capital items, like transit, that increase capacity and so help address the quantitative measurements as needed because of growth impacts, but cannot be included in impact fees because of the vagaries of Colorado state statutes, again using one of the allocation systems,

(6) lays out other revenue raising/behavior changing approaches, using development requirements, adequate public facility mandates, etc., to ensure full mitigation of growth related impacts that require ongoing costs, using devices like net zero transportation impact requirements and the like, and finally,

(7) identifies other devices, like the use of districts, parking fees, TMFs, etc. to fund the other ongoing citywide transportation services that are not really growth related, such as maintenance, or ones that actually improve the levels of service over and above simply preventing degradation due to the impacts of growth (such as safety and convenience improvements), and evaluates them in terms of efficiency and effectiveness.

This approach would end up with equitably requiring growth to pay its own way, but not more, and have the general public pay for what is appropriately their responsibility, which is maintenance and actual improvements in the quality of the transportation system, as opposed to improvements necessary to deal with the impacts of growth. And both would be done in equitable, efficient and effective ways.

One other comment — there have been statements made like, "All these improvements benefit everyone, so why charge growth for them?" This simply misses the point. Building a new branch library benefits everyone, as does the purchase of more water rights, or expanding a park, or providing better transit. But just because some public facilities or services happened to be used by everyone doesn't mean that new development shouldn't pay for them. If these improvements are necessary to ensure that the level of service that existing residents and businesses experience are not degraded by the demands of growth, then growth should pay for them, not the general public. And if a portion of that improvement, whether one time or ongoing, is necessary for that end, then growth should pay for that portion.

(As a P.S., I should point out that the system presented on 3/30/16 that was used to calculate the costs that growth should pay, as best as I understand it, could likely lead to double charging, and so require credits that will offset any DIF/DET payments made by new development. This would negate even the minimal value it might have.)

Addendum on the TMP Objectives for 2035:

Here are the TMP Objectives in summary form, taken from the TMP report

https://www-static.bouldercolorado.gov/docs/2016_Transportation_Report_on_Progress-1-201603181433.pdf

1. Reduce VMT in the Boulder Valley by 20%
2. Reduce SOV to 20% of all resident trips and 60% of non-resident work trips
3. Achieve 16% reduction in GHG emissions, and reduction in other mobile source emissions
4. No more than 20% of roadways at LOS F
5. Expand fiscally viable options for all residents
6. Increase alternatives commensurate with rate of employee growth
7. Toward “vision zero” for fatal and serious injury crashes
8. Have 80% of residents living in walkable neighborhoods
9. Reduce daily resident VMT to 7.3 miles/capita, and non resident one-way commute VMT to 11.4 miles per capita

A few comments:

No. 8 – If the definition of “walkable” is what the Planning staff was using, this is essentially impossible to achieve for most of the existing single family neighborhoods west of Broadway, simply because the distance to shopping or a major arterial is more than $\frac{3}{4}$ mile, so to gain access to shopping would require tearing down people’s houses. And on the other side, access to open space is equally distant. So forget that.

No. 5 and 7 – These are not directly related to any of the effects of growth that I can see, so are probably irrelevant for this discussion.

No. 2, 6, and 9 – These are interim objectives that appear to be designed to achieve other goals, like congestion reduction and emissions reduction. And if we go to driverless cheap small cars, they become much less relevant.

No. 1, 3, and 4 seem to be more direct statements about more ultimate goals that people actually value – being able to get somewhere without having to sit at a stoplight for a long time, and not polluting the atmosphere either with GHGs or other pollutants, and not being overrun with traffic.

(I note that No. 4 is rather unclear. What is really meant here? From the data, I think what was meant was no more than 20% of signalized intersections at LOS F. But, given the current status at a claimed 9% and that LOS F is a big range, etc., this doesn’t actually set a very useful standard to be maintained.)

What is missing from all this is a goal or objective about mobility – like travel time – something that measures people’s ability to actually get around when they want to.

Adding in travel time (on all heavily or moderately used streets, many more than the current 6) would also put in place a reasonable measure to use to evaluate the impacts of new development. Intersection LOS doesn’t work very well; if you require a new development that is right next to a heavily used intersection to not degrade it, then they probably couldn’t build. But travel time is a summary measure over the full length of the arterial, so a bit more congestion in one spot can be compensated for by a bit less in another. This allows offsets done at off site locations.

And this could be tied to the No. 1, not increasing overall VMT. No. 1 then becomes a global measure that could be used to judge new development, and as with travel time, it allows for off site offsets.

So my suggestion is to add in a “no degradation of travel time” measure that will (1) include all major streets and arterials (not just the current 6), and (2) include all hours of the day, so that the obvious expansions of rush hours are included in the measure. (This is why people are so incredulous when you say that travel times are not increasing; traffic is expanding to the other routes, and morning, noon, and afternoon rush hours and lunch hours are getting to be multi hour events.)

So the three tests for setting impact fees, excise taxes, etc. would be “no degradation by growth” as measured by:

- 1) no increase in overall VMT

- 2) no increase in end-to-end travel time on all major streets and arterials
- 3) no increase in GHG or other pollutant emissions

These measures would provide the operation basis for evaluating what contribution a new development should make, both in fees and taxes, and in on site and off site implementations.

Written Comment #3

As I reflected on yesterday's meeting, I think I came to understand what is going on. But I still have some concerns.

It appears that the DIF and the DET studies use what is going on with the CIP and the TMP overall and then backs out new development's fair share of that. In put differently, when the city would be putting in a turn lane that would increase safety and would have done so with or without new development, and said turn lane allows for more traffic via more development, new development is not having to pay for that impact so to speak because it would have been done anyway. Is that true? The same would apply to other areas as well.

And though I am ok with that on a theoretical basis, I still am concerned that the studies do not appear to address what Steve is calling levels of service. For instance, how much longer does it take to get through intersections at say between 5-6 PM or 8-9 AM when most of the cars are on the road as a result of new development irrespective of any other changes that have been made in the transportation system. Or how many more GHGs are there with new development. I understand that many of things being done will reduce GHGs that are separate from new development, however, shouldn't we also know the actual amount of GHGs that new development is causing separate from any other reductions that would occur in the system? If we did that, we would then be able to hold new development's feet to the fire so to speak and we would possibly be able to reduce GHGs even further, which is everyone's goal.

The discussion about how much new development should pay is for another day, but for me it important to know for instance the exact amount of impact new development has in the various areas of transportation to even have an intelligent conversation. I understand that your point is that transportation has to be looked at as a whole. And that is important. But if we can't somehow quantify what new development is causing in the various areas, how can we make recommendations about it?

Does that make sense and am I seeing it correctly?

Written Comment #4

Thank you for the good meeting today. I'm excited that others are so excited about the O&M part of the work. For the DIF/DET component, here's my feedback.

Overall I'm content with the rigorousness of both the DIF and DET studies. I agree with TischlerBise and staff that a DIF could reasonable be geared to maintain current level of service, and that DET could reasonably be tasked toward the TMP Action plan. Clearly the proposed fees are based in research and facts, and are therefore defensible. But I do believe that the approach and honestly the fee/tax levels can and should be tweaked to meet a policy goal, not the other way around.

We embarked on this part of the process because the community wants development to pay its own way. These studies make a compelling case that there's not a lot for development to pay for - \$4-6M over 6 years is pretty nominal compared to the transportation O&M burden. Therefore, for "development must pay its own way", my inclination is to define the fundraising or policy goal (which seems to be \$4-6M revenue), then set the DET level to meet that goal. And abandon the DIF approach, the defensible amounts are too small to be worth the effort. My experience on TAB has me inclined to want the DET to

satisfy the TMP Action plan; I do honestly believe that new development should make the city better, not maintain status quo.

Like Ken, I'm mostly concerned about how the DET and/or DIF fits into the entire package of programs and fees which new development must satisfy (TDM etc). Yes there are equity issues here, but also I despise anything that creates an unnecessarily confusing combination of fees and programs. I'd like to see the fee/tax structure be as simple as possible.

Ultimately both DET and DIF might be abandoned for a better approach. But if a DET can be smoothly implemented, let's do it.

Affordable Housing Linkage Fee Component

Written Comment #1

Excellent presentation of data for this analysis. Excellent illustrations. Commute adjustment should stay in analysis and not be lowered. Yikes! Impact fees will only scratch the surface (Zoning and land use changes will have to also be implemented to mitigate the gap). Seems like Boulder could increase its fees a tiny bit.

Written Comment #2

1. What is the source of the 39% estimate of employees housed in Boulder – is it simply the balance remaining after subtracting the estimated 60,000 in commuters daily from the 98,500 total jobs?
2. The commute adjustment seems appropriate, even necessary, given that higher real estate costs in Boulder – in part the result of cumulative development fees and taxes – exacerbate the affordable housing dilemma.
3. How are outflows of commuters factored into calculating impacts of trip demand generated in Boulder? Thousands if not tens of thousands of residents commute outside of Boulder for work.
4. Shouldn't there be some acknowledgment that development fees and taxes contribute to overall costs of housing and that Boulder already has comparatively high impact fees and excise taxes?
5. A couple additional considerations should be included in the development cost prototypes:
 - a. The city's current development review process for larger office, retail, multifamily residential and some other development projects can take two years or more to complete which drives up the cost of development. The "indirect costs" identified in the report for high-density office don't appear to adequately reflect costs for the kinds of projects the report is trying to represent at the high end of the range of prototypes.
 - b. Exactions and other community benefit development approvals are often substantial in more complex projects. These are routinely applied to commercial projects so some placeholder estimate of those costs should be included.
6. The context report should acknowledge that there are public benefits of commercial development. At least obvious long-term benefits such as sales and use taxes, property taxes, and utilities fees collected and/or paid by tenants of commercial development should not be completely overlooked.
7. The most important takeaway from the market context report is that the economy is not static. It is very dynamic and in just the past decade experienced two severe contractions to which Boulder was not immune. Boulder's current economic performance is not a "new normal" that will continue indefinitely. We are starting the seventh year of an average 8-10 year economic cycle, with some kind of correction inevitable in the not too distant future. A cautious, longer-term view should be adopted when setting fees at or near a peak performing economy.
8. The "Total Employment" chart on page 52 represents Boulder County data, not city data.
9. The "comparable" communities selected are not comparable to Boulder. Resort communities (Aspen, Vail) are nothing like Boulder with its large and multi-industry economic base and much lower incidence of second home ownership. Cambridge, too, has nothing like the diverse economic base of Boulder. Some California cities may be comparable, but Palo Alto, Berkeley, San Francisco, etc.?!?
10. Better comparables, often used by CU and other local researchers, include Ft Collins, Madison, Portland, even Austin.
11. The analysis uses Boulder County worker/household data, correct? What is the City of Boulder's worker/household avg?

Written Comment #3

-As Kristin and team are aware, new affordable projects are expected to cost significantly more than \$293K/unit. I know that there may not be data to support that right now, but it is just something to be aware of.

-This is minor, but all projects financed with assistance from CHFA and State of Colorado are required to underwrite projects with a 7% vacancy rather than 5%.

-Must the funds collected from the commercial linkage fee be spent on housing for the exact population/income level that it is paying for, or will all the funds go into one pot for affordable housing in general? I'd like to understand more about how the City intends to implement the fund program, especially for Middle Income (Low to Moderate and Middle Income). If this was discussed in the special session, just let me know and I can take a listen. How much is anticipated to be brought in from the linkage fees for Middle Income housing?

Written Comment #4

- There are more subsidies for rental units out there (primarily the low income housing credit and tax exempt bond financing programs). Thus using linkage fee proceeds for units serving those above 60% AMI is far less valuable in the long run, in terms of generating the most units, if that is Council's goal.
- Market context: we should not be assuming land values or construction costs will decrease in Boulder. And rents are likely to be stable to increasing over the long run.
- I am not intimately familiar with commercial project budgets. I am familiar with affordable housing and market-rate apartment housing budgets. Subjectively speaking, any increase in current City fees over 1 to 2% of project costs may have a significant impact on the program (and, worst case, the feasibility) of many affordable projects. Market rate projects likely have a bit more ability to absorb fee increases, but not much. Without question, development cost context is relevant to linkage fee sizing.
- As for total development cost per unit of \$293,000, we just saw costs land around \$385,000/unit in Louisville in BCHA's 200-unit project there. Boulder development is unlikely to cost less than development in outerlying areas, with the exception that some of the infrastructure may be in place already in Boulder (streets, utilities, etc.).
- Otherwise assumptions generally look good.
- Scaling fees to the type of project being built makes sense. Maybe aim to have the percent of development costs about the same across project types, but the dollars associated will differ due to differing project costs.
- A minimum threshold commercial building size for fee to be imposed is worth looking at.
- Consider exempting day cares, nurseries, churches, and similar "public good" uses that don't generate as much need for employee housing and have vastly less ability to pay extra fees.

Requirement for public art

Written Comment #1

Analysis seems to imply that “arts” are visual/plastic arts. Is this the intention? Are performing or other arts excluded (poetry, etc)? Seems that using 1% by building permit valuation is better than the other options. Regarding the categories of building types, exemptions of Industrial below \$10 million maybe? What about the value of underground areas, or repairs such as reroofing? Private residential could have its own, lower rate. I would exempt non-profits. Overall, exempt tenant improvements below \$400k, and all projects should have the option of in-lieu payment. What is the value of public exposure (not all buildings have locations that lend themselves to public exposure). There should not be a threshold at which the city requires on-site art, because City Arts could use \$1 million for performing arts, for example.

Written Comment #2

How is the nexus between demand and fee charges for public art determined and quantified? BPV appears to be the norm across other communities, so it would seem to be a common practice for Boulder to adopt. However, if there are better ways to define the nexus, e.g. marginal growth in population or housing, then perhaps alternatives to BPV should be considered. In a similar vein, adopting the 1% norm seems arbitrary based on common practice. Is there a more rational basis for fees that represents a better defined nexus? Is there any additional benchmarking information from other communities about thresholds? As in the case of BPV as the requirement-triggering metric, it seems that there isn't a strong rational basis for determining a "correct" threshold. Isn't this mostly determined through a political process?

How were the "highest priority" building types identified in the report determined? More publicly accessible building types seem to make more sense for public art installations. That would prioritize public/institutional buildings, retail, etc over office and other commercial buildings. Industrial, R&D, and large private campuses, e.g. IBM, that don't see much public visitation or traffic should probably be excluded from the requirement.

Have other cities figured out how to partner with local arts organizations or created a public art committee to advise them how to best implement public art installations? It seems logical that a revenue stream dedicated to public art could be managed by an advisory group for better community-wide benefit than requiring developers to install project specific art.

Written Comment #3

As you know from our prior conversations my views on the public arts program make me a bit of an outlier on the subject. In no particular order, I am skeptical about its purposes, its funding and its administration. I will deal with each of these subjects separately, but I first want to express that my views do not reflect a devaluation of the importance of art or its place in our society. To the contrary, after living in New York City for 39 years, I am entirely convinced of the primary role of art as part of a well-rounded life. My wife and I were devoted to the theatre (seeing 40-50 shows a year), were frequent visitors to museums, and attended talks with authors, playwrights and poets. I do not question the need to support art and artists or the appropriateness of using public funds for that purpose.

Having said that, while I agree with the use of funds to directly support artists (e.g., commissioning works of art, subsidizing the cost of studios) and cultural organizations (through grants and direct support of specific arts programs), the concept of having developers fulfilling a public art requirement by enhancing the lobbies of their private structures or installing statues of dubious merit on the landscaped portions of those projects leaves me cold. I question the quality of art that will result from this requirement, and I feel

certain that the interaction between private developers and the enforcement authority charged with monitoring the process will result in a great deal of bureaucracy with little to show for it.

Even more fundamentally, I question whether Boulder, with a population of only 100,000, can sustain a meaningful public arts program, and whether the funds raised will be sufficient to fulfill the various objectives set forth in the Community Cultural Plan. To some extent, I feel that the effort to do so is an attempt to match the cachet Boulder has as a Mecca for outdoor activities and athletic achievement with a similar profile as a cultural center, and I doubt that this is possible. Arts oriented cities such as Portland, Seattle and even Denver all have populations above 600,000, and I simply do not think that Boulder has the mass necessary to create and fund a program that will fulfill the ambitious goals of the Community Cultural Plan. I may be wrong, and one of the issues I have with the Keyser Marston draft report is that while it identified other cities of comparable size that have initiated a public arts program, there was no information to indicate what they have achieved as a result, i.e., are the programs of any real value?

However, if Boulder as a community wants to provide public funds to sustain the arts it should certainly do so. But it is clear that there is either a reluctance to go to the community to approve a dedicated tax to support arts goals or a belief that such a levy would not be approved. Funding is therefore anticipated from a public arts requirement with a cash-in-lieu option, which will presumably exempt from its application all but large-scale commercial development. This strikes me as a construct to avoid making the case for an arts levy of general application to the public, or simply supporting the arts from general funds that are not spent elsewhere. And while we can structure the program to incentivize developers to exercise the cash-in-lieu option, I believe we were told that we could not require it or the program would be deemed a tax (if I am incorrect, please let me know). Accordingly, despite all best efforts, we could still end up with the developer's nephew providing weekend concerts with his heavy metal band as a means of fulfilling the public art obligation or, worse yet, another depiction of a buffalo.

Based on the projections we were shown on future sources and uses of funds, at no time from 2016-2024 (there are no projections past this point) do the funds spent on public art and programs exceed the cost of administration. In addition, the Keyser Marston study projected revenues of approximately \$435,000 per year from the program (based on the assumptions they employed), which falls short of the administrative expense projected by the Cultural Plan from 2019 on, implying that all real arts support must necessarily come from other sources. To the extent those sources fail to materialize we would be taxing the development community to support a cultural administration.

Finally, I want to point out that although I have been a professional developer I am not averse to taxing the development community for public purposes, and I am positively in favor of doing so in support of affordable housing goals. But as we have seen from the Nexus study, there is no way to set the Affordable Housing Commercial Linkage Fee at a level that would fully mitigate the impact of future development without shutting down every proposed project in the City of Boulder. In effect, at any level of linkage fee that would be commercially reasonable we mitigate only a small proportion of the impact of every project that is completed. There are limits to the fees that can practically be extracted from development activity, and consequently I am loath to divert whatever funds that could be captured from future development projects and used for capital facilities, transportation and affordable housing to fund an arts program that by rights should be funded from general revenues, or by a tax approved by the electorate. It is not that art is not a worthy purpose, it is just that I believe these other categories are more fundamental to the future health of Boulder.

Written Comment #4

In general, I am supportive of this requirement, and the analysis seems sound. My personal opinion, however, is that if a development is already providing significant community benefit (eg. high percentage of affordable housing), there should be an exemption from this requirement.



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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: March 25, 2016

RE: **DRAFT #4** Land Use Assumptions for Impact Fee/Excise Tax Studies

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 1st.

Impact Fee/Excise Tax Service Area

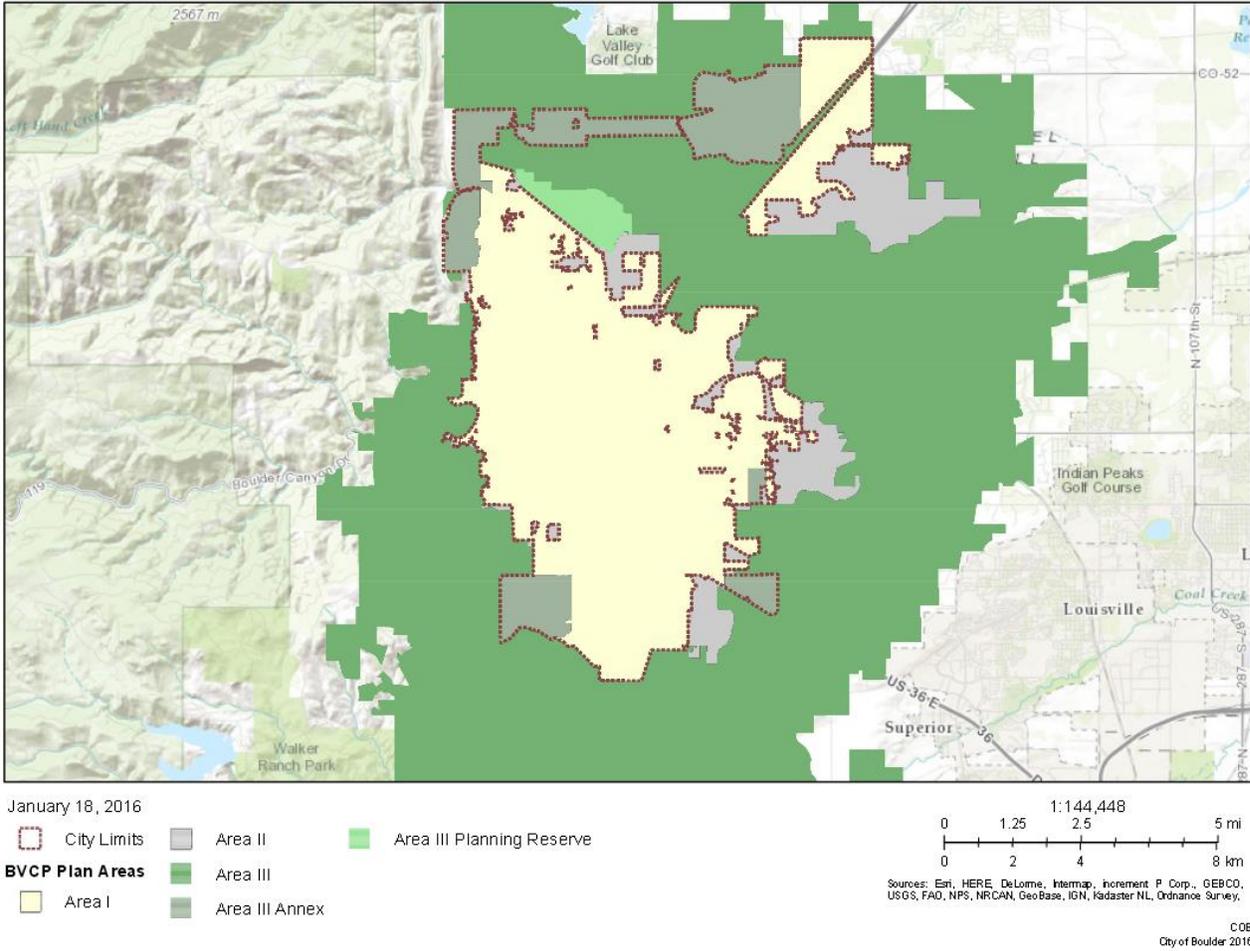
The City of Boulder is part of the Boulder Valley planning area, which is comprised of three areas:

- 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.¹

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.**

¹ 2015 BVCP Trends Report.

Figure A1: City of Boulder Planning Areas



Summary of Growth Indicators

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.

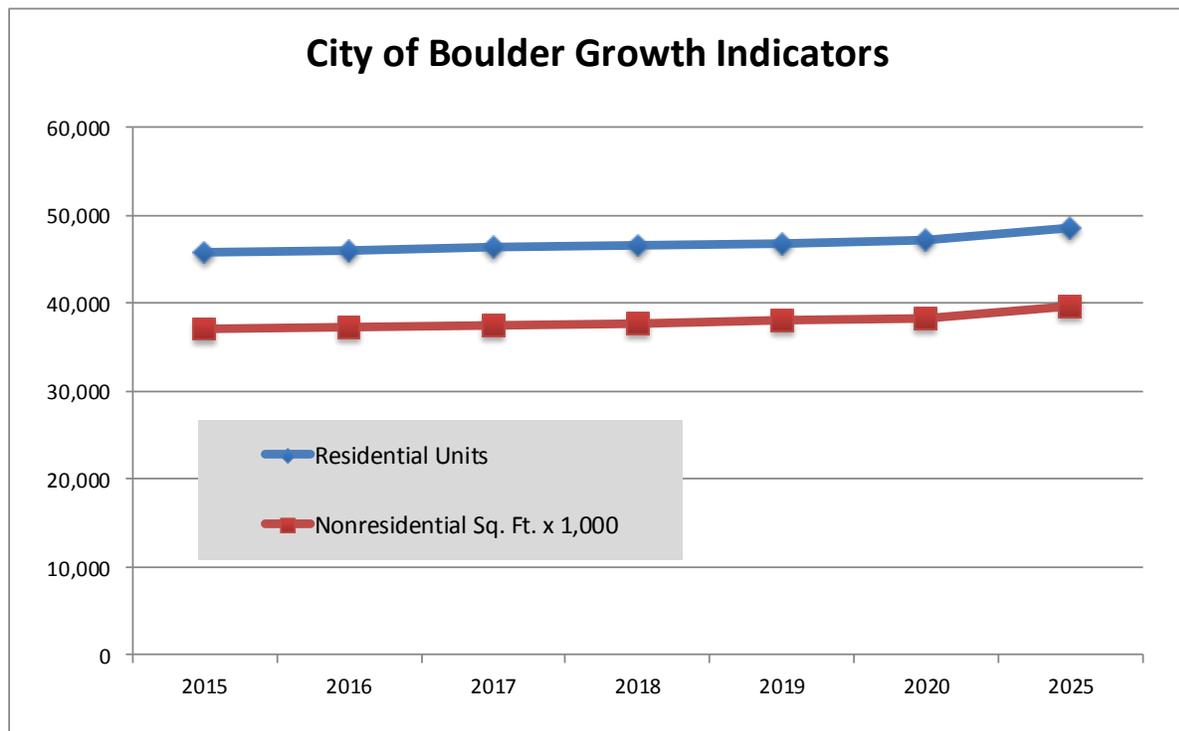
During the next five years, the 2015-2016 impact fee update expects an average increase of 282 housing units per year in the City. In comparison, 365 housing units on average were added per year from 2010 to 2014 and 387 units per year on average from 2004 to 2014.²

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 A11 and related text).

² 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%	



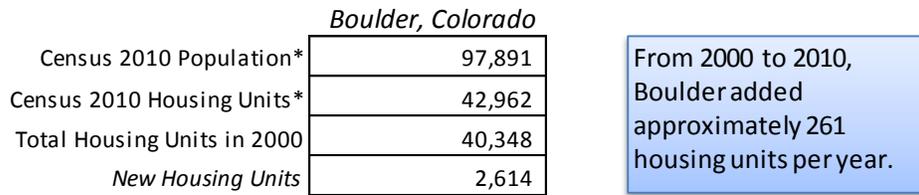
Sources: Figure A13: Population and Housing Unit Projections; Figure A14: Projected Jobs and Nonresidential Floor Area

Residential Construction

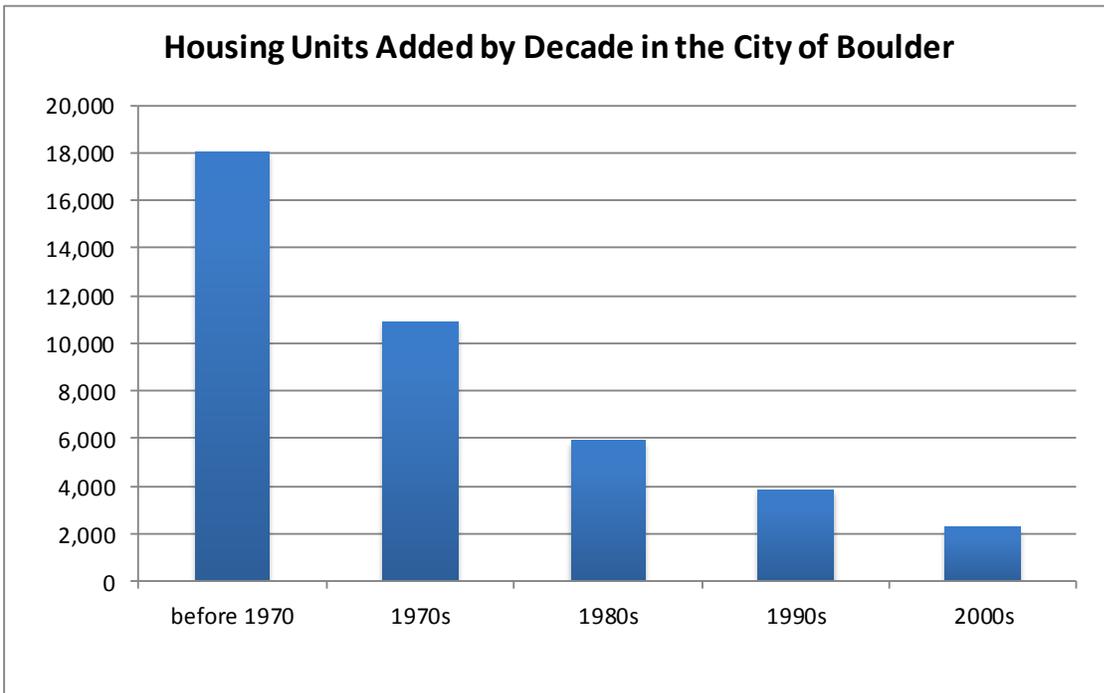
From 2000 to 2010, the City of Boulder increased by an average of 261 housing units per year. Figure A3 indicates citywide housing units added by decade in the city, according to data obtained from the U.S. Census Bureau and the 2015 BVCP Trends Report. Consistent with the nationwide decline in development 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



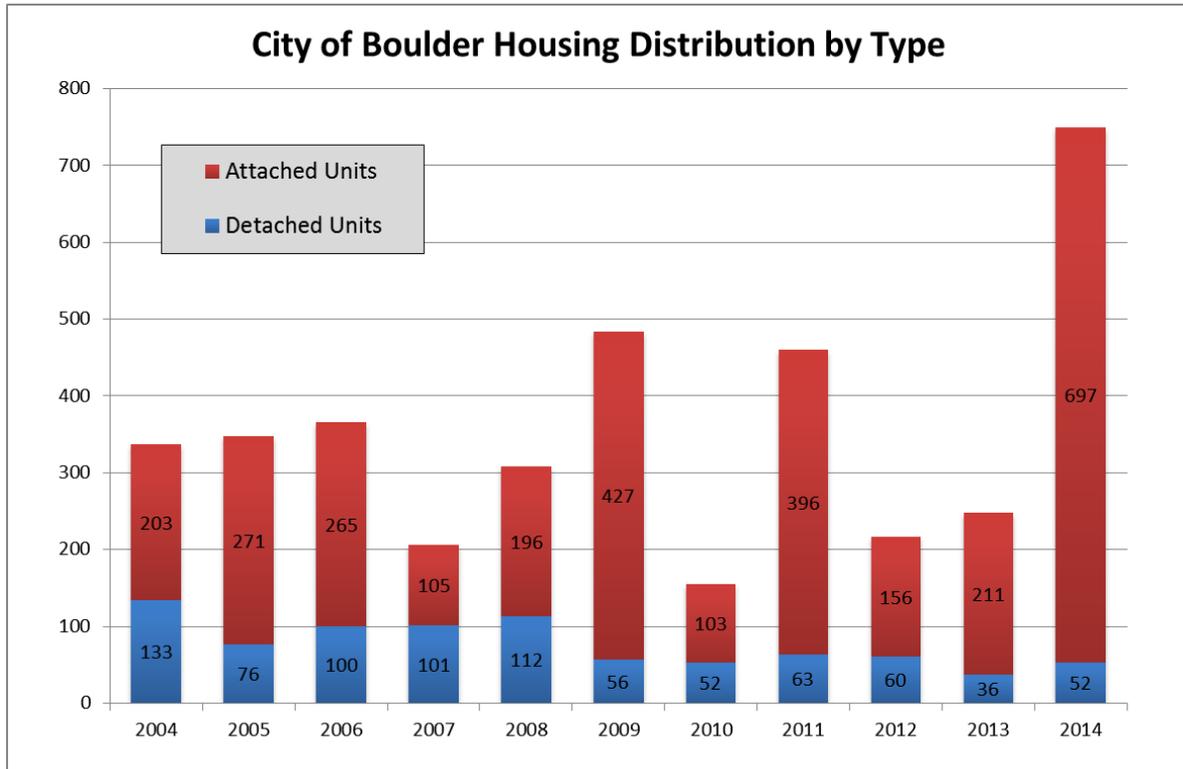
* From City of Boulder, 2015 BVCP Trends Report.



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
Total Net Increase	3,535	1,826
<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>Households</i>	<i>Persons per Household</i>	<i>Housing Units</i>	<i>Persons per Housing Unit</i>	<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	2.14		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	1.31
2	220	162	121	25%	1.82	1.86
3	296	236	134	28%	2.21	2.26
4+	372	300	135	28%	2.76	2.83
Total	1,002	787	479		2.09	2.14

(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.

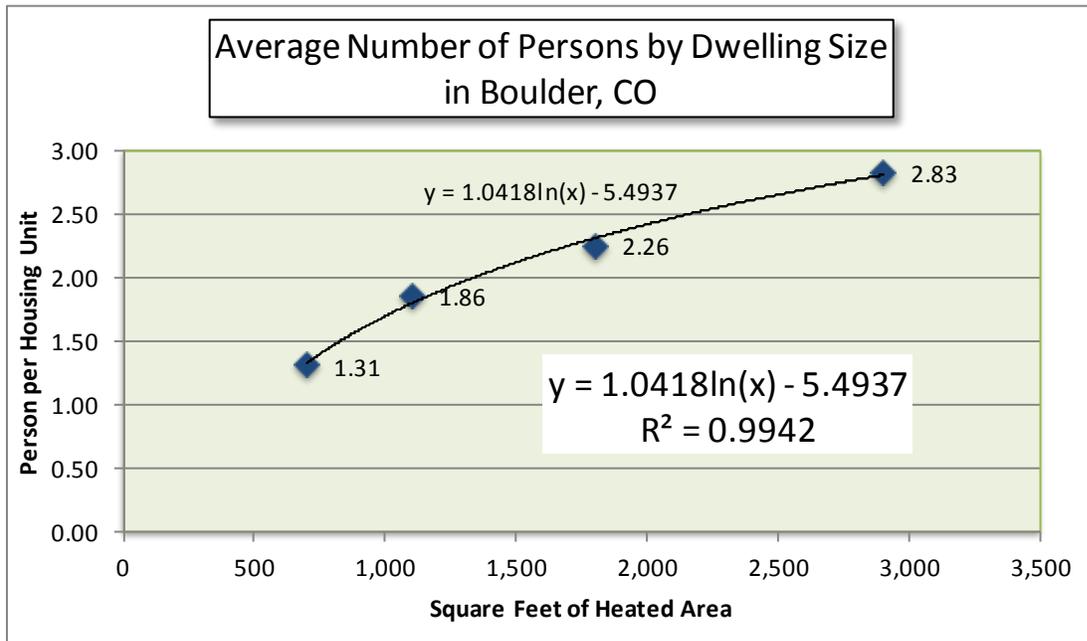
Average Number of Persons by Dwelling Size

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 800 square feet and a maximum fee for units 2201 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	Sq Ft Range	Persons
0-1	700	1.31	800 or less*	1.17
2	1,100	1.86	801 to 1200	1.80
3	1,800	2.26	1201 to 1600	2.19
4+	2,900	2.83	1601 to 2200	2.52
			2201 or more	2.83



* Assumed as 600 sq. ft.

The City of Boulder anticipates continuing to assess impact fees for the marginal increase in size of residential units. Toward that end, the following figure provides detail on household sizes for 200 square foot increments.

Figure A9: Persons by Square Feet of Living Space in 200 Square Foot Increments

<i>Fitted-Curve Values*</i>	
<i>Sq Ft Range (x)</i>	<i>Persons (y)</i>
600	1.17
800	1.47
1,000	1.70
1,200	1.89
1,400	2.05
1,600	2.19
1,800	2.32
2,000	2.42
2,200	2.52
2,400	2.61
2,600	2.70
2,800	2.78
3,000	2.85
3,200	2.91
3,400	2.98
3,600	3.04
3,800	3.09
4,000	3.15
4,200	3.20
4,400	3.25
4,600	3.29
4,800	3.34
5,000	3.38
5,200	3.42

* Formula: $y = 1.0418\ln(x) - 5.4937$

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 A10 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 A10: 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 [^]	1,000 Sq Ft	6.97	2.31	433
4	150	Warehousing [^]	1,000 Sq Ft	3.56	0.92	1,087
5	520	Institutional ^{**}	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)

[^] 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 A11 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 A11: 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%
Total Jobs			98,510	100%

* 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 A12.

Figure A12: 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 A13 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 A13: Population and Housing Unit Projections

	Projections ==>										25-Year Net Increase
	2015 Base Yr	2016 1	2017 2	2018 3	2019 4	2020 5	2025 10	2030 15	2035 20	2040 25	
<i>Cumulative Population</i>											
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	
<i>Cumulative Housing Units</i>											
	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	22,607	23,752	24,931	26,146	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 A14 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 A10. The projected “jobs to population” ratio is shown at the bottom of the figure for informational purposes.

Figure A14: 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		
<i>5-Year Intervals</i>												
Cumulative Jobs												
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		
	<i>% of Total</i>											
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
Total Jobs		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^A												
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
Total Jobs			677	685	689	694	699	724	750	776	804	18,500
Nonresidential Square Footage												
	<i>Jobs/1000sf</i>											
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

DRAFT #2

2016 Capital Facility Development Impact Fee Study

Prepared for:
City of Boulder, Colorado

March 25, 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"> ▪ Facilities ▪ Collection Materials 	<ul style="list-style-type: none"> ▪ Incremental ▪ Incremental 	100% Residential
Parks and Recreation	<ul style="list-style-type: none"> ▪ Outdoor Park Improvements ▪ Recreation Facilities and Pools ▪ Parks and Rec Admin & Support Facilities 	<ul style="list-style-type: none"> ▪ Incremental ▪ Incremental ▪ Incremental 	100% Residential
Human Services	<ul style="list-style-type: none"> ▪ Human Services Facilities 	<ul style="list-style-type: none"> ▪ Incremental 	100% Residential
Municipal Facilities	<ul style="list-style-type: none"> ▪ Office Buildings ▪ Land ▪ Municipal Court 	<ul style="list-style-type: none"> ▪ Incremental ▪ Cost Recovery ▪ Plan-Based 	Functional Population
Police	<ul style="list-style-type: none"> ▪ Station Space ▪ Communications Infrastructure 	<ul style="list-style-type: none"> ▪ Incremental ▪ Incremental 	Functional Population
Fire	<ul style="list-style-type: none"> ▪ Station Space ▪ Storage Facility ▪ Apparatus ▪ Land 	<ul style="list-style-type: none"> ▪ Incremental ▪ Plan-Based ▪ Incremental ▪ Incremental 	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

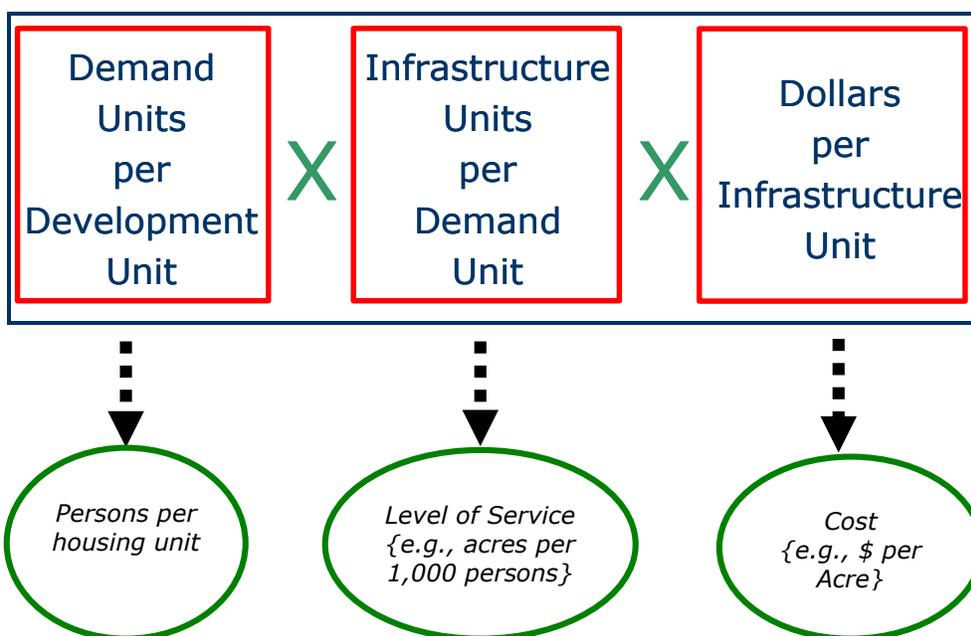
improvements normally required as part of the development approval process are not eligible for credits against impact fees.

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 DRAFT 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
800 or less	Dwelling Unit	\$424	\$2,656	\$81	\$287	\$216	\$193	\$3,857
801 to 1200	Dwelling Unit	\$653	\$4,086	\$126	\$442	\$333	\$297	\$5,937
1201 to 1600	Dwelling Unit	\$794	\$4,971	\$153	\$538	\$405	\$361	\$7,222
1601 to 2200	Dwelling Unit	\$914	\$5,720	\$176	\$619	\$466	\$415	\$8,310
2201 or more	Dwelling Unit	\$1,027	\$6,424	\$198	\$696	\$523	\$466	\$9,334

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	\$0.43	\$0.71	\$0.61	\$1.75
Office	Square Feet of Floor Area	\$0	\$0	\$0	\$0.61	\$0.28	\$0.87	\$1.76
Light Industrial	Square Feet of Floor Area	\$0	\$0	\$0	\$0.39	\$0.17	\$0.56	\$1.12
Warehousing	Square Feet of Floor Area	\$0	\$0	\$0	\$0.15	\$0.09	\$0.22	\$0.46
Institutional^	Square Feet of Floor Area	\$0	\$0	\$0	\$0.13	\$0.23	\$0.19	\$0.55
Hospital	Square Feet of Floor Area	\$0	\$0	\$0	\$0.50	\$0.33	\$0.71	\$1.54
Nursing Home/Assisted Living	Bed	\$0	\$0	\$0	\$144.00	\$69.00	\$204.00	\$417.00
Nursing Home/Assisted Living*	Square Feet of Floor Area	\$0	\$0	\$0	\$0.36	\$0.17	\$0.13	\$0.66
Lodging	Room	\$0	\$0	\$0	\$98.00	\$208.00	\$139.00	\$445.00
Lodging**	Square Feet of Floor Area	\$0	\$0	\$0	\$0.16	\$0.34	\$0.06	\$0.56

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

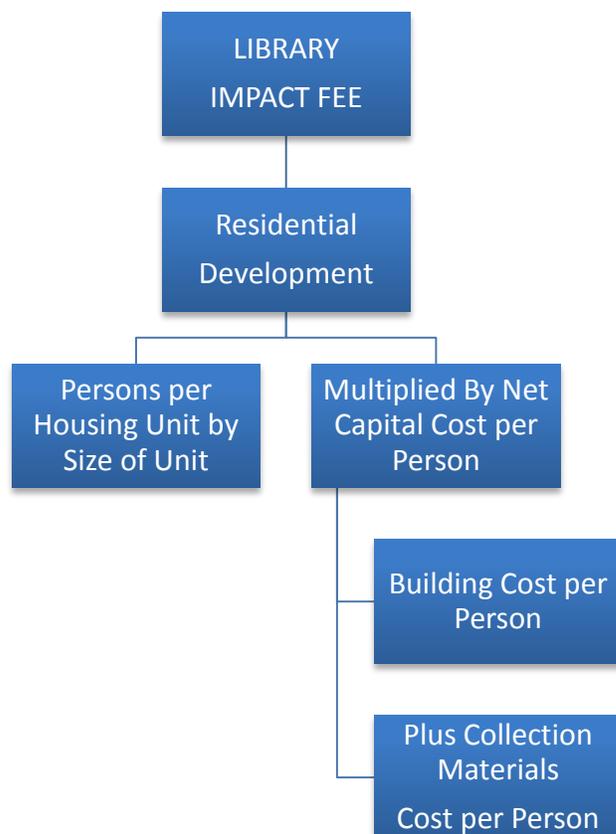
** For illustration and comparison with per square foot impact fees, assumes an average of 600 sq. ft. per room

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
TOTAL		109,123	\$20,884,022	\$6,265,207	\$27,149,229	
TOTAL City Owned		100,741	\$20,884,022	\$6,265,207	\$27,149,229	\$269

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
TOTAL	522,815		\$8,681,364

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

Source: City of Boulder Library Department.

Credit Evaluation

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

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 800 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	<i>Per Person</i> \$280
Collection Cost	\$83
Debt Service Credit	\$0
Net Capital Cost	\$363

DRAFT [03.25.16]			
<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>
<i>Residential (by square feet of finished living space)*</i>			
800 or less	Dwelling Unit	1.17	\$424
801 to 1200	Dwelling Unit	1.80	\$653
1201 to 1600	Dwelling Unit	2.19	\$794
1601 to 2200	Dwelling Unit	2.52	\$914
2201 or more	Dwelling Unit	2.83	\$1,027

* Square feet increments available using the formula:

$$y = 1.0418 \ln(x) - 5.4937, \text{ where } "x" = \text{square feet and } "y" = \text{persons per housing unit.}$$

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.¹ 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

	DRAFT Preliminary Calculated [03.25.16] Cost per Person	Current City of Boulder Impact Fee Cost per Person[^]	Increase / Decrease
Library	\$363	\$215	\$148

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

¹ 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 9 is calculated based on the preliminary calculated 2016 Library Impact Fee and the development projections described in the land use assumptions (TischlerBise 03/25/16). 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>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 =>			\$2,186,294

Parks and Recreation Impact Fees

Methodology

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.² 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.”³ 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.”⁴

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.

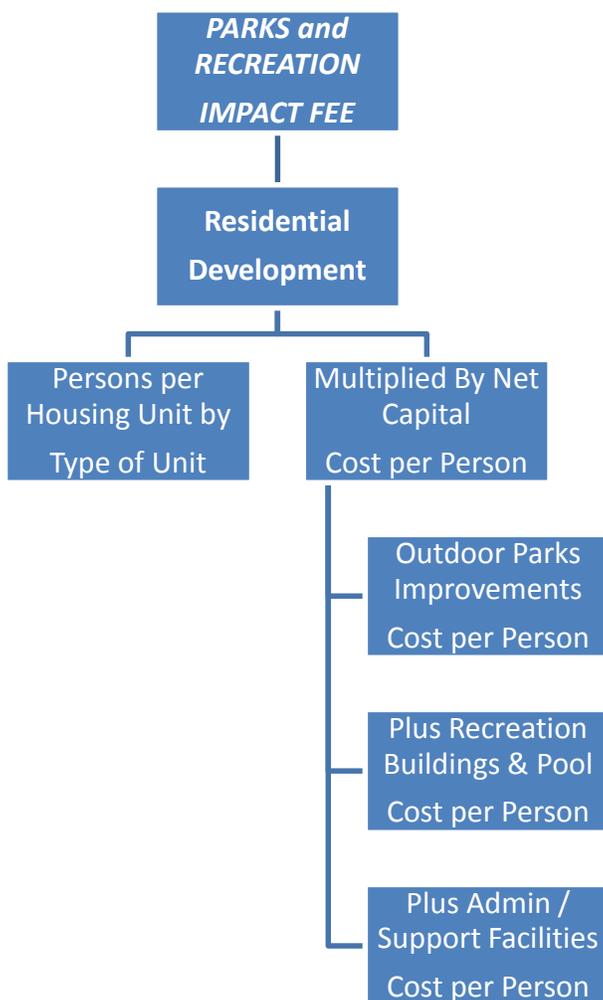
² The City of Boulder current collects a Parkland Development Excise Tax (DET). An update to the Parkland DET will be analyzed as part of this overall scope of work with the analysis issued separately.

³ Boulder Parks and Recreation Department Master Plan, p. 42.

⁴ Ibid.

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 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

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														4	1	1	2
East Mapleton Ballfields	Recreation Facilities	8.3	8.3				3.0						15.0				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																	
TOTALS		704.7	566.0	1.0	11.0	10.0	0.0	10.0	2.0	11.0	18.0	25.0	7.0	5.0	4.0	35.0	15.0	19.0	8.0	

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

SUMMARY			
Population in 2015	104,808		
		Total	Improved
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		
Total Improvements	\$174,936,030		
Cost per Improved Acre	\$309,074		
Cost per Capita	\$1,669		

* 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
TOTALS		182,509			\$6,474,628	\$100,365	\$103,500	\$1,942,388	\$56,907,757	\$312

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
TOTALS		68,325			\$4,536,992	\$211,604	\$25,000	\$1,361,098	\$6,134,695	\$90

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

* 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

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

RESIDENTIAL IMPACT FEES			DRAFT [03.25.16]
<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>
<i>Residential (by square feet of finished living space)*</i>			
800 or less	Dwelling Unit	1.17	\$2,656
801 to 1200	Dwelling Unit	1.80	\$4,086
1201 to 1600	Dwelling Unit	2.19	\$4,971
1601 to 2200	Dwelling Unit	2.52	\$5,720
2201 or more	Dwelling Unit	2.83	\$6,424

* Square feet increments available using the formula:
 $y = 1.0418 \ln(x) - 5.4937$, where "x" = square feet and "y" = persons per housing unit.

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.⁵ Figure 15 compares the draft calculated cost to the current schedule for the Parks and Recreation category.

⁵ The annual increases are as follows:

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

	<i>DRAFT Preliminary Calculated [03.25.16] Cost per Person</i>	Current City of Boulder Impact Fee Cost per Person[^]	Increase / Decrease
Parks and Recreation	\$2,270	\$1,474	\$796

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

<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 16 is calculated based on the preliminary calculated 2016 Parks and Recreation Impact Fee and the development projections described in the land use assumptions (TischlerBise 03/25/16). 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

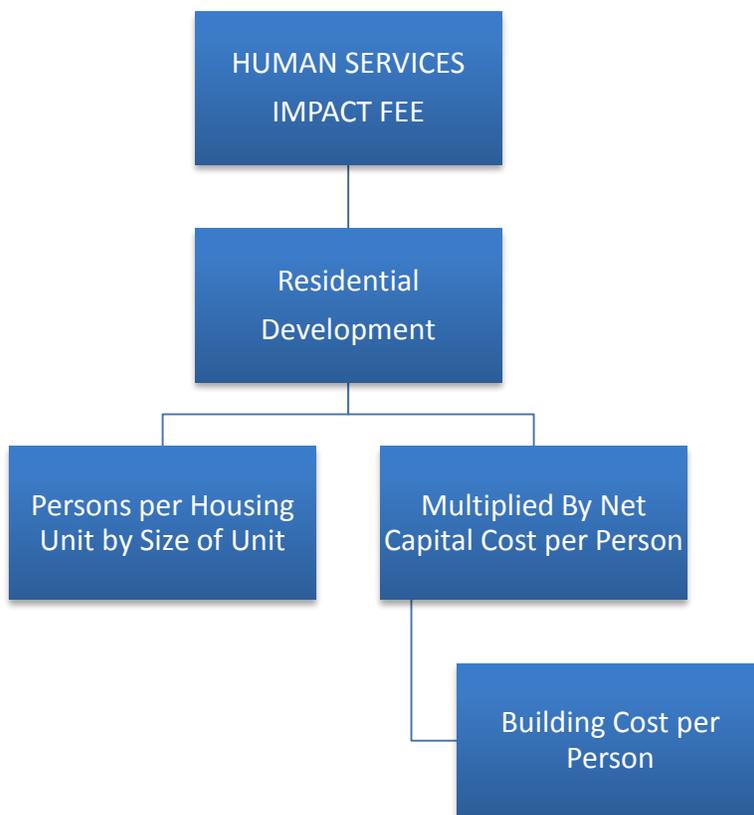
		<i>Residential</i>	
		<i>Fee (Wtd Avg)</i>	\$4,858
		per housing unit	
<i>Year</i>		<i>Housing Units</i>	
Base	2015	45,740	
Year 1	2016	46,012	
Year 2	2017	46,288	
Year 3	2018	46,566	
Year 4	2019	46,846	
Year 5	2020	47,127	
Year 6	2021	47,409	
Year 7	2022	47,694	
Year 8	2023	47,980	
Year 9	2024	48,268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

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
TOTAL		34,073	\$5,533,347	\$1,660,004	\$7,193,351	\$211

Cost per Square Foot=> **\$211**

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

* 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

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 800 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	

DRAFT [03.25.16]			
<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>
<i>Residential (by square feet of finished living space)</i>			
800 or less	Dwelling Unit	1.17	\$81
801 to 1200	Dwelling Unit	1.80	\$126
1201 to 1600	Dwelling Unit	2.19	\$153
1601 to 2200	Dwelling Unit	2.52	\$176
2201 or more	Dwelling Unit	2.83	\$198

* Square feet increments available using the formula:
 $y = 1.0418 \ln(x) - 5.4937$, where "x" = square feet and "y" = persons per housing unit.

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.⁶ 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>DRAFT Preliminary Calculated [03.25.16] Cost per Person</i>	Current City of Boulder Impact Fee Cost per Person [^]	Increase / Decrease
Human Services	\$70	\$70	\$0

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

⁶ 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 (TischlerBise 03/25/16). 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 =>		\$419,791	

Municipal Facilities Impact Fees

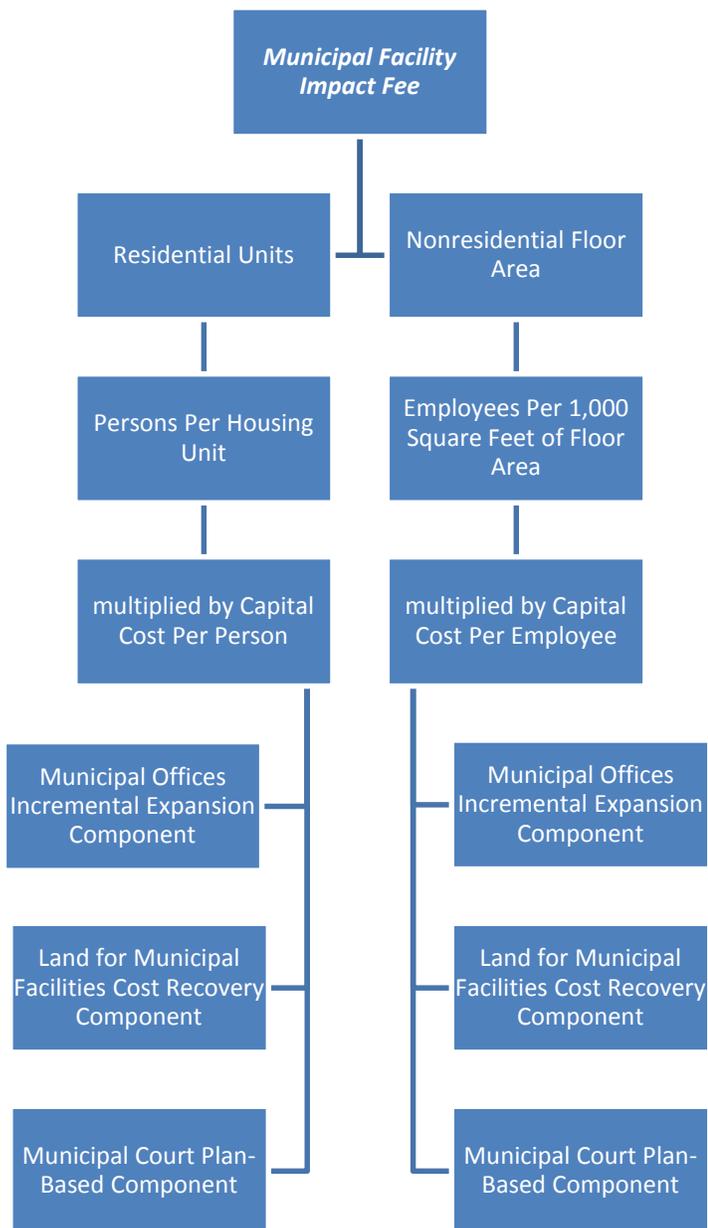
Methodology

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

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 (TischlerBise 03/25/16). 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

Boulder Functional Population Analysis				Demand Hours/Day	Person Hours
Service Units in 2015					
Nonresidential					
	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
					Nonresidential Subtotal 1,189,316
					Nonresidential Share => 40%
Residential					
	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
					Residential Subtotal 1,773,636
					Residential Share => 60%
					TOTAL 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
TOTAL		108,319	\$15,901,185	\$4,770,356	\$20,671,541	
TOTAL City Owned		72,890	\$15,901,185	\$4,770,356	\$20,671,541	\$284

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

Address	Acct	Acres	Total Cost	Cost per Acre
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
TOTAL		8.83	\$15,177,800	\$1,718,890

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 50 percent of each of the Balsam and Broadway parcels. Therefore, the above figure is adjusted to reflect this anticipated plan 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: 5.11 acres x 60% proportionate share / 123,000 population * 1,000 = .025 acres per 1,000 persons
- Nonresidential: 5.11 acres. x 40% proportionate share / 117,010 jobs * 1,000 = .017 acres per 1,000 jobs

The 5.11 acres has a cost of \$10.2 million, reflecting an average cost per acre of almost \$2 million. The cost per person is \$50 (.025 acre per 1,000 persons x \$1,995,211 = \$50) and a cost per job of \$34 (.017 acres per 1,000 jobs x \$1,995,211 = \$34).

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

Address	Acct	Acres	Total Cost	Cost per Acre
1100 Balsam*	R0602588	3.38	\$3,753,150	\$1,110,399
1155 Alpine Ave	R0116926	0.66	\$360,000	\$545,455
2655 Broadway*	R0000500	0.35	\$1,239,100	\$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
TOTAL		5.11	\$10,185,550	\$1,995,211

* Per the City, it is assumed the City will retain 50 percent of the property for facility needs; therefore 50 percent of acreage and value are included.
Sources: City of Boulder Facilities and Asset Management; Boulder County Assessor, Online Property Search (data accessed by TischlerBise on Feb. 14, 2016).

Site Acquisition	Acres	Total Cost	Cost per Acre
Boulder Community Hospital Site	5.11	\$10,185,550	\$1,995,211

	Proportionate Share	2040 Projected Demand Units	LOS: Acres per 1,000 Demand Units	Cost per Demand Unit
Residential	60%	123,000 Population	0.025	\$50
Nonresidential	40%	117,010 Jobs	0.017	\$34

Source: 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).⁷ The City conducted a space needs assessment for the court that identified the need for 12,000 square feet of Municipal Court space.⁸

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

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.

⁷ 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.

⁸ Trestle Strategy Group, "Space Needs Assessment of City of Boulder's Municipal Court (Draft)," May 11, 2015.

Credit Evaluation

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.⁹

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.¹⁰

⁹ "City of Boulder, Boulder Municipal Property Authority Agenda Item," September 15, 2015, p. 3. Emphasis added.

¹⁰ 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

Level Of Service	Factors	
		Per Person
Municipal Facilities Building Cost		\$175
Land Cost		\$50
Municipal Court Cost		\$21
Debt Service Cost		\$0
Net Capital Cost		\$246

RESIDENTIAL IMPACT FEES			DRAFT [03.25.16]
Square Feet	Development Unit	Persons per Housing Unit	Impact Fee per Housing Unit
(finished floor area)		All Housing Unit Types	All Housing Unit Types
Residential (by square feet of finished living space)*			
800 or less	Dwelling Unit	1.17	\$287
801 to 1200	Dwelling Unit	1.80	\$442
1201 to 1600	Dwelling Unit	2.19	\$538
1601 to 2200	Dwelling Unit	2.52	\$619
2201 or more	Dwelling Unit	2.83	\$696

* Square feet increments available using the formula:
 $y = 1.0418 \ln(x) - 5.4937$, where "x" = square feet and "y" = persons per housing unit.

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.¹¹ 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>DRAFT Preliminary Calculated [03.25.16] Cost per Person</i>	Current City of Boulder Impact Fee Cost per Person [^]	Increase / Decrease
Municipal Facilities	\$246	\$131	\$115

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

¹¹ The annual increases are as follows:

Fiscal Year	% Increase
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 (\$172), for an impact fee of \$0.43 per square foot.

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

Level Of Service		Factors	
			<u>Per Employee</u>
	Municipal Facilities Building Cost		\$124
	Land Cost		\$34
	Municipal Court Cost		\$14
	Debt Service Cost		\$0
	Net Capital Cost		\$172

NONRESIDENTIAL IMPACT FEES			DRAFT [03.25.16]
<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	\$0.43
Office	Square Feet of Floor Area	0.00359	\$0.61
Light Industrial	Square Feet of Floor Area	0.00231	\$0.39
Warehousing	Square Feet of Floor Area	0.00092	\$0.15
Institutional	Square Feet of Floor Area	0.00081	\$0.13
Hospital	Square Feet of Floor Area	0.00294	\$0.50
Nursing Home/Assisted Living	Bed	0.84	\$144.00
<i>Nursing Home/Assisted Living*</i>	<i>Square Feet of Floor Area</i>	<i>0.0021</i>	<i>\$0.36</i>
Lodging	Room	0.57	\$98.00
<i>Lodging**</i>	<i>Square Feet of Floor Area</i>	<i>0.00095</i>	<i>\$0.16</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.¹² 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>DRAFT Preliminary Calculated [03.25.16] Cost per Employee</i>	Current City of Boulder Impact Fee Cost per Employee [^]	Increase / Decrease
Municipal Facilities	\$172	\$54	\$118

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

¹² The annual increases are as follows:

Fiscal Year	% Increase
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 (TischlerBise 3/25/16). 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>		\$526	\$0.39	\$0.43	\$0.61
		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 =></i>		\$1,481,946	\$378,537	\$262,011	\$644,387
					Total Projected Revenue => \$2,766,882

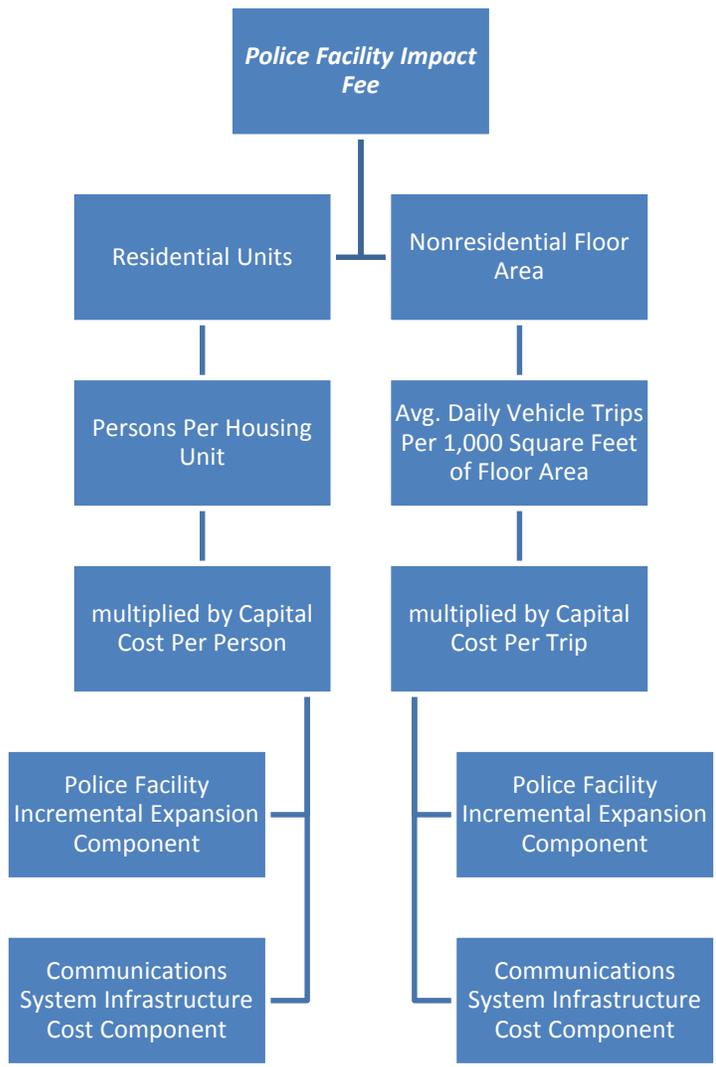
Police Impact Fees

Methodology

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

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 (TischlerBise 03/25/16). 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

Boulder Functional Population Analysis				Demand Hours/Day	Person Hours
Service Units in 2015					
Nonresidential					
	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	10	549,690
	Non-working Residents	51,054		4	204,216
					Nonresidential Subtotal 1,189,316
					Nonresidential Share => 40%
Residential					
	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	14	609,574
	19% Residents Working Outside City**	10,213		14	142,982
					Residential Subtotal 1,773,636
					Residential Share => 60%
					TOTAL 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 St	72,986	\$17,881,570	\$7,663,530	\$25,545,100	\$350
Training Ctr / Firing Range Addition	Public Safety Building/1805 E. 33rd St	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	Vaimont Rd	600	leased	na	na	na
TOTAL		95,749	\$21,098,653	\$8,628,655	\$29,727,308	
TOTAL City Owned***		93,849	\$21,098,653	\$8,628,655	\$29,727,308	\$317

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
TOTAL		\$1,887,192

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

* Source: 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

Level Of Service

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

Factors

Per Person	
	\$174
	\$11
	\$0
	\$185

RESIDENTIAL IMPACT FEES			DRAFT [03.25.16]
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>
Residential (by square feet of finished living space)*			
800 or less	Dwelling Unit	1.17	\$216
801 to 1200	Dwelling Unit	1.80	\$333
1201 to 1600	Dwelling Unit	2.19	\$405
1601 to 2200	Dwelling Unit	2.52	\$466
2201 or more	Dwelling Unit	2.83	\$523

* Square feet increments available using the formula:
 $y = 1.0418 \ln(x) - 5.4937$, where "x" = square feet and "y" = persons per housing unit.

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.¹³ 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

	<i>DRAFT Preliminary Calculated [03.25.16] Cost per Person</i>	Current City of Boulder Impact Fee Cost per Person [^]	Increase / Decrease
Police	\$185	\$138	\$47

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

¹³ The annual increases are as follows:

Fiscal Year	% Increase
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 foot (.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>
Police Buildings Cost	\$48
Communications Infrastructure Cost	\$3
Debt Service Cost	\$0
Net Capital Cost	\$51

NONRESIDENTIAL IMPACT FEES				DRAFT [03.25.16]
<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.¹⁴ 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

	DRAFT Preliminary Calculated [03.25.16] Cost per Trip	Current City of Boulder Impact Fee Cost per Trip[^]	Increase / Decrease
Police	\$51	\$19	\$32

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

¹⁴ 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 (TischlerBise 03/25/16). 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	\$0.17	\$0.71	\$0.28
		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 =></i>		\$1,112,869	\$165,003	\$432,623	\$295,784
			<i>Total Projected Revenue =></i>		\$2,006,279

Fire Impact Fees

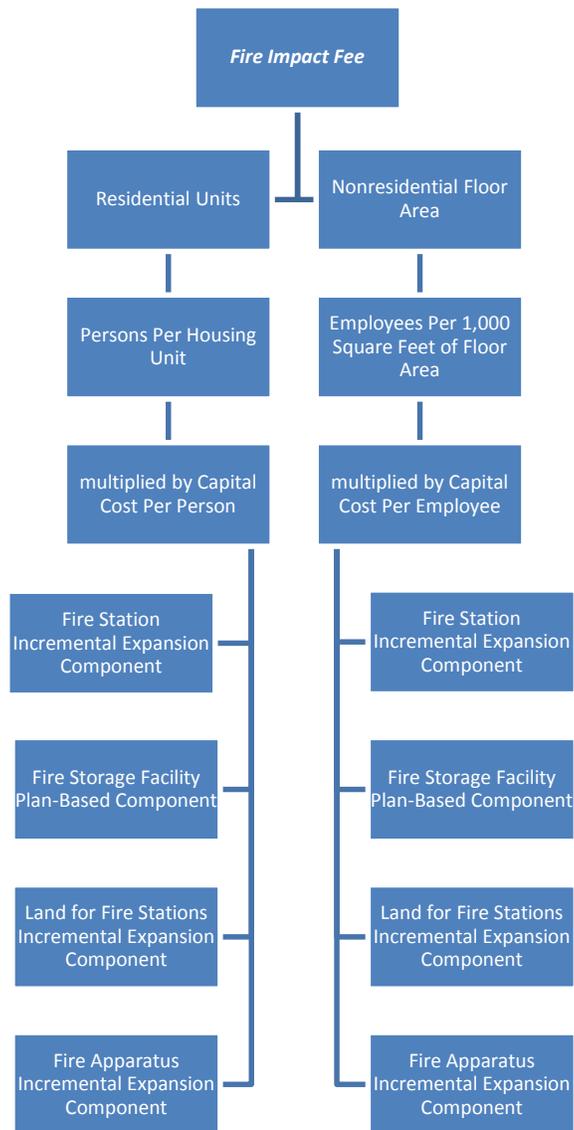
The City of Boulder Fire impact fee is based on the incremental expansion cost of Fire Services facilities, Fire apparatus, and land for future Fire stations. The City has identified future needs for new Fire Stations and expansion and relocations of existing Fire Stations in the following recently completed studies: *Space Needs Assessment for Fire Station 3 and Administration Building*¹⁵ and *Boulder Fire Rescue Station Location Report*.¹⁶ 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.

¹⁵ Trestle Strategy Group, "Space Needs Assessment of Boulder Fire-Rescue Department's Fire Station 3 and Administration Building (Draft)," March 17, 2015.

¹⁶ 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. 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 Hotel/Motel, Commercial	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 Parking Garage (detached residential)	1		1	
899 residential or self-storage	1		1	
900 Outside or Special Property Nonres	1,941	1,941		
962 Residential street, road or residential driveway	233		233	
None	41			41
Undetermined	53			53
TOTALS	9,910	5,622	4,131	157

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

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

Fire Level of Service Standards and Costs

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
TOTAL		79,318	\$13,437,799	\$4,031,340	\$17,469,139	\$220
TOTAL City Owned***		73,318	\$13,437,799	\$4,031,340	\$17,469,139	\$238

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*.¹⁷ 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

Cost per Square Foot=> \$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.*

¹⁷ 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
TOTAL	18	\$541,667	\$9,750,000

	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
TOTAL		9.41	\$10,264,690	\$1,090,473

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

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

RESIDENTIAL IMPACT FEES				DRAFT [03.25.16]
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>	
Residential (by square feet of finished living space)*				
800 or less	Dwelling Unit	1.17	\$193	
801 to 1200	Dwelling Unit	1.80	\$297	
1201 to 1600	Dwelling Unit	2.19	\$361	
1601 to 2200	Dwelling Unit	2.52	\$415	
2201 or more	Dwelling Unit	2.83	\$466	

* Square feet increments available using the formula:

$$y = 1.0418 \ln(x) - 5.4937, \text{ where "x" = square feet and "y" = persons per housing unit.}$$

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.¹⁸ 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

	DRAFT Preliminary Calculated [03.25.16] Cost per Person	Current City of Boulder Impact Fee Cost per Person[^]	Increase / Decrease
Fire	\$165	\$102	\$63

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

¹⁸ 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

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

NONRESIDENTIAL IMPACT FEES			DRAFT [03.25.16]
Nonresidential Land Use	Development Unit	Jobs per Development Unit	Impact Fee per Development Unit
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
Nursing Home/Assisted Living*	Square Feet of Floor Area	0.0021	\$0.13
Lodging	Room	0.57	\$139.00
Lodging**	Square Feet of Floor Area	0.00095	\$0.06

* 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.¹⁹ 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>DRAFT Preliminary Calculated [03.25.16] Cost per Employee</i>	Current City of Boulder Impact Fee Cost per Employee[^]	Increase / Decrease
Fire	\$244	\$143	\$101

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

¹⁹ 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 (TischlerBise 03/25/16). 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 =></i>		\$994,538	\$543,540	\$371,690	\$919,044
					Total Projected Revenue => \$2,828,812

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

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

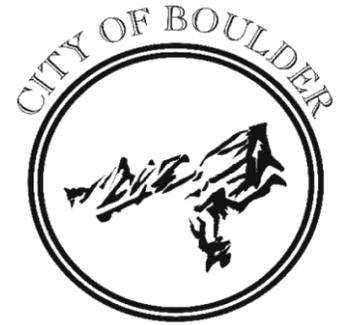
The reasonableness of impact fees is determined in part by their relationship to the local government's burden to provide necessary public facilities. The need to show a benefit usually requires communities to evaluate collection and expenditure zones for public facilities that have

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. Demographic Data

[Land use memo to be attached to final report]



DRAFT Legal Guidelines and Best Practices for
Multimodal Transportation Funding Solutions

Prepared for:
City of Boulder, Colorado

February 1, 2016

TischlerBise
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INTRODUCTION

The City of Boulder selected TischlerBise to update Development Impact Fees (DIF) and possibly revise Development Excise Taxes (DET). As part of the work scope, Boulder requested this document providing legal guidelines and best practices related to funding solutions for multimodal transportation systems. Federal and Colorado legal guidelines are discussed in the first section, followed by best practices, documented in a literature review and synopsis of case studies relevant to Boulder. This document also provides an extensive list of references for those desiring additional information related to multimodal funding solutions and the interaction of transportation with land use. The Appendix is a copy of a recent Planning Advisory Service (PAS) Memo on Next-Generation Transportation Impact Fees.

The historical trend in the United States since the 1950s has seen VMT rise faster than population growth for the following reasons. First, the average number of persons per household has declined over time due to declining birth rates and an “aging” population, plus an increase in divorce, single-person households, and unrelated persons living together. Second, the average number of workers per household has been increasing, mainly due to growing labor force participation by women. Third, the average number of vehicles available per household has increased over time as incomes grew and Americans shifted toward single-occupancy vehicle trips.

Given the importance of demographic factors and falling energy prices in understanding the historical demand for suburban housing and the resulting VMT increase, these same variables will be the keys to predicting long-term changes in housing and travel demands. Nation-wide demographic trends, such as labor force participation, vehicles available, and household formation, are leveling off thus decreasing travel demand in the long run. In Boulder, preferences of two important generational cohorts will further shift demand away from drivable sub-urban housing to favor walkable urbanism. Now that baby boomers are entering retirement, this generation seems to resist moving to the retirement communities favored by their parents. Instead, many boomers are looking for smaller units in more urban and less auto-dependent areas. Also, millennials are less attracted to suburban settings, thus further weakening the market for low density housing on the fringe of urban areas.

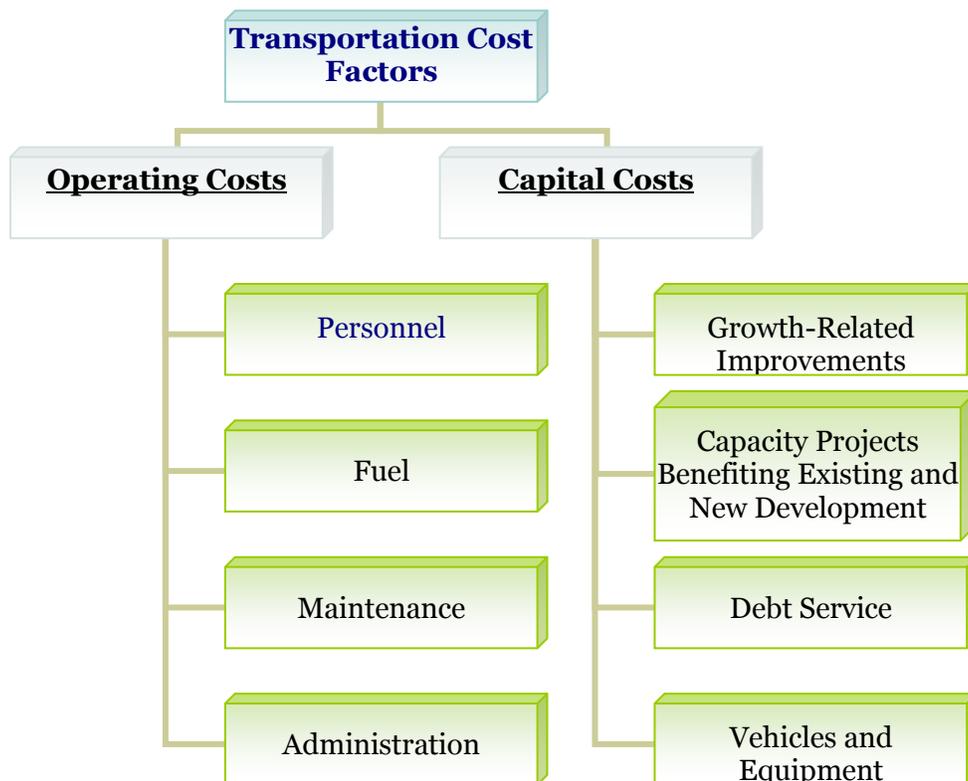
In recent decades, transportation planning has experienced a progression of thought regarding the interaction of transportation and land use development. In the early years of transportation planning, moving vehicles was the major concern of traffic engineers, with limited recognition of the interaction between transportation and land use. The classic, four-step transportation models used by most Metropolitan Planning Organizations emphasized mobility and focused on expanding infrastructure (wider and farther out). Transportation planning accommodated suburban development patterns and tended to function in modal silos. Our “predict and provide” approach, lacked connectivity between modes and land uses, while ignoring social and environmental costs.

Lately, more sustainable transportation systems are emphasizing complete streets, multi-modal improvements, and the important interaction between transportation and land use. As documented in the Transportation Master Plan, the City of Boulder has deliberated and decided on a preferred vision that integrates transportation and land use planning to manage demand, provide multi-modal improvements, and ensure a quality built environment. Although specific policies must be locally determined, general solutions to transportation problems include greater density and mix of uses in urban areas, less suburban development in fringe areas, adding housing close to employment centers, and redevelop/infill (also known as “refill”). Prime locations for refill include shopping centers, commercial strips, and surface parking (also known as “gray fields”). TischlerBise builds upon this theme, suggesting several ways Boulder

can minimize transportation costs through land use policies. Encouraging urban area infill and redevelopment can accommodate the demand for future development while reducing the cost of additional transportation improvements near the city’s fringe.

The evaluation of funding options forces decision-makers to wrestle with a dynamic tension between two competing desires. Various funding options have a strong to weak connection between the source of funds and the demand for public facilities. For instance, area-specific assessments are based on known capital costs in a specific location and are paid by those directly benefiting from the new infrastructure. In contrast, sales tax revenue may be used by the City to fund infrastructure with very little, if any, connection between those paying the tax and the need for capital improvements. Unfortunately the funding options with the closest nexus to the demand for public facilities also have the smallest demand base to bear the cost of the public facilities. Given these relationships, there is typically political pressure to “cast a broad net” and collect a relatively small increment of revenue from a large tax base rather than ask a small group to make a large contribution of funds, which is the case with development excise taxes and impact fees.

A successful transportation funding strategy must consider the variation in transportation costs and the potential funding that may be available for each cost factor. The graphic below summarizes transportation cost factors into two broad categories of operating and capital costs. In urban areas, transportation solutions typically require multi-modal approaches. Various transit options, such as buses and streetcars, all require operating revenue in addition to user charges collected from patrons. Because stable, on-going funding is needed to cover operating costs, revenue sources tied to development activity are not sufficient for operating costs.



FEDERAL AND STATE LEGAL GUIDELINES

Both state and federal courts have recognized the imposition of impact fees on development as a legitimate form of land use regulation, provided the fees meet standards intended to protect against regulatory takings. Land use regulations, development exactions, and impact fees are subject to the Fifth Amendment prohibition on taking of private property for public use without just compensation. To comply with the Fifth Amendment, development regulations must be shown to substantially advance a legitimate governmental interest. In the case of impact fees, that interest is in the protection of public health, safety, and welfare by ensuring development is not detrimental to the quality of essential public services. The means to this end are also important, requiring both procedural and substantive due process. The process followed to receive community input (i.e. stakeholder meetings, work sessions, and public hearings) provides opportunities for comments and refinements to the impact fees.

There is little federal case law specifically dealing with impact fees, although other rulings on other types of exactions (e.g., land dedication requirements) are relevant. In one of the most important exaction cases, the U. S. Supreme Court found that a government agency imposing exactions on development must demonstrate an “essential nexus” between the exaction and the interest being protected (see *Nollan v. California Coastal Commission*, 1987). In a more recent case (*Dolan v. City of Tigard, OR*, 1994), the Court ruled that an exaction also must be “roughly proportional” to the burden created by development. However, the *Dolan* decision appeared to set a higher standard of review for mandatory dedications of land than for monetary exactions such as development impact fees.

There are three reasonable relationship requirements for development impact fees that are closely related to “rational nexus” or “reasonable relationship” requirements enunciated by a number of state courts. Although the term “dual rational nexus” is often used to characterize the standard by which courts evaluate the validity of development impact fees under the U.S. Constitution, we prefer a more rigorous formulation that recognizes three elements: “need,” “benefit,” and “proportionality.” The dual rational nexus test explicitly addresses only the first two, although proportionality is reasonably implied, and was specifically mentioned by the U.S. Supreme Court in the *Dolan* case. Individual elements of the nexus standard are discussed further in the following paragraphs.

All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the capacity of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Development impact fees may be used to recover the cost of development-related facilities, but only to the extent that the need for facilities is a consequence of development that is subject to the fees. The *Nollan* decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle clearly applies to impact fees. In this study, the impact of development on infrastructure needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific facilities, based on applicable level-of-service standards.

The requirement that exactions be proportional to the impacts of development was clearly stated by the U.S. Supreme Court in the *Dolan* case and is logically necessary to establish a proper nexus. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate impact fees for various types of facilities and categories of development. The demand for facilities is measured in terms of relevant and measurable attributes of development (e.g. a typical housing unit’s average weekday vehicle trips).

A sufficient benefit relationship requires that impact fee revenues be segregated from other funds and expended only on the facilities for which the fees were charged. Impact fees must be expended in a timely manner and the facilities funded by the fees must serve the development paying the fees. However, nothing in the U.S. Constitution or the state enabling legislation requires that facilities funded with fee revenues be available *exclusively* to development paying the fees. In other words, benefit may extend to a general area including multiple real estate developments. Procedures for the earmarking and expenditure of fee revenues are discussed near the end of this study. All of these procedural as well as substantive issues are intended to ensure that new development benefits from the impact fees they are required to pay. The authority and procedures to implement impact fees is separate from and complementary to the authority to require improvements as part of subdivision or zoning review.

Impact fees must increase the carrying capacity of the transportation system. Capacity projects include, but are not limited to the addition of travel lanes, intersection improvements (i.e., turning lanes, signalization or roundabouts) and widening roads (e.g. adding paved shoulders and bike lanes). Whenever improvements are made to existing roads, non-impact fee funding will be required to help pay some portion of the cost.

Colorado Impact Fee Enabling Legislation

For local governments, the first step in evaluating funding options for multimodal transportation improvements is to determine basic options and requirements established by state law. Some states have more conservative legal parameters that basically restrict local government to specifically authorized actions. In contrast, “home-rule” states grant localities all powers that are not precluded or preempted by the state constitution or statutes. Local governments in Colorado have home rule power and the State adopted impact fee enabling legislation in 2001. Impact fees are one-time payments imposed on new development that must be used solely to fund growth-related capital projects, typically called “system improvements”. An impact fee represents new growth’s proportionate share of capital facility needs. In contrast to project-level improvements, impact fees fund infrastructure that will benefit multiple development projects, or even the entire service area, as long as there is a reasonable and direct relationship between the new development and the need for the growth-related infrastructure. Project-level improvements, typically specified in a development agreement, are usually limited to complete-street amenities near a proposed development.

According to Colorado Revised Statute 29-20-104.5 impact fees must be legislatively adopted at a level no greater than necessary to defray impacts generally applicable to a broad class of property. The purpose of impact fees is to defray capital costs directly related to proposed development. Other states allow impact fee schedules to include administrative costs related to impact fees and the preparation of capital improvement plans, but this is not specifically authorized in Colorado. Impact fees do have limitations, and should not be regarded as the total solution for infrastructure funding. Rather, they are one component of a comprehensive portfolio to ensure adequate provision of public facilities. Because system improvements are larger and more costly, they may require bond financing and/or funding from other revenue sources. To be funded by impact fees, capital improvements must have a useful life of at least five years. By law, impact fees can only be used for capital improvements, not operating or maintenance costs. Also, development impact fees cannot be used to repair infrastructure or correct an existing deficiency.

Boulder Development Excise Tax Authorization and Policies

The City has collected an excise tax for transportation since the 1980s. In 1998, voters approved a consolidated Development Excise Tax (DET) that included transportation, with a maximum fee schedule of \$5,630.38 for a detached dwelling, \$3,624.10 for an attached dwelling, and \$2.48 per square foot of floor area for nonresidential development. Boulder currently collects the maximum DET from nonresidential development, but only \$2,226.93 per detached dwelling and \$1,650.29 per attached dwelling for 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.

As part of the current work scope to update Boulder's Development Impact Fee (DIF) study, additional parkland needed to accommodate new development could be added to the Parks & Recreation DIF, which would provide significant additional DET funding capacity for transportation. Boulder could also consider a policy change to collect the maximum voter-approved DET rate for residential development, which would increase the DET by \$3,403 per detached dwelling and \$1,973 per attached dwelling. Based on the draft Land Use Assumptions (TischlerBise 01/21/16) collecting the maximum DET from residential development would provide an additional \$6.37 million for transportation improvements over the next ten years.

Special Assessments and Districts

Special assessments may be levied only on properties that realize some direct or "special" benefit from a capital improvement. One feature of a special assessment is that vacant land may be required to pay for transportation improvements. Therefore, revenue is generated from each property owner even before new development or redevelopment occurs. Special assessments are a viable option for multimodal transportation improvements in Boulder. To provide an economic incentive to encourage infill and redevelopment, TischlerBise recommends that the cost of improvements be allocated based on land area.

Special districts are a promising source of supplemental revenue for transportation costs, especially for on-going operations. Special districts have different names that vary by state, such as "Community Facilities District" or Colorado's "Business Improvement District" (see CRS 31-25-1201). The specific requirements and types of special districts vary by state. In general, special districts range from non-profit corporations to quasi-governmental entities with broad powers. Key differences between the types of special districts include their ability to levy property taxes and the composition of the governing board. The basic governance options are election of a board of directors by property owners, appointment of a board by local elected officials, or the local elected officials function as the board of directors.

A Business Improvement District (BID) is created by petition of owners of real property for the purpose of constructing infrastructure and for economic development. There are four possible types of governing bodies (DOLA 2012) but the district boundary is limited to commercial properties, which does not exclude mixed-use development with residential units. A BID has the assessment authority of a SID (discussed below).

A Special Improvement District (SID) may impose assessments for the construction of specific capital improvements (CRS 31-25-501). If 50% of property owners object, the City may not form a SID. For special districts to be successful, landowners must perceive a substantial benefit that exceeds the cost they will be asked to pay. Therefore, a key factor is the cost of improvements compared to the size of the benefit area. Benefits include increase in property value and adaptability of the property to a superior or more profitable use. Cost may be financed through bonds approved at election. The governing body of the municipality determines whether the electors of the district or the electors of the entire municipality will vote on the question of assessment bonds (DOLA 2012). Assessments can be paid over time using installment payments.

LITERATURE REVIEW

Within the past century, the geographic scale of our daily world has grown from the city (Warner 1962 and Jackson 1985), to large agglomerations of urban realms (Vance 1964 and 1977) and even global networks (Sudjic 1992; Taylor and Lang 2005). Unfortunately, many of our transportation planning concepts have not adapted to the increased scale and polycentric nature of current development patterns.

The current transportation governance structure in America is founded on the old Chicago School with its mono-centric concept of workday travel between bedroom communities and the central city. The new paradigm for transportation governance is more polycentric, edgeless and galactic (Hackworth 2005; Lang 2003; Lewis 1995) while acknowledging the tremendous increase in geographic area for commuter sheds.

In keeping with the theme of scale-dependent transportation governance, the following literature review is organized according to the “scale” of classic urban development theories. These sections address early mono-centric theories and more recent polycentric concepts. The literature review concludes with sections on walkable urbanism and impact fee adjustments.

Mono-centric Urban Form

Urban development scholars have noted that firms locate close to markets or resource endowments to maximize profits. The spatial form associated with early mono-centric theories is the pattern of concentric rings described by Burgess (1925). Using a theoretical framework of hierarchal market areas, Christaller (1933) and Losch (1940) explain spatial distribution as a tiered arrangement of central places with their respective spheres of influence. Although the graphic pattern of their market areas appears polycentric, hinterlands are focused on, and organized by, their respective centers.

The benefits of agglomeration help to explain cumulative causation, or self-maintaining feedback, that leads to economic polarization (Myrdal 1957; Hirschman 1958). Agglomeration effects of natural economic spaces are also referred to as growth poles (Perroux, 1950). Land prices and rents tend to rationally sort firms to locations where the advantages of spatial proximity match their willingness to pay for the site (Muth 1961; Mills and Lav 1964; Alonso 1968). Thus we typically find high-rise offices in high-value areas of urban centers. In keeping with this theme, Kaldor (1970) explains how support functions and labor markets gain specialized skills and efficiency.

Weaknesses in mono-centric theories are due to underlying assumptions that have become increasingly outdated. For example, employment is no longer concentrated in the center of the city, households have multiple workers and location is only one variable in complex trade-offs between housing and transportation costs. In addition to these weaknesses, strong cultural forces and changes in transportation technology have transitioned mono-centric cities to polycentric urban forms. The following sections review scholarly contributions (presented in chronological order) that explain the transition from mono-centric to polycentric development.

Hoyt (1939)

As a housing economist, Homer Hoyt provides a valuable analysis of [The Structure and Growth of Residential Neighborhoods in American Cities](#). It is unfortunate that analytical techniques he pioneered became associated with discriminatory “red-lining” practices used by mortgage lenders. Hoyt was innovative in the use of block-level, time-series maps to illustrate dynamic change in urban areas. His book had two major purposes. First, Hoyt demonstrated techniques for mapping and measuring growth in cities. Second, Hoyt used principles of urban growth to

explain spatial patterns. For example, Hoyt understood city shape to be determined primarily by topography and transportation.

By looking at rents, housing attributes and racial segregation, Hoyt concluded the concentric circle theory of urban growth was only a loose generalization. A better understanding was his favored-sector concept that found the highest rents tend to locate in a radial wedge that comprise a quarter or less of the urban area. The “fashionable” residential areas tend to dictate the outward spread of the same pattern. Hoyt documented a connection between high-end jobs and high-end residential, noting the following locational preferences for high end development: 1) seeks higher ground, 2) locates along water fronts not used for industry, 3) grows toward free, open country, 4) gravitates toward the homes of community leaders, 5) high-end retail and services follow high-end residential development, 6) high-end residential follows the fastest transportation routes, 7) favored sector is stable over time.

Warner (1962)

Streetcar Suburbs contains numerous photos and maps to aid the reader’s understanding of the time period. Warner’s story of the development of Boston begins with a brief description of the 1850s seaport town that was small enough to walk across. By the end of his story, the Boston of 1900 had grown to ten square miles and encompassed 31 separate jurisdictions. Surrounding the central business district was the inner ring area of low-income, attached, rental housing. The outer ring suburbs contained middle to upper income residents living in newer, detached and predominantly owner-occupied housing.

Electric streetcars began service in Boston during 1889. A Brookline real estate developer played a prominent role in consolidating transit companies. Warner maintains that the location of streetcar lines were the primary determinants of where suburban development occurred. Decision makers during this period lived in the new suburbs and were sympathetic to the rural ideal. In contrast to current practice, local governments typically constructed the local streets within new suburbs at taxpayer’s expense. Even though there were no zoning laws at this time, market forces effectively guided thousands of individual purchase/construction decisions, resulting in relatively uniform suburbs that sorted themselves out by income level. By 1900, the trolley lines extended about six miles from the central business district, with a typical door-to-door commute time of about one hour. The predominant subdivision pattern consisted of grid streets with deep, narrow lots of 30 to 60 feet. The practice of small scale retail and service businesses “following rooftops” can be traced back to these early streetcar suburbs where commercial strips appeared along the transit lines.

Jackson (1985)

The book Crabgrass Frontier offers an historical perspective on the dynamics of American land use patterns. Jackson maintains that the housing pattern during the electric streetcar period became increasingly dominated by separation, suburban character and racial/economic exclusion. In comparison to western European housing patterns, urbanized areas in America generally lack an “edge” or distinct boundary between town and country. Jackson concludes that American suburbanization has been facilitated by governmental policies.

At the beginning of the electric streetcar era, urban centers in America were primarily walking cities characterized by muscle-powered transportation, small land parcels with buildings close to the street, mixed land use pattern, short distances from home to work (if not at the same location), high status residences near the city center and low income residences on the periphery. Although accelerated by the electric streetcar, the inside-out transformation of cities began slowly with increasing transportation options that emerged from 1815 to 1875. Examples discussed by Jackson include steam ferries, railroads, omnibuses (essentially a large public

carriage pulled by a team of horses) and horsecars. The latter was an improved form of omnibus that traveled on iron rails, thus greatly reducing the rolling resistance. These transportation modes began to interconnect and integrate service starting in the 1850s. The transition to mechanized intra-urban transit began in 1867 when the first cable car system was installed in New York. Cable cars reached their peak in 1890, with systems in 23 cities. The mechanized cable cars were cleaner, more powerful and faster than the horsecars they replaced.

The first successful electric streetcars were used in Richmond, Virginia, beginning in 1887. The common name of “trolley” began to be used because of the electrical connection, or “troller”, that was pulled along behind the streetcar on an overhead wire. Compared to cable cars, electric trolleys were cheaper to construct and operate, they could obtain speeds of 10-20 miles per hour and they offered quicker acceleration. In modern nomenclature, we use the term “light rail” to distinguish electric streetcars from heavy rail systems. The latter run on tracks that are separated from other vehicles and pedestrians (either above or below ground) with power provided from a third rail located near the base of the passenger cars.

Following the example of electric power companies, trolley operators tried to balance the load by having trip attractors at both ends of the streetcar lines. Jackson provided several examples of these “attractions,” such as Coney Island Amusement Park. Even though residential densities decreased during the time of the trolley, nonresidential development was intensified in downtown business districts through the use of high-rise, steel-framed skyscrapers with electric elevators. Radial transit lines were ideally suited to the daily routine of concentrating people within these downtown activity centers.

Streetcar companies experienced exponential growth in their service areas and ridership during the early years of the 20th century, partly due to joint ventures that combined transit operations and real estate development. To provide access for customers, transit lines were proactively constructed to new real estate development projects. Jackson provided several examples of transit and real estate synergy in Oakland, Los Angeles and Washington, DC. An interesting case study in the nation’s capitol was the Chevy Chase Land Company that purchased 1,712 acres, constructed a transit line along Connecticut Avenue to draw upscale homebuyers to their model homes (first subdivision in 1893), created amenities like Rock Creek Park and established minimum construction standards for the new houses.

McShane (1994)

Down the Asphalt Path provides a history of streets and their use, from muscle-powered transportation in walking cities through 1917, when electric trolley use peaked and automobiles were becoming the dominant form of mechanized transportation. The book, based on McShane’s dissertation, claims the automobile triumphed because it was more than just a form of travel. According to McShane, rapid acceptance grew because the motorcar was a status object and symbol of liberation.

In his chapter titled “The Motor Boys Rebuild Cities” McShane discusses the City Beautiful movement that was popular during the 1890s through the 1920s. City planners, architects, engineers and public-works czars (e.g., Robert Moses in mid-century New York) changed the physical appearance of urban areas with Olmstead-style parkways, Burnham-style boulevards and parking garages. McShane explains how major public works projects were made possible by new financial resources, such as the first gas taxes (imposed by Oregon in 1919) and toll facilities.

Polycentric Metropolitan Development

During the automobile age, decreasing transportation costs and the decline in manufacturing (corresponding to a rise of services) led to more polycentric urban forms. The literature on polycentric development is extensive, but the following works provide an adequate understanding of this body of knowledge. Contributions are discussed in chronological order.

Vance (1977)

James Vance offers a concise answer to the question of “Why cities?” stating that some urban areas may be special purpose centers of government, religion or education, but generally their reason for being is economics. In his book *This Scene of Man: Role and Structure of the City in the Geography of Western Civilization*, Vance builds on his urban realm concept, pointing out the large geographic scale of modern cities limits daily interact to smaller realms. The differentiation of roles that occurs among urban realms also occurs for entire metropolitan areas in relationship to the rest of the nation, and even on a global scale for a few “primate” cities. According to Vance, as complexity and choice increases over time, the outlying realms become more independent from the historic core. To help understand the nature and extent of urban realms, he suggests consideration of the following: 1) terrain and topographic barriers, 2) overall size of the metropolis, 3) amount and type of economic activity and 4) geography of transportation within the region. (See page 411) Vance notes that transportation innovation is a main force in determining the scale of cities, but the full exploration of this topic was reserved for another book (Vance 1986).

Davis, Nelson and Dueker (1994)

The authors of the journal article titled “*The New Burbs: The Exurbs and Their Implications for Planning Policy*”, survey new homebuyers in the exurbs of Portland, Oregon, to discover “What types of people are moving to the exurbs?” “Why are these people moving to exurbia?” and “What impact does exurban living have on commuting?” Their results indicate that over half of the exurban migrants are already living in the metro area (i.e. moving out from the city and suburbs), changing only their residential location but with few job changes. The migrants to exurbia were predominantly white-collar workers with higher incomes, two wage earners and few single working adults. Motivations for exurban living were primarily a desire for more open space and rural amenities, with finding the best/most affordable house at the top of the list. Because they typically retained the same job, moving to the exurbs initially results in a longer commute. In the long run, exurban residents may seek out new jobs closer to home, but this question was beyond the scope of the point-in-time analysis.

Lewis (1995)

In a book edited by Emery Castle, Pierce Lewis discusses the “*Urban Invasion of Rural America: Emergence of the Galactic City*.” Lewis describes the galactic city as traditional urban functions in a new spatial pattern with the limited access highway serving as the new main street. After passage of the 1956 Interstate Highway Act, rural landscapes became a locational amenity of the galactic city. As areas transition from rural to exurban, the “value” of farms is no longer connected to agricultural production. Rather, the economic reason for farming is to qualify land for agricultural property tax exemptions until it is ripe for development.

Calthorpe and Fulton (2001)

In *The Regional City*, Peter Calthorpe and William Fulton discuss planning for the end of sprawl. Their work is linked to planners and architects who began realizing in the 1920s the fundamental change in the scale of urban areas due to the automobile and communications

technology. Calthorpe and Fulton use the term “regional city” for the new metropolitan form characterized by car dependency, decentralized service-driven economy and communities of interest rather than communities of place. Most of their recommended policy changes (such as an endorsement of urban growth boundaries) are from a regulatory mindset. The authors use case studies of Portland, Seattle and Salt Lake City to illustrate the advantages of the emerging regional city that will have “transit, affordable housing fairly distributed, environmental preserves, walkable communities, urban reinvestments, and infill development.” (See page 12) The authors call for federal policies and investments to reinforce the regional city concept, pointing out federal dollars are often a major source of funding for transportation construction and operations.

Champion (2001)

The article, “*A Changing Demographic Regime and Evolving Polycentric Urban Regions,*” extends the field of housing demography (Myers, 1990) to the entire urban context. Champion’s exploratory research is helpful in its description of Polycentric Urban Regions (PUR). It summarizes major demographic trends such as longer life expectancy and lower fertility, countered by increased immigration, as the driving force behind population growth (especially in America). The article concludes with a challenge to researchers to “pay more attention to the potentially important role of demographic developments in reshaping the urban region.” (Page 674)

Dear (2002)

Michael Dear compiled book chapters to support the premise that Los Angeles and the “LA School” are successors to the Chicago School. The latter is mono-centric and with a modernistic view that the center organizes the hinterland. In contrast, the new LA School is post modern, post polycentric and regards the hinterland as more important than the historic center. Dear describes a five-county southern California megalopolis with approximately 16 million people and suggest this area is the prototype for future urban development.

Lang (2003)

In the book *Edgeless Cities*, Robert Lang analyzed office development trends and discovered that most new space was not in older central cities or a few “edge cities” as documented by Joel Garreau, but rather in edgeless suburban locations. This finding is important for understanding modern metropolitan development because the dispersion of office jobs to the suburbs expands the sprawling commuter shed. According to Lang, “a revolution in metropolitan form occurred in the past several decades – the regional office hierarchy has been turned upside down.” (See page 56) To explain this point, data on office floor area was tabulated by location (primary downtown, secondary downtown, edge cities or edgeless suburban space) and organized into a typology of metropolitan areas (see Figure 4-17). Examples of metropolitan areas are given for four types: core-dominated, balanced, dispersed and edgeless. Lang adds the findings of other researches on both sprawl and density measures to illustrate the complexity of metropolitan areas when examined from different perspectives.

Hackworth (2005)

“*Emergent Urban Forms or Emergent Post-Modernisms?*” is a complex journal article written for academics, yet it shares some methodological similarities with Hoyt’s earlier (1939) analysis of urban form that was intended for more plebian distribution. Using extensive data sets at the census tract level for each decade from 1970 through 2000, Hackworth creates density gradients and maps to document similar patterns of urban development within the ten largest metropolitan areas in the United States. Rather than a quasi-random pattern, as postulated by postmodern urban theory, Hackworth finds similarities in the revitalization of inner cities,

decline of inner-ring suburbs and continued outward expansion of suburbanization. Hackworth's analysis of population density gradients provides evidence for increasing polycentricity, but not randomness. According to Hackworth, "newer suburbs experienced an almost unqualified valorization." (Page 514) Although not the primary focus of his analysis, wealth accumulation through suburban real estate investment continues to be a powerful variable in explaining emergent urban forms.

Walkable, Bikeable, and Transit-Oriented Urbanism

As documented in the literature review above, a key to understanding urban development is the land use-transportation connection. In contrast to the focus on moving vehicles during the suburban era, recent literature focuses on moving people under the umbrella-concepts of "walkable urbanism" and "transit-oriented development". Transit-oriented development provides opportunities for using market forces to support transit. Real estate development can be used to both attract transit riders and provide financial support for transit (Warner, 1962; Vance, 1986). A viable model for transit-oriented development is the use of public sector eminent domain power to acquire land at transit stations for major real estate development projects (TRB, 2001). Land remains in public ownership but construction and management is carried out by the private sector for a percentage of the profits, with net revenues used as a transit subsidy. Transit subsidies are legitimate, given the provision of public goods, but can be minimized through the use of zonal fares and congestion pricing (Jones, 1985; McKay, 1988). Intense urban development can be achieved by removing parking requirements within the urban service area and integrating public garages into transit oriented development, as done at Boulder Junction (Shoup 2011).

Three significant changes to current tax policies are also needed to make transit work (TRB, 2001). First, the subsidies/externalities of automobile transportation can be at least partially offset by means of a substantial increase in gas taxes (Jones, 1985). Second, property taxes within urban services areas should be determined based on the value of land, not improvements. A land-based tax system discourages under utilization of land, such as surface parking lots and large-lot housing. The third tax policy change needed to make transit work is to eliminate subsidies for owner-occupied housing, currently provided by federal/state income tax deductions for local property taxes and interest paid on home mortgages (Jones, 1985). With these realignments to market forces, along with the growing perception that automobile travel does indeed have limits, perhaps the morphogenesis of transportation will again see walking, biking, and transit thriving in urban areas (Vance, 1986).

Leinberger (2009)

In The Option of Urbanism, Leinberger clarifies important differences between drivable sub-urbanism and walkable urbanism. "Walkable urbanism means that you could satisfy most everyday needs, such as school, shopping, parks, friends, and even employment, within walking distance or transit of one's home. Walkable urbanism as a description combines the basic transportation mode used with the character of the place." A key difference is the perception of growth. Walkable urbanism leads to thriving communities with more businesses, street life, and increasing property values. In contrast, in development in drivable sub-urban areas is often resisted due to more traffic, loss of open space and environmental degradation.

Dunham-Jones and Williamson (2009)

A major contribution of Retrofitting Suburbia is the visual presentation of illustrations, plans, and photographs of case studies that help the reader compare and contrast urban versus suburban form. They call for bottom-up "incremental metropolitanism" whereby underperforming asphalt, abandoned strip centers, and dying regional malls are converted into

“urban places that reduce vehicle miles of travel, expand public space, diversify housing choices, and conserve undeveloped land at the periphery.”

Speck (2012)

Writing from a planner’s perspective, Speck contends that walking is best when useful, safe, comfortable, and interesting. “Walkability is both an end and a means, as well as a measure. While the physical and social rewards of walking are many, walkability is perhaps most useful as it contributes to urban vitality...Get walkability right and so much of the rest will follow.”

In addition to specific “how to” steps, Walkable City provides a strong theory basis for walkability. For example, “The economic advantage that has already begun to accrue to walkable places can be attributed to three key factors. First, for certain segments of the population, chief among them young ‘creatives,’ urban living is simply more appealing...Second, massive demographic shifts occurring right now mean that these pro-urban segments of the population are becoming dominant, creating a spike in demand that is expected to last for decades. Third, the choice to live the walkable life generates considerable savings for these households, and much of these savings are spent locally.”

Nelson (2013)

Nelson’s Reshaping Metropolitan America can be regarded as a market study for the nation, providing demographic analysis and clarify development trends that will likely emerge by 2030. Nelson claims that, “virtually all the demand for new development between 2010 and 2030 can be met by redeveloping existing commercial corridors and centers, including the parking lots that dominate those spaces.” This book provides extensive documentation on dynamic generational changes that will see aging boomers face difficulty in selling their homes to younger generations, with growing evidence that market preferences are not being met by current real estate products. Nelson also analyses nonresidential development, which has a shorter useful life than residential construction and is becoming more efficient in terms of building space per employee. The final chapter lays out an agenda for reshaping metropolitan America, in which Nelson states, “Most local governments finance public facility capital and operating costs through average cost approaches ... the result is that less costly areas pay more than their full cost and more costly areas pay less than theirs.”

Impact Fee Adjustments

Single-family housing is generally located in low-density suburbs where there are few alternatives for travel except by private motor vehicle. Higher housing and job density within urban areas, along with public transit service, facilitates alternative modes of travel. The report *Driving and the Built Environment* found a strong link between development patterns and vehicle miles of travel, encouraging mixing of land uses to reduce vehicle trip rates and reduce trip lengths. Recommended reductions up to 24% for transit service and pedestrian/bicycle friendliness is recommended for nonresidential development in a 2005 study titled *Crediting Low-Traffic Developments* (Nelson/Nygaard Consulting Associates 2005). However, the detailed methodology in this study requires extensive data on average weekday bus stops within a quarter mile of the study area, intersection density, and the completeness of sidewalk and bike networks.

Urban areas have distinct demographic profiles and physical traits that reduce vehicle trips, such as higher internal capture, design characteristics that promote walking and biking, and superior transit service. Holian and Kahn (2012) found that “vibrant downtown areas are associated with lower greenhouse gas emissions from driving and greater public transit use. Seemingly unrelated efforts, such as fighting crime and improving urban schools, actually make

for good environmental policy, as these efforts enable people to live in higher density, more compact neighborhoods, where people are comfortable driving less and walking and using transit more.”

Downtown areas also have more diverse travel options including public transportation and muscle-powered mobility. For example, a study titled *Trip Generation Rates for Urban Infill Land Uses in California* documented auto trips for infill development averaged approximately 50% of the modal share, compared to 90% or higher auto dependency in most metropolitan areas (Daisa and Parker, 2009). Lower dependency on private vehicles reduces the need for street capacity and supports an impact fee reduction for new development.

Urban areas with grid streets and small blocks offer a variety of routes that encourage walking and biking. Interesting streetscapes with human-scale design features encourage people to walk and bike farther in urban areas, while lowering our perception of distance (Jacobs 2001). Also, vehicle congestion in many urban centers tends to minimize travel time differences across modes, especially when public transit is provided in separate rights-of-way or given priority signaling at intersections (Vuchic 2000).

By balancing the number of jobs with nearby housing units, urban centers have the potential for reducing journey-to-work travel. The magnitude of effect is dependent on matching job and housing locations of individual workers, which can be aided by offering a variety of housing styles and price ranges. Inclusionary policies, such as requiring at least 10% affordable housing units within each development, can foster a better jobs-housing balance and reduce the need for street capacity (Nelson, Dawkins and Sanchez 2007).

Large-scale, mixed-use developments exhibit lower vehicular trips because of “internal capture” (i.e., many daily destinations do not require travel outside the study area). For example, a study titled *Internalizing Travel by Mixing Land Uses* examined 20 mixed use communities in South Florida, documenting internal capture rates up to 57 percent with an average of 25 percent. In addition to a percent reduction for the jobs-housing balance, credit can be given for local-serving retail. Urban, transit-oriented development offers coffee shops, restaurants, general retail stores and services that reduce the need for vehicular trips outside the area (Ewing, Dumbaugh and Brown 2003).

Currans and Clifton (2015) developed and tested methods for adjusting ITE trip generation rates for urban settings. They recommend mode-share adjustments based on the number of residents and jobs per acre, which serves as a proxy for urban form. In Boulder, this “activity density” measure can be readily derived using Traffic Analysis Zone (TAZ) data available from Denver Regional Council of Government (DRCOG) or the City of Boulder, divided by the acreage of each TAZ, derived using the City’s Geographic Information System (GIS). Mode share percentages were derived for all trip ends and for general land use categories such as Restaurant, Retail, Office, and Residential.

CASE STUDIES

The following case studies are relevant to the DET/DIF update for the City of Boulder. For ongoing operating costs, a viable funding option is the transportation utility concept discussed below.

Transportation Utilities

While utility charges for water and sewer facilities have been widely used since the beginning of the 20th century, on-going charges for transportation represent a relatively new application of the utility concept (Schoettle and Richardson 1993). The establishment of a utility to address transportation needs will not only allow the City to address the funding of capital improvements but it will also provide revenue to cover the cost of operations and maintenance. Utility charges may address all cost aspects, including debt service, operation, maintenance, repair and replacement of facilities. Unlike impact fees that are imposed on new development, utility revenue is generated from all development, existing and new. Unlike impact fees, which have an unstable revenue stream based solely on the amount and timing of new development, utility charges have a stable and secure revenue stream that enables the issuance of bonds backed by the anticipated utility revenue.

Legal challenges of transportation utilities have a wide spectrum of outcomes. In Florida they were overturned, in Colorado they were upheld but rarely implemented, and in Oregon they are rarely challenged but widely implemented due to the state's enabling legislation (Ewing 1993). The authority for a local government to enact utility fees must come from State enabling legislation, a City charter, or from implied authority (either statutory or legal precedent). Local governments are creatures of the state and possess only such powers as the state confers upon them, subject to addition or diminution at the state's discretion. Courts in Colorado have upheld transportation utility charges as a valid exercise of a city's home rule authority. In *Bloom v. City of Fort Collins* (784 P.2d 304 Colo. 1989) the court upheld the city's imposition of a transportation utility charge as a "special fee", the purpose of which was to meet the overall cost of local street maintenance. The City of Loveland has a similar transportation maintenance fee.

Utility charges should be fair and equitable, as determined by a reasonable cost allocation methodology. Utility charges should not generate excess revenues and thus appear to be a general revenue raising mechanism. The fees should closely reflect the actual costs that the City incurs in providing the service or facility for which the charge has been imposed. For additional information on this topic, please see the City of Boulder's website at the URL below.

<https://bouldercolorado.gov/transportation/transportation-maintenance-fee-faq>

Value Capture

Reconnecting America, a national nonprofit that integrates transportation and community development, prepared a 2008 report for the Federal Transit Administration titled "Capturing the Value of Transit." Major public sector investments in infrastructure, like a transit system, can increase property values and result in valuable development opportunities. "Value capture" is the idea that planners, elected officials, and private sector developers can work together to harness a portion of the value created by infrastructure and use it for additional public improvements.

A well-known example, near the TischlerBise office in the DC metropolitan area, is the Ballston Metro (subway) corridor in Arlington, VA. During the development review process, local governments grant increases in both residential density and nonresidential intensity for improvements to the public realm. Existing residents may welcome additional infill and redevelopment if the fixed-cost of municipal services are allocated to more development units, thus lowering their cost share. Also, developers generally do not object to making public improvements near their project if the additional cost is offset by a corresponding return on investment from greater development potential (Urban Land Institute and National Multi Housing Council 2008).

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APPENDIX: NEXT-GENERATION TRANSPORTATION IMPACT FEES

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American Planning Association

Making Great Communities Happen

PAS Memo — January/February 2015

Next-Generation Transportation Impact Fees

By Dwayne Pierce Guthrie, AICP, and L. Carson Bise, AICP

An increasing number of communities are realizing the fiscal and economic benefits of higher density, mixed-use development that offers alternative modes of transportation. Also, significant national demographics changes, shifting market preferences for walkable urbanism, and the importance of place making are compelling local governments to encourage redevelopment in urban and suburban centers where there is existing infrastructure capacity. Next-generation impact fees are an important implementation mechanism in the smart governance toolbox, particularly transportation impact fees that embrace multi-modal travel options.

Within the context of providing adequate infrastructure to accommodate new development, there is some overlap between development impact fees and other efforts to evaluate the adequacy of public facilities. All these techniques are best understood as relative points along a growth-management continuum (i.e., they are not mutually exclusive). At one end are Adequate Public Facilities Ordinances (APFO) and concurrency evaluations, based on specific development proposals and how they affect nearby infrastructure. At the other end are impact-fee studies that focus on growth-related system improvements needed to accommodate multiple development proposals within an entire service area.

In Florida, the unintended consequences of concurrency coupled with the Great Recession led to a legislative mandate for a viable alternative that was labeled "mobility fees" (Seggerman 2009; Florida Departments of Transportation and Community Affairs 2009). In some respects, mobility fees might be regarded as a simple rebranding, but the name does emphasize multimodal improvements and is consistent with the popular concept of complete streets. Some jurisdictions in Florida have broadened mobility fees to include the up-front payment of transit operating costs, which is an expansion of impact fees that have traditionally been limited to capital costs.

This *PAS Memo* will provide a general overview of impact fees, discuss the importance of examining the spatial relationship between the movement of people and transportation infrastructure needs, and offer ways to improve transportation impact fees so that they are in line with current demographic and market forces. The article concludes with practical steps for putting next-generation impact fees into practice. In this *PAS Memo*, the term "impact fees" is used broadly to cover all one-time payments for growth-related infrastructure, typically collected at the time a building permit is issued.

Background

Transportation impact fees are one-time payments imposed by a local government on new development that must be used solely to fund system improvements. In contrast to project-level improvements, impact fees fund growth-related infrastructure that will benefit multiple development projects, or even the entire community.

Any community considering impact fees should note the following limitations:

- Impact fees can be used only to fund capital infrastructure and cannot be used for ongoing operations, maintenance, or rehabilitation costs.

- Impact fees cannot be deposited in the local government's General Fund. The funds must be accounted for separately in individual accounts and earmarked for the capital expenses for which they were collected.
- Impact fees should not be used to increase infrastructure standards unless there is a funding plan to raise the level of service for existing development in the community.

During the 1980s, impact fees grew increasingly popular, especially in high-growth communities. This proliferation of impact fees was largely due to the decline in federal and state grants available for local governments, along with restrictions on local government revenue options, which led to impact fees becoming a common funding approach for local government capital facilities.

The general steps in a conceptual transportation impact fee formula are illustrated in Figure 1. The first step (see the left box) is to determine an appropriate demand indicator. The demand indicator measures the number of service units for each unit of development. For example, an appropriate indicator of the demand for transportation infrastructure is vehicle miles of travel generated by a development unit (e.g., a detached house).

The second step in the conceptual formula is shown in the middle box below. Infrastructure units per demand unit are typically called Level-Of-Service (LOS) or infrastructure standards. In keeping with the transportation example, a common infrastructure standard is arterial lane miles per vehicle miles of travel.

The third step in the conceptual formula, as illustrated in the right box, is the cost of various infrastructure units. To complete the transportation impact fee example, this part of the formula establishes the cost per lane mile to construct arterial capacity.

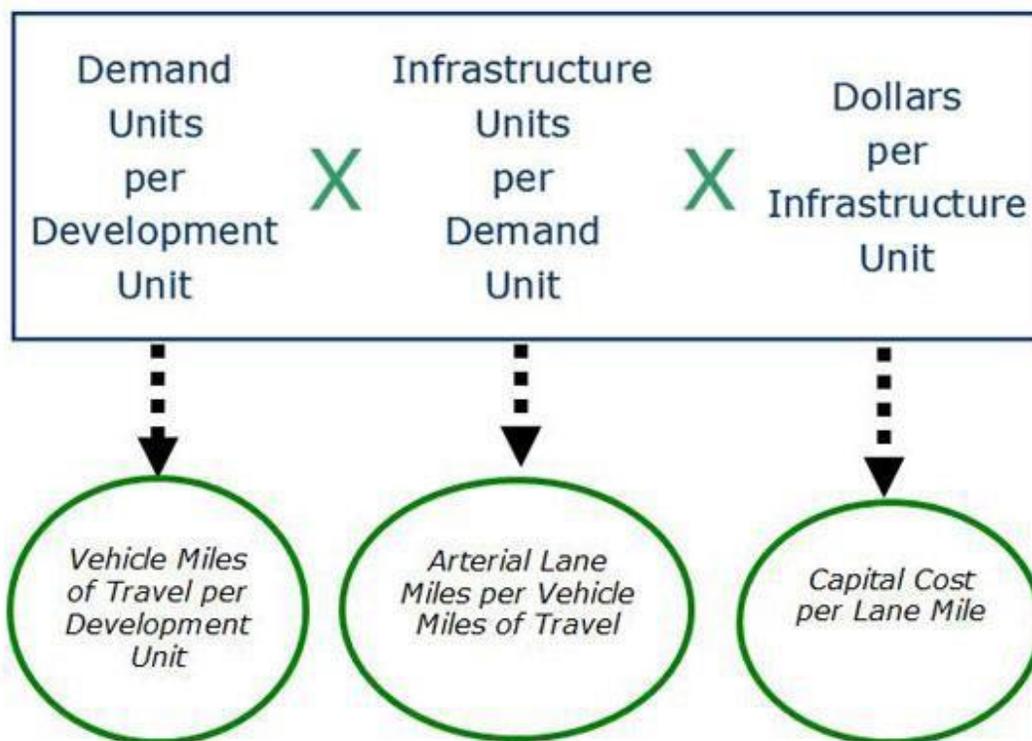


Figure 1. Conceptual Impact Fee Formula. Source: TischlerBise.

Although fee methodologies are tailored to each jurisdiction, there are three basic methods for calculating impact fees:

Plan-Based Impact Fee Calculation — The plan-based method allocates costs for a specified set of future improvements to a specified amount of development. The improvements are identified by a

facility plan. In this method, the total cost of relevant facilities is divided by total demand (e.g., vehicle trips for transportation, persons for parks, etc.) to calculate a cost per unit of demand. The plan-based method is often the most advantageous approach for facilities that require engineering studies, such as roads and utilities.

Cost Recovery Impact Fee Calculation — The rationale for the cost recovery, or buy-in, approach is that new development is paying for its share of the useful life and remaining capacity of facilities from which new growth will benefit. To calculate an impact fee using the cost recovery approach, costs are allocated to the ultimate number of demand units the facility will serve.

Incremental Expansion Impact Fee Calculation — The incremental expansion, or consumption method, documents the current level-of-service (LOS) for public facilities in both quantitative and qualitative measures. The LOS standards are determined in a manner similar to the current replacement cost approach used by property insurance companies. However, in contrast to insurance practices, clients do not use the funds for renewal or replacement of existing facilities. Rather, the jurisdiction uses the impact fee revenue to expand or provide additional facilities as needed to accommodate new development. This method is best suited for public facilities that will be expanded in regular increments, with LOS standards based on current conditions in the community.

"Old-School" vs. "Next-Generation" Transportation Impact Fees

As shown in Figure 2, traditional, or "old-school," transportation impact fees were designed with a suburban worldview and designed to increase capacity for vehicle travel. Old-school impact fees are typically uniform across the entire jurisdiction, are driven by generic formulas, tend to focus on 20-year master plans or build-out guesstimates, and are designed to fund infrastructure that will move vehicles.

In contrast, the basis of "next-generation" transportation impact fees is the recognition that impact fees can actually function like a land-use regulation to help shape development patterns. Planning and policy objectives drive next-generation transportation impact fees, which vary geographically to reflect cost differences, and are intended to move people rather than vehicles alone.

Old School Fees	Next Generation Fees
"pay to play" revenue source	contractual arrangement to build improvements
driven by generic formulas	driven by plans and policy
long range to buildout	Five- to 10-year planning horizon
one and done	ongoing planning and budgeting process
suburban focus	apply transect concept
uniform across jurisdiction	vary geographically
moving vehicles	moving people
vehicle trips	inbound vehicle miles of travel
one size fits all	residential by dwelling size
loose cost analysis and generous credits	specific improvements with a funding strategy

Figure 2. Comparison of "Old-School" and "Next-Generation" Transportation Impact Fees. Source: TischlerBise.

These next sections will describe in more detail the various ways in which old-school transportation impact fees are different from their next-generation counterparts.

Intent

A misconception common to elected officials, staff, and developers is that an impact fee is essentially a financial hurdle whereby the private sector "pays to play." This type of thinking is evident when there is too little concern with the fee methods and too much concern with fee amounts in other jurisdictions. From a legal perspective, an impact fee is not a tax but functions more like a contractual arrangement. In exchange for a fee payment, there is an expectation of receiving growth-related capital improvements.

Old-school transportation fees tended to be driven by generic formulas, but next-generation fees are being driven by plans and policy. In the boom periods during the 1980s, 1990s, and even up to the Great

Recession, many jurisdictions rode the sprawl wave assuming additional arterial lane miles would solve congestion problems. The pendulum has now swung towards "deliberate and decide" that realizes the importance of connecting land use and transportation decisions along with multimodal improvements to solve mobility problems (Schiller and Kenworthy 2010; Moore, Thornes, and Appleyard 2007).

Timeframe

Due to the legal requirement that fee-payers receive a benefit, impact fees have a time dimension. Unlike many planning products that are "one and done," impact fees are an ongoing planning and budgeting function. We cannot simply translate a long-range vision into a build-out plan for capital improvements, with no concern for realistic market absorption rates and the timing of improvements.

In contrast to many planning products that look 20-plus years into the future, next-generation fees look out five to 10 years. For example, the State of Arizona recently amended its enabling legislation for municipalities to require development fees based on an Infrastructure Improvements Plan that is limited to 10 years.

Spatial Thinking and Vehicle Miles of Travel

Old-school transportation fees have a suburban worldview. This perspective is evident in trip generation rates, typically obtained from the Institute of Transportation Engineers (ITE), that are derived from traffic surveys primarily in suburban settings. A useful tool to facilitate spatial thinking is application of the transect concept during the development of next-generation transportation and mobility fees (Duany, Speck, and Lydon 2010). Just as land-use regulations and smart growth techniques need to vary by transect, so must next-generation transportation impact fees be tailored to the characteristics of the area.

In recent years, academic studies have provided extensive literature reviews and summaries of findings that document relationships between smart growth and daily travel demand (Resource Systems Group, Fehr & Peers, Cervero, Kockelman, and Renaissance Planning Group 2012). A nice framework for understanding and applying these principles are the "D" variables summarized in Figure 3 (Ewing, Greenwald, Zhang, Walters, Feldman, Cervero, Frank, and Thomas 2011). The seven variables are demographics, density, diversity, development scale, design, destination accessibility, and distance to transit.

On average, urban residential development has fewer persons and vehicles available per unit, relative to suburban residential development; thus lowering vehicular trip generation rates. Urban settings also provide options for walking, biking, and transit travel, thus lowering the vehicular mode share. Finally, mixed land use (vertical and horizontal), more compact development, and a better jobs-housing balance work together to reduce average trip lengths in urban areas. The evidence is very compelling that next-generation transportation and mobility fees must differentiate between urban and suburban areas.

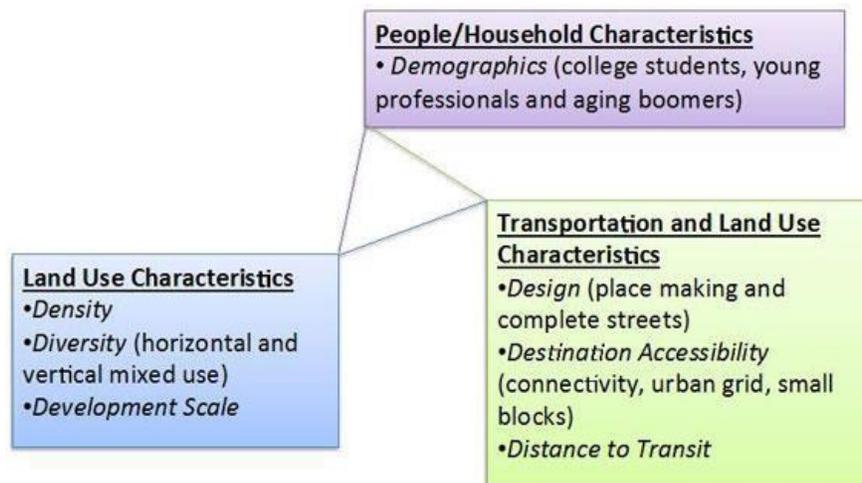


Figure 3. Graphic Summary of "D" Variables. Source: Graphic by TischlerBise

The authors' consulting firm, TischlerBise, first recommended varying fees by geographic area to take into account development context in a 2002 study conducted with the Delaware Department of Transportation for the State of Delaware. The state authorized "graduated" impact fees (i.e. variable amounts by geographic area) as part of the state's Livable Delaware Program, intended to address sprawl, congestion, and other

growth issues. The study documented average trip lengths, revealing that they varied by State Investment Strategy Areas.

Compared with trip generation rates, Vehicle Miles of Travel (VMT is equal to the number of vehicle trips multiplied by trip length, measured in miles) is a superior indicator of travel demand because it considers distance in the allocation of infrastructure costs. Development in rural areas is typically associated with longer trip lengths and higher trip generation, due to a lack of alternative modes of travel. As density and mix of development increase in urban areas, VMT decreases due to shorter trips and more walking, bicycling, and transit use. Allocating infrastructure costs by VMT is beneficial because it provides a better assessment of the demand for transportation infrastructure and it provides the rational nexus for next-generation fees that vary by geographic area. A recent example of this approach is a 2012 Mobility Fee study by Renaissance Planning Group for Kissimmee, Florida. This study demonstrated that shorter trip lengths within urban areas justified lower fees, while longer trips result in higher fees for suburban areas.

Putting Next-Generation Impact Fees into Practice

Based on the differences between old-school and next-generation transportation impact fees (described above), there are a number of practices that planners can use to bring their impact fees up to speed. The sections below describe various strategies that can be used to convert old-school impact fees into next-generation tools.

Better Assessment of Need

Old-school fees are based on moving vehicles and adding lane miles. Often, this approach is not appropriate for urban areas because intersections become the limiting factor and expansion of roads is not practical, nor desirable. Next-generation fees have a broader understanding of mobility needs requiring a combination of multimodal improvements.

In both urban and suburban areas, improvements within the right-of-way should embrace the concept of complete streets to simultaneously provide improvements for all travel modes, including walking, biking, and motorized vehicles. Transit improvements are also possible, but a couple of caveats should be considered. First, there is an important hierarchical distinction between transit facilities within the right-of-way of a street (e.g., local buses) and high-end transit improvements (e.g., bus rapid transit, light or heavy rail systems). The former fit under the complete streets framework, but high-end transit systems should undergo a separate needs analysis and have a unique cost allocation, as discussed further below.

Better Demonstration of Benefit

Old-school fees that derived a generic need for lane miles often fail to demonstrate how fee payers will benefit from future improvements because many local governments do not have a multi-year Capital Improvements Plan and annual capital budgets might lack consistent policy objectives. In contrast, next-generation impact fee studies should list specific improvements (e.g., "construct a roundabout at the intersection of x and y arterials"), so fee payers know what infrastructure will be built in the service area.

The prioritized list of improvements should be in locations experiencing congestion problems due to traffic flowing from a larger travel shed to choke points (conceptually like a funnel that tapers to fit into a bottleneck). Therefore, the location of system improvements is not concerned with accurately forecasting the exact location of specific development projects on the fringe of the travel shed. Improvements to arterials adjacent to specific development projects (e.g., outside travel lane, curb/gutter, and sidewalks) are usually specified in adopted design standards and considered to be project-level improvements.

Better Allocation of Infrastructure Costs

As described above, old-school fees allocated costs according to vehicle trips (either average weekday or PM-peak). Next-generation fees typically work best when using inbound, average-weekday VMT as the service unit. Focusing on trips destined for development within the service area simplifies fee calculations by eliminating complicated origin-destination traffic studies and fee adjustments for pass-through trips.

For high-end transit improvements, such as Bus Rapid Transit (BRT) and heavy rail systems, a better cost-allocation methodology than VMT is to simply use persons and jobs located within the service area. For example, the City of Tempe, Arizona, is currently considering a possible development fee that might provide partial funding for a new streetcar line, with the growth share of planned improvements allocated to persons and jobs in the service area (primarily downtown Tempe and the Arizona State University campus). As shown in Figure 4, work commute trips are a major component of morning and afternoon peak travel demand, and

work trips tend to be longer than other types of trips. Next-generation impact fees in urban areas should allocate high-end transit costs to persons and jobs because the movement of people from their place of residence to their place of work is being accomplished by walking, biking, and transit systems, instead of private vehicles.

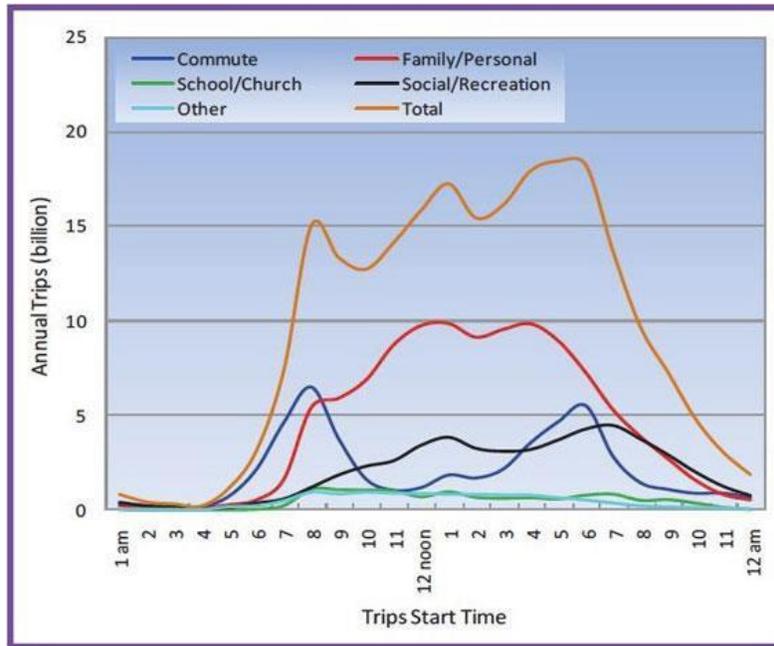


Figure 4. Start Times for Trips by Purpose. Source: *Our Nation's Highways*, U.S. Department of Transportation, 2010.

Better Proportionality for Residential Fees

Impact fees must be proportionate to the demand for infrastructure; thus, a critical first step is documenting demand units or service units per development unit. Because the average number of persons and vehicles available per dwelling unit has a strong and positive correlation to the number of bedrooms per unit, next-generation impact fees should include residential fee schedules that correlate the fee to dwelling size, with larger units charged higher fees. An old-school average fee for all types and sizes of residential development is not proportionate; further, this approach makes small units less affordable, while essentially subsidizing larger units (Nelson, Bowles, Juergensmeyer, and Nicholas 2008).

Rather than use national or state multipliers, 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 Microdata Samples (PUMS). PUMS files, for areas of at least 100,000 persons, can be downloaded from the American Community Survey website. Recent data sets are based on 2010 census geography and enable large metropolitan areas to differentiate urban and suburban service areas, but small communities will be limited to demographic characteristics of the entire Public Use Microdata Area.

An example from a recent TischlerBise study for Roswell, Georgia, will help to illustrate the technique of allocating infrastructure costs based on house size. As shown below, trip generation rates and average persons per housing unit by bedroom range were derived from unweighted PUMS data. Input variables are the three columns highlighted with yellow shading (i.e., persons, vehicles available, and housing units). Footnote 2 provides the formula for deriving trip ends from persons. Footnote 3 provides the formula for deriving trip ends based on vehicles available. Average trip ends from both approaches are divided by housing units to yield the recommended multipliers (i.e., trip ends per housing unit by bedroom range). The recommended multipliers by bedroom range are for all types of housing units, adjusted to control totals for Roswell.

Roswell, Georgia							Recommended Multipliers (4)		
Bedrooms	Persons (1)	Trip Ends (2)	Vehicles Available (1)	Trip Ends (3)	Average Trip Ends	Housing Units (1)	Trip Ends per Housing Unit	Persons per Housing Unit	Housing Mix
0-1	47	162	31	186	174	31	5.12	1.58	6%
2	188	571	128	755	663	108	5.61	1.81	22%
3	291	850	247	1,448	1,149	133	7.89	2.28	27%
4+	666	1,805	499	2,905	2,355	221	9.74	3.14	45%
Total	1,192	3,388	905	5,295	4,342	493	8.05	2.52	

- (1) American Community Survey, Public Use Microdata Sample for GA PUMA 1005 (2012 1-Year unweighted data).
- (2) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2012). For single unit housing (ITE 210), the fitted curve equation is $EXP(0.91*LN(persons)+1.52)$. To approximate the average population in the ITE studies, persons were divided by 2 and the equation result multiplied by 2.
- (3) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2012). For single unit housing (ITE 210), the fitted curve equation is $EXP(0.99*LN(vehicles)+1.81)$. To approximate the average number of vehicles in the ITE studies, vehicles available were divided by 4 and the equation result multiplied by 4.
- (4) Recommended multipliers are scaled to make the average values for PUMA 1005 match the average values for Roswell, derived from American Community Survey 2012, 1-Year data.

Figure 5. Example of Residential Service Units by Bedroom Range, Roswell, Georgia. Source: TischlerBise.

Next-generation fees based on size of dwelling are generally easier to administer when expressed in square feet of finished living space for all types of housing. Basing fees on square footage rather than the number of bedrooms eliminates the need for criteria to make administrative decisions on whether a room qualifies as a bedroom. To translate dwelling size by number of bedrooms into square footage, data on the floor area of dwellings can often be obtained from local sources, like the local government's GIS or a parcel database used for property tax assessments. At the census division level, the U.S. Census Bureau's 2013 Survey of Construction microdata is a good source to obtain the average size of single-family units (both detached and attached) by bedroom range. The Census Bureau also publishes summary tables on the size of multifamily housing units constructed in 2013 by census region.

To continue with the Roswell example, demographic data derived from U.S. Census Bureau PUMS files was combined with floor area averages obtained from Roswell building permits (3 and 4+ bedroom units) and Census Bureau construction surveys (0-1 and 2 bedroom units). Average floor area and weekday vehicle trip ends, by bedroom range, are plotted in the graph below, with a logarithmic trend line derived from four actual averages for the area that includes Roswell. The trend line formula was then used to derive estimated trip ends by dwelling unit size, in 500-square-foot intervals. The average-size three-bedroom unit has a fitted-curve value of 8.65 vehicle trip ends on an average weekday. In comparison, a very small dwelling (1,000 square feet or less) has a fitted-curve value of 4.26 trip ends and would pay 49 percent of the transportation impact fee paid by an average-size unit. At the other end of the spectrum, a large unit (4,001 square feet or more) with a value of 9.54 trip ends would pay 110 percent of the transportation impact fee paid by an average size unit.

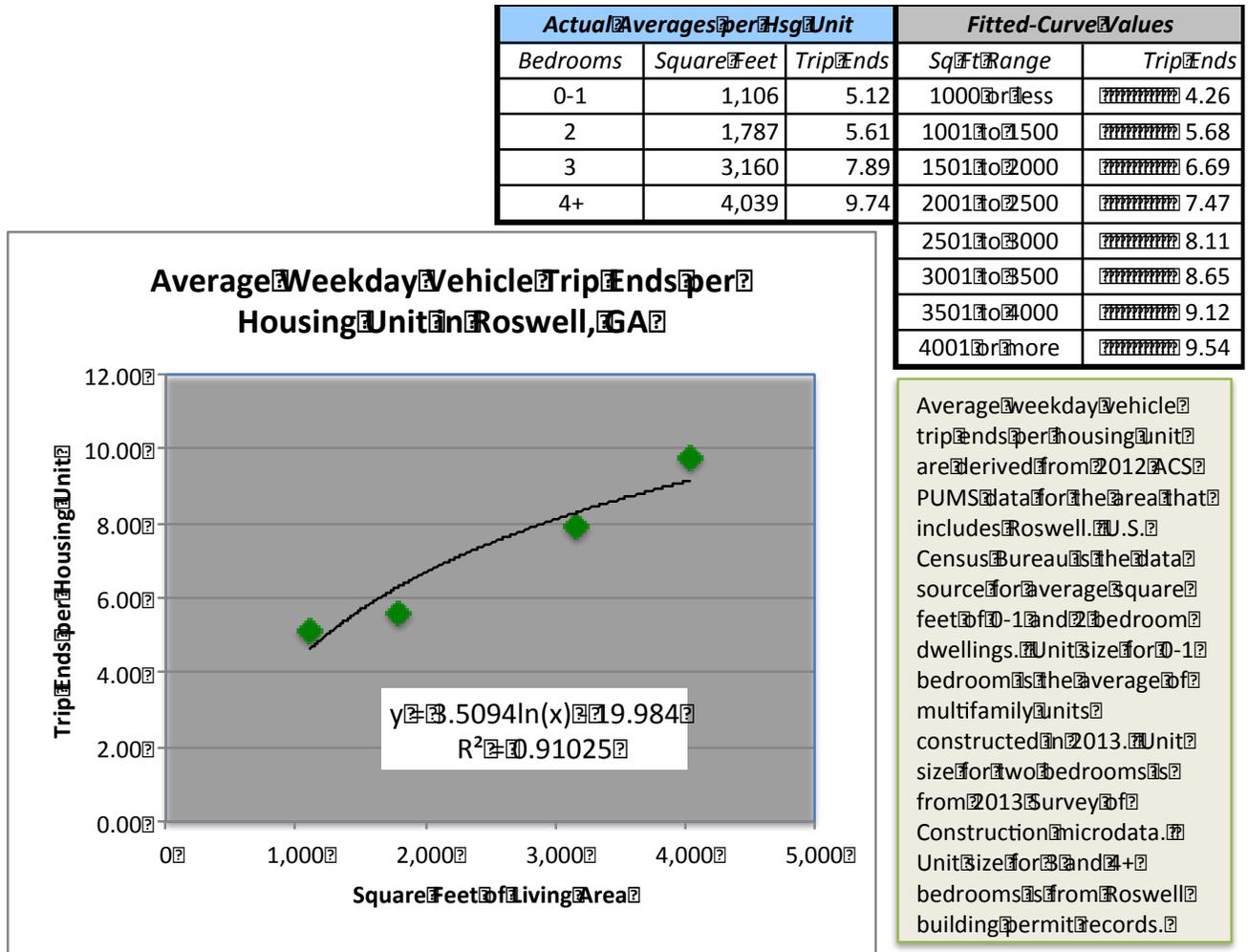


Figure 6. Example of Trip Ends by Residential Floor Area. Source: TischlerBise.

It is important to note that the proposed fees by dwelling size do not increase in a linear manner. In other words, a unit in the largest size range (4,001 or more square feet) would pay a fee that is only roughly twice as much as a unit in the smallest size range (1,000 square feet or less), even though the floor area is at least four times larger. Some older impact fee studies simply recommended an average fee per square foot of dwelling. However, a dwelling with 6,000 square feet of living space is not likely to have six times the number of vehicle trips as a dwelling with 1,000 square feet of living space. This is an important consideration to avoid overcharging fees.

Specific Improvements and Funding Strategy

The "need" for transportation system improvements (e.g., additional arterial lane miles, roundabouts, or traffic signals) is more difficult to determine than improvements to utility systems. The key difference is that water and sewer utilities are closed systems, but a street network is an open system. The demand for street capacity can be influenced by development units outside the service area and by what is known as "triple convergence" (Downs 1992). In essence, this concept acknowledges that transportation capacity is consumed by drivers changing their time, route, and mode of travel, with the latter being more significant in urban areas. Also, "traffic congestion" is a relative and more subjective measure that is closely linked to the concept of "willingness to pay." In other words, planners should be asking, "What improvements are we willing to fund?" rather than compiling wish lists of what people want without any consideration of fiscal realities.

Given this complexity, communities should embrace the willingness-to-pay concept and strive to agree on a list of multimodal improvements that translates into fees deemed appropriate for their communities. If officials, with input from staff and stakeholders, determine the proposed fees are too high, lower-priority projects can be deleted, or the growth share to be funded by impact fees can be reduced, assuming additional funding is available from other revenue sources. An example of using other revenue sources to reduce fees is the recent update to Pasco County's Mobility Fees (Tindale-Oliver & Associates 2014).

To ensure planned improvements are financially feasible, it is a good idea to compare projected annual impact fee revenue to the timing of planned expenditures, which is commonly known as a cash flow analysis. Also, a good quality control measure is to compare cumulative impact fee revenue over the planning horizon to the growth cost of planned improvements. If revenues and expenditures vary significantly, there might be a problem in the analysis that warrants additional work.

Incorporating Credits in Impact Fee Calculations

Regardless of the methodology used, a consideration of "credits," or possible fee reductions, is integral to the development of next-generation impact fees. There are two types of "credits" with specific characteristics, both of which should be addressed in next-generation fee studies and ordinances.

The first is a site-specific credit, or developer reimbursement, for dedication of land or construction of a system improvement that was included in the fee calculations. This type of credit is addressed in the administration and implementation of the impact fee program. If a developer constructs a system improvement included in the fee calculations, it will be necessary to either reimburse the developer or provide a credit to reduce the fees for that particular development. The latter option is more difficult to administer because it creates unique fees for specific geographic areas. It is usually better for a jurisdiction to establish a reimbursement agreement with the developer that constructs a system improvement. The reimbursement agreement should be limited to a payback period of no more than 10 years and the jurisdiction should not pay interest on the outstanding balance. The developer must provide sufficient documentation of the actual cost incurred for the system improvement. The jurisdiction should only agree to pay the lesser of the actual construction cost or the estimated cost used in the fee analysis. Reimbursement agreements should only obligate a jurisdiction to reimburse developers annually from actual fee collections in the service area. The reimbursement percentage for a particular improvement can be derived from the list of transportation improvements used to derive the fee schedule (discussed above). Project-level improvements, such as turn lanes for safe access to a residential subdivision, are specified as part of the development approval process and are **not** eligible for credits against impact fees.

The second type of credit is due to possible double-payment situations, which could occur when other revenues may contribute to the capital costs of infrastructure funded by the impact fee. This revenue credit is integrated into the impact fee calculation, thus reducing the fee amount. Because old-school fees tended to be driven by generic formulas, the cost analysis was often generalized and included contingencies. To help avoid legal challenges, it was common to provide generous adjustments to compensate for the loose cost analysis. The most common was the gas tax credit often found in old-school fee calculations. Gas tax revenue has been declining over time, especially when expressed in constant dollars and normalized to account for the increase in population and jobs. Because most jurisdictions are struggling just to maintain their existing network of streets with decreasing gas tax revenue, jurisdictions can acknowledge the fiscal reality that gas tax revenue will not be used to expand capacity of roadways. Therefore, the gas tax credit is probably no longer applicable to next-generation fees in most jurisdictions.

Next Steps for Planners

This *PAS Memo* has discussed a number of elements that planners should consider in evaluating their current impact fees to determine whether they are encouraging the type of development desired by their jurisdictions. These actions are summarized below along with practical suggestions to help local governments transition to next-generation impact fees.

- Consider broader mobility needs and multimodal infrastructure when determining what improvements may be funded by impact fees.
- Adopt "complete streets" policies and design standards to codify the need to provide improvements for all travel modes.
- List specific capital improvements so fee payers can evaluate the benefit from infrastructure to be built in the service area.

Attachment D - Legal Guidelines and Best Practices for Multimodal Transportation Funding

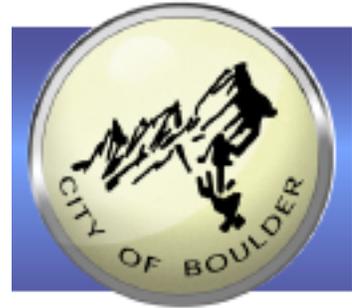
- Consider allocating the growth share of arterial street improvements to inbound, average-weekday VMT, rather than simply using vehicle trip ends.
- For high-end transit improvements, allocate costs to persons and jobs located within the service area.
- Establish residential fee schedules by dwelling size (typically measured by square feet of finished living space).
- Embrace the willingness-to-pay concept and propose a level of improvements that translates into multi-modal fees deemed appropriate for your community.
- Vary fees by urban and suburban service areas.
- Set up a liaison group of developers and builders to get input on market assumptions and quantitative inputs like local costs.
- Avoid stumbling blocks and pitfalls, like rolling out the updated fees prior to an upcoming local election.
- Work with champions among staff, elected officials, and business leaders.

About the Authors

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DRAFT

2016 Transportation Development Impact Fee Study

Prepared for:
City of Boulder, Colorado

April 4, 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 assumes compliance 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.

CURRENT TRANSPORTATION DET

The City of Boulder currently collects a Development Excise Tax (DET), with a portion of the funds used for transportation capital improvements. In 1998, voters approved a maximum consolidated DET schedule that was significantly less than the proposed transportation DET schedule supported by a study completed in 1996. Boulder's DET is a one-time revenue imposed on new construction. As shown in Figure 1, the City of Boulder currently collects a Transportation DET of \$2.48 per square foot of nonresidential floor area and a Transportation DET for each additional dwelling (approximately \$2,227 per detached and \$1,650 per attached unit). Applying these rates to the projected increase in development within Boulder over the next ten years (see Land Use Assumptions by TischlerBise) would yield approximately \$11.5 million in Transportation DET revenue, with residential units contributing 43% of the ten year total and 57% from nonresidential development.

Figure 1: Transportation DET Rates Currently Collected

Tax Name	Nonresidential	Residential	
	Per Square Foot	Per Detached Dwelling Unit	Per Attached Dwelling Unit or Mobile Home
Development Excise Tax			
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
Housing Excise Tax	\$0.51	\$0.23 per square foot	\$0.23 per square foot

The right column in Figure 2 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 is increasing the transportation DET for residential units to the maximum, voter-approved rates.

Figure 2: 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

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 update uses growth shares to provide an up-front reduction in total costs. Also, the 2016 update 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

After evaluating the 1996 DET study, that emphasized moving vehicles and allocated costs accordingly, TischlerBise concluded the current Transportation DET rate schedule is not proportionate by type of development and does not comply with Colorado’s impact fee enabling legislation. It is not possible to simply update the 20-year old DET methodology with current data and comply with more rigorous impact fee standards that were enacted in 2001. 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 in Figure 4 are expected to yield approximately \$9.9 million over the next ten years, which will cover the growth cost of planned transportation enhancements. In comparison, the current Transportation DET rate schedule would yield approximately \$11.5 million over the next ten years. Also, the current Transportation DET rate schedule would obtain approximately 43% of future revenue from residential development and 57% from nonresidential development. In contrast, the proposed 2016 DIF methodology expects to obtain approximately 52% of future Transportation DIF revenue from residential development and 48% from nonresidential development. 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 switching from the current Transportation DET approach, based on two housing types, to 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 4. 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 3 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 and cost allocation methods. The key difference between the two is the magnitude of cost, with the DET based on a more extensive set of growth-related transportation improvements.

Figure 3: 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>Walk / Bike / Transit</i>	Functional Population and Jobs	Citywide	Sidewalks, Multi-Use Paths, Bike Lanes and Bus Stops/Pullouts
<i>Streets</i>	Vehicle Miles of Travel	Citywide	Arterial/Collector Capacity and Intersection Improvements

Figure 4 shows the proposed 2016 Transportation DIF schedule, along with current Transportation DET rates. For residential development, updated 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.

The proposed total DIF is a combination of two cost components and different cost allocation methods. The cost of “Bus Bike Walk” capital improvements was allocated to the increase in population and jobs within Boulder. The cost of street improvements was allocated to the projected increase in vehicle miles of travel. Details regarding both cost allocation methods are provided in the middle section of this report.

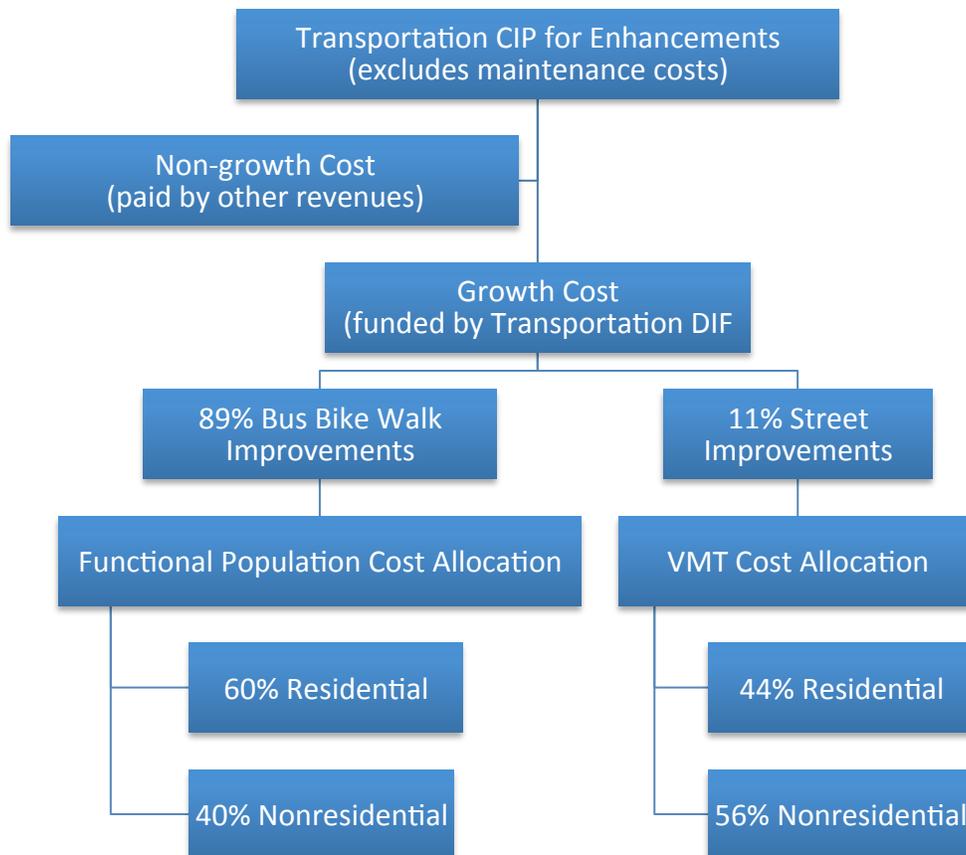
Figure 4: Proposed 2016 Transportation DIF Schedule

2016 Transportation DIF	<i>Development Unit</i>	<i>Bus Bike Walk</i>	<i>Streets</i>	<i>Proposed Transportation DIF</i>	<i>Current Transportation DET</i>	<i>Increase/ Decrease</i>	<i>Percent Change</i>
Residential (by square feet of finished living space)							
800 or less	Dwelling Unit	\$875	\$97	\$972	\$1,650	-\$678	-41%
801 to 1200	Dwelling Unit	\$1,346	\$153	\$1,499	\$1,650	-\$151	-9%
1201 to 1600	Dwelling Unit	\$1,638	\$188	\$1,826	\$1,939	-\$113	-6%
1601 to 2200	Dwelling Unit	\$1,885	\$217	\$2,102	\$2,227	-\$125	-6%
2201 or more	Dwelling Unit	\$2,117	\$245	\$2,362	\$2,227	\$135	6%
Nonresidential							
Retail / Restaurant	Square Foot	\$1.35	\$0.54	\$1.89	\$2.48	-\$0.59	-24%
Office	Square Foot	\$1.94	\$0.22	\$2.16	\$2.48	-\$0.32	-13%
Light Industrial	Square Foot	\$1.25	\$0.14	\$1.39	\$2.48	-\$1.09	-44%
Warehousing	Square Foot	\$0.50	\$0.07	\$0.57	\$2.48	-\$1.91	-77%
Institutional	Square Foot	\$0.44	\$0.19	\$0.63	\$2.48	-\$1.85	-75%
Hospital	Square Foot	\$1.58	\$0.27	\$1.85	\$2.48	-\$0.63	-25%
Nursing Home / Assisted Living	Bed	\$453	\$55	\$508			
Lodging	Room	\$307	\$165	\$472			

MULTIMODAL TRANSPORTATION DIF

The 2016 Transportation DIF study uses a plan-based methodology that includes improvements for all modes of travel. Figure T1 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 DIF revenue, with non-growth costs funded by other revenues. Staff determined that 89% of enhancement projects are for Bus Bike Walk facilities (primarily moving people), with the remaining 11% for street improvements (i.e. primarily moving vehicles). 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.

Figure T1: 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 T2 provides a reasonable means of quantifying the impact of growth on transportation facilities.

Figure T2: 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

As shown in Figure T3, the ten-year growth cost of planned enhancement projects is approximately \$10.58 million. For most transportation projects listed below, the growth share to be funded by DIF revenue is 9.9% of the local cost, which is the total project cost less any grant funding. The 9.9% growth share is based on the projected increase in person trips to and from Boulder from 2010 to 2035, as discussed above.

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.

The list of improvements in Figure T3 excludes three projects proposed by staff but not recommended by TischlerBise due to the requirement in Colorado's enabling legislation that fees must be limited to impacts caused by, and directly related to proposed development. Boulder's current practice is to derive citywide fees and limit fee expenditures to projects that will benefit all new development. To avoid the need for multiple service areas and fee schedules, the following projects in the University Hill area were excluded: 1) street improvements for events in the commercial district, and 2) lighting within the residential area. The final project excluded was for pedestrian access and lighting improvements to Chautauqua Park, which could possibly be funded using park impact fees.

Figure T3: Growth Cost of Transportation Enhancements

CIP#	Project Location	Description	Ten-Year Cost (less grants)	Enhancement Cost Due To Growth		Growth Share of Local Cost	
				FY16-25 Walk/Bike/Transit	FY16-25 Streets		
310TR052OG	Citywide Funds 2800 & 2810	TIP local match & TMP implementation	\$18,363,000	\$1,642,800	\$182,500	9.9%	
310TR003OC	Citywide	Major capital reconstruction and enhancements	\$4,800,000	\$436,900	\$39,700	9.9%	
310TR773OC	Citywide	Pedestrian facilities repair/replacement/ADA and enhancements	\$3,774,000	\$375,500	\$0	9.9%	
310TR153NG	30th St & Colorado*	Local share of bike/ped underpass (total cost = \$7,500,000)	\$3,150,000	\$588,500	\$149,600	23.4%	
310TR156NC	Boulder Creek & Arapahoe (15th to Broadway)	Reconstruction and multimodal improvements	\$2,500,000	\$248,300	\$0	9.9%	
3102ABCK03	Boulder Creek - Arapahoe & 13th	Underpass	\$2,365,000	\$234,100	\$0	9.9%	
310TR152NG	Broadway - Violet to Hwy 36*	Local share of reconstruction & multimodal improvements (total cost = \$7,050,000)	\$1,825,000	\$661,000	\$34,800	38.1%	
310TR692OC	Citywide	Bikeway facilities enhancements	\$1,350,000	\$133,700	\$0	9.9%	
3102ABCK01	Boulder Creek	Path lighting	\$979,680	\$97,000	\$0	9.9%	
310TR743NC	28th St - Valmont to Iris	Multimodal improvements	\$860,000	\$76,900	\$8,500	9.9%	
3102ABCK02	Boulder Creek	Path improvements	\$770,000	\$76,200	\$0	9.9%	
310TR112OC	Citywide	Pedestrian facilities enhancements	\$750,000	\$74,300	\$0	9.9%	
310TR692OC	Citywide	Tributary greenways	\$585,000	\$57,900	\$0	9.9%	
310BJ002NC	Bluff & 30th St	Traffic signal	\$532,000	\$10,500	\$42,100	9.9%	
310TD019NC	28th St - Baseline to Iris	Complete street elements; turn lanes; widen bridge	\$470,000	\$42,000	\$4,700	9.9%	
310TD004OC	Citywide Funds 2810 & 3500	Development coordination	\$450,000	\$337,500	\$112,500	100.0%	
310TR157NG	Citywide	Bldr Co/City Joint TIP Scoping & Prioritization	\$289,000	\$289,000	\$0	100.0%	
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%	
310TR154NG	19th - Norwood to Upland*	Local share of reconstruction & walk/bike improvements (total cost = \$257,000)	\$157,000	\$16,800	\$8,400	16.1%	
310TR480NC	East Arapahoe	Transportation Corridor Study	\$100,000	\$75,000	\$25,000	100.0%	
310TR151NG	Boulder Slough - 30th St to Pearl*	Local share of multiuse path (total cost = \$480,000)	\$96,000	\$47,500	\$0	49.5%	
	Citywide	Additional improvements in Years 7-10	\$29,710,500	\$3,783,600	\$449,100	14.2%	
* Projects with grant funding; enhancers			Ten-Year Total =>	\$74,276,180	\$9,459,000	\$1,122,700	14.2%
cost growth share is approximately 5.9% of total cost					89%	11%	
				\$10,581,700	<= Ten Year Total to be funded by DIF		
				\$63,694,480	<= 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 T4, 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. 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 T4: Functional Population

Boulder Functional Population Analysis				<i>Demand</i>	<i>Person</i>
<i>Service Units in 2015</i>				<i>Hours/Day</i>	<i>Hours</i>
Nonresidential					
	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**	33,690		10	336,900
	Jobs Held By Non-residents**	54,969	<= 56% of jobs	10	549,690
	Non-working Residents	51,054		4	204,216
					Nonresidential Subtotal
					1,189,316
					Nonresidential Share =>
					40%
Residential					
	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
					Residential Subtotal
					1,773,636
					Residential Share =>
					60%
					TOTAL
					2,962,952

* 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 T3) Bus Bike Walk improvements account for 89% of growth costs, or approximately \$9.46 million over the next ten years. As shown in Figure T5, 60% of this amount, divided by the projected increase in Boulder’s population over the next ten years, yields a capital cost of \$748 per additional resident. The Bus Bike Walk component of the 2016 DIF for transportation improvements is equal to the cost per person multiplied by the average number of persons per dwelling, by size range (i.e. square feet of finished living space). For example, an apartment building with small units (800 or less square feet) would have to pay \$748 per person multiplied by an average of 1.17 persons per dwelling, or \$875 per dwelling unit (rounded). The DIF for nonresidential development is equal to the capital cost per additional job, multiplied by the average number of jobs per development unit, for each type of development.

Figure T5: Bus Bike Walk Improvements Allocated to Population & Jobs

Ten Year Growth Cost of Bus Bike Walk Improvements =>		\$9,459,000	
Cost Range and Allocation per Service Unit			
	<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	\$748
Boulder Jobs	40%	7,013	\$539
	<i>2015</i>	<i>2025</i>	
Population	104,808	112,388	
Jobs	98,510	105,523	
Ten Year Increase in Population plus Jobs		7.2%	

Residential

<i>Square Feet of Living Space</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Proposed Bus Bike Walk Component</i>
800 or less	Dwelling Unit	1.17	\$875
801 to 1200	Dwelling Unit	1.80	\$1,346
1201 to 1600	Dwelling Unit	2.19	\$1,638
1601 to 2200	Dwelling Unit	2.52	\$1,885
2201 or more	Dwelling Unit	2.83	\$2,117

Nonresidential

<i>Type</i>	<i>Development Unit</i>	<i>Jobs per Development Unit</i>	<i>Proposed Bus Bike Walk Component</i>
Retail / Restaurant	Sq Ft of Floor Area	0.00251	\$1.35
Office	Sq Ft of Floor Area	0.00359	\$1.94
Light Industrial	Sq Ft of Floor Area	0.00231	\$1.25
Warehousing	Sq Ft of Floor Area	0.00092	\$0.50
Institutional	Sq Ft of Floor Area	0.00081	\$0.44
Hospital	Sq Ft of Floor Area	0.00294	\$1.58
Nursing Home / Assisted Living	Bed	0.84	\$453
Lodging	Room	0.57	\$307

VEHICLE MILES OF TRAVEL

Figure T3 above indicates street improvements to provide additional vehicular capacity account for 11% 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 length¹. 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 9th 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 T6, 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

¹ 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 T6: 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	1.13
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	
1-Residential Total			14,327		3,342	4.3	
2-Retail/Restaurant	Shopping	8.4%	1,533	11.1%	536	2.9	0.68
2-Retail/Restaurant	Eat a Meal	4.0%	730	7.1%	343	2.1	
2-Retail/Restaurant Total			2,263		879	2.6	
3-Other Nonresidential	Personal Business	5.7%	1,040	6.3%	304	3.4	0.72
3-Other Nonresidential	School	3.4%	621	6.3%	304	2.0	
3-Other Nonresidential Total			1,661		609	2.7	
TOTAL			100.0%	18,251	100.0%	4,830	3.8

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 T7. 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 T7: 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 the streets portion of Boulder’s 2016 Transportation DIF schedule are shown in Figure T8. 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 (rounded) 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 T8: 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
800 or less	Dwelling Unit	3.94	51%	55.5%	113%	4.79	\$97
801 to 1200	Dwelling Unit	6.23	51%	55.5%	113%	7.57	\$153
1201 to 1600	Dwelling Unit	7.65	51%	55.5%	113%	9.30	\$188
1601 to 2200	Dwelling Unit	8.85	51%	55.5%	113%	10.76	\$217
2201 or more	Dwelling Unit	9.99	51%	55.5%	113%	12.14	\$245

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	\$0.54
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	\$0.19
Hospital	Sq Ft	0.01322	50%	73.2%	72%	0.01324	\$0.27
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 T9, 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 T9 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 pay approximately 52% of the growth cost for transportation system improvement, with nonresidential development covering the remaining 48%.

Figure T9: Projected Transportation DIF Revenue

		<i>Residential</i>	<i>Light Industrial</i>	<i>Retail</i>	<i>Office & Other Services</i>
		\$1,826	\$1.39	\$1.89	\$2.16
<i>Year</i>		per housing unit	per 1000 Sq Ft	per 1000 Sq Ft	per 1000 Sq Ft
		<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 =>		\$5,145,000	\$1,349,000	\$1,152,000	\$2,282,000
		Total Projected Transportation DIF Revenue (rounded) =>			\$9,928,000
Res Share =>		52%		Nonres Share => 48%	

APPENDIX A: LAND USE ASSUMPTIONS RELATED TO TRANSPORTATION

Most of the demographic data for Boulder’s 2016 transportation studies may be found in memo dated January 27, 2016 regarding “Draft 3 Land Use Assumptions for Impact Fee/Excise Tax Studies.” 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	2.14		4%
Group Quarters	8,674						
TOTAL	103,163						

* 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	1.55

(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

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)	Unadjusted VehAvl/HU	Adjusted VehAvl/HU (2)
0-1	114	89	89	19%	1.28	1.31	1.00	0.95
2	220	162	121	25%	1.82	1.86	1.34	1.27
3	296	236	134	28%	2.21	2.26	1.76	1.66
4+	372	300	135	28%	2.76	2.83	2.22	2.10
Total	1,002	787	479		2.09	2.14	1.64	1.55

National Averages According to ITE						
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	8.17		2.92	1.45

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

(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.

AWVTE per Dwelling by House Type						
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)	Boulder Persons/HU	Boulder VehAvl/HU	
All Other	5.15	8.11	6.63	1.77	1.45	
210 SFD	7.22	9.11	8.17	2.48	1.63	
All Types	6.23	8.66	7.45	2.14	1.55	

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, across five size thresholds. TischlerBise does not recommend average fees for all house sizes because it makes small units less affordable and essentially subsidizes larger units.

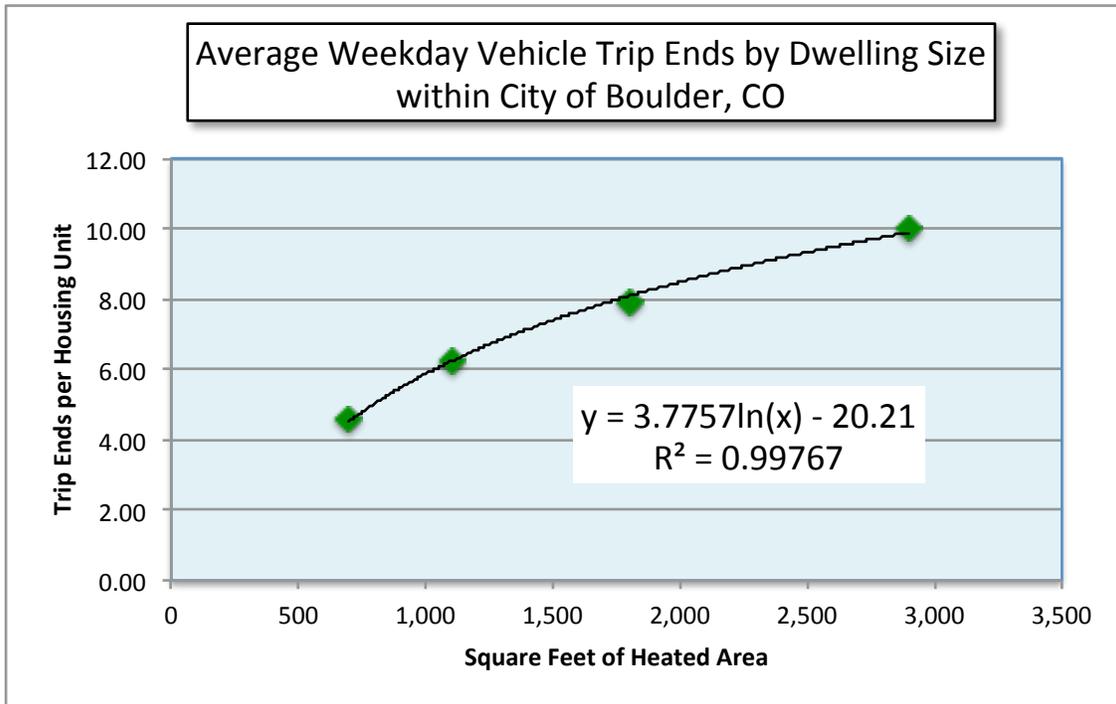
Apartment units will generally be in the three smallest size thresholds, with one-bedroom units being 800 square feet or less, two-bedroom units ranging from 801 to 1200 square feet, and a few three-bedroom apartments being at least 1201 square feet.

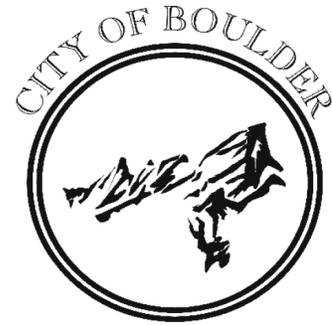
Single-unit dwellings (both detached and attached) will have floor areas that correspond to the three largest size thresholds. Smaller units will likely have 1201 to 1600 square feet of living space. The most common single-unit dwelling will have three bedrooms and likely range from 1601 to 2200 square feet. All units with 2201 or more square feet of living space are assumed to generate a maximum 9.99 AWWTE per dwelling.

Figure A4: Vehicle Trips by Dwelling Size

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Sq Ft Range	Trip Ends
0-1	700	4.56	800 or less	3.94
2	1,100	6.26	801 to 1200	6.23
3	1,800	7.93	1201 to 1600	7.65
4+	2,900	9.99	1601 to 2200	8.85
			2201 or more	9.99

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).





DRAFT

2016 Transportation Development Excise Tax Study

Prepared for:
City of Boulder, Colorado

April 4, 2016



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EXECUTIVE SUMMARY

As part of the 2016 work scope for the City of Boulder, TischlerBise will prepare three products to address the funding of transportation facilities and services. The first product is a Transportation Development Impact Fee (DIF) study that satisfies requirements of Colorado's impact fee enabling legislation. Given the impact fee requirement to quantify the reasonable impacts caused by, and directly related to, proposed development, the DIF study has a reduced growth cost that is less than the broader set of growth-related improvements used in the Development Excise Tax (DET) study. A future 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. As part of the current work scope to update Boulder's DIF study, additional parkland needed to accommodate new development could be added to the Parks & Recreation DIF, which would provide significant additional DET funding capacity for transportation.

CURRENT TRANSPORTATION DET

As shown in Figure 1, 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 (see Land Use Assumptions by TischlerBise) 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 1: Transportation DET Rates Currently Collected

Tax Name	Nonresidential	Residential	
	Per Square Foot	Per Detached Dwelling Unit	Per Attached Dwelling Unit or Mobile Home
Development Excise Tax			
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
Housing Excise Tax	\$0.51	\$0.23 per square foot	\$0.23 per square foot

The right column in Figure 2 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 the Land Use Assumptions, 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).

Figure 2: Maximum Voter-Approved DET Rates

TYPE OF DEVELOPMENT	CURRENT	PROPOSED 1999	PROPOSED MAXIMUM (LIMITED BY CIP)
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

CONCLUSIONS

After evaluating the 1996 DET study, that emphasized moving vehicles and allocated costs accordingly, TischlerBise concluded the current Transportation DET rate schedule is not proportionate by type of development. Preliminary DET rates (see Figure 4) are expected to yield almost \$32 million over the next ten years, which will cover 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. Also, the current Transportation DET rate schedule would obtain approximately 43% of future revenue from residential development and 57% from nonresidential development. In contrast, the proposed 2016 DET methodology expects to obtain approximately 52% of future Transportation DET revenue from residential development and 48% from nonresidential development. TischlerBise also finds the current Transportation DET rate schedule to be inconsistent with best practices to ensure development charges are proportionate to the need for capital facilities. For residential development, TischlerBise recommends switching from the current Transportation DET approach, based on two housing types, to a DET schedule based on dwelling size (measured by square feet of finished living space). To be proportionate, the transportation DET rate schedule should also differentiate by type of nonresidential development as shown in Figure 4. For ease of administration and comparison, the transportation DET rate schedule is consistent with Boulder's 2016 DIF study for all other types of infrastructure.

PRELIMINARY 2016 TRANSPORTATION DEVELOPMENT EXCISE TAX

Figure 3 summarizes the methods and cost components used in Boulder’s 2016 Transportation DET study. Both the DIF and DET studies share the same types of capital improvements and cost allocation methods. The major difference between the two studies is the magnitude of cost, with the DET based on a more extensive set of growth-related transportation improvements (i.e. CIP plus Action Investment Program).

Figure 3: Proposed Transportation DET Methods and Cost Components

<i>Type of Improvements</i>	<i>Cost Allocation</i>	<i>Service Area</i>	<i>Plan-Based Method (future)</i>
<i>Walk / Bike / Transit</i>	Functional Population and Jobs	Citywide	Sidewalks, Multi-Use Paths, Bike Lanes and Bus Stops/Pullouts
<i>Streets</i>	Vehicle Miles of Travel	Citywide	Arterial/Collector Capacity and Intersection Improvements

Figure 4 shows the preliminary 2016 Transportation DET schedule, along with current Transportation DET rates. All but two nonresidential categories exceed the maximum DET rate, thus requiring voter-approval prior to implementation. For nonresidential development, DET rates are stated per square foot of floor area, except for “Nursing Home / Assisted Living” (per bed) and “Lodging” (per room). The preliminary DET schedule for nonresidential development is designed to provide a reasonable DET rate for general types of development. For unique developments, the City may allow or require an independent assessment.

For residential development, updated amounts are based on square feet of finished living space. Garages, porches and patios are excluded from the DET assessment. All but the smallest residential size range exceeds the maximum DET rate, thus requiring voter-approval prior to implementation.

The preliminary total DET is a combination of two cost components and different cost allocation methods. The cost of “Bus Bike Walk” capital improvements was allocated to the increase in population and jobs within Boulder. The cost of street improvements was allocated to the projected increase in vehicle miles of travel. Details regarding both cost allocation methods are provided in the middle section of this report.

Figure 4: Preliminary 2016 Transportation DET Schedule

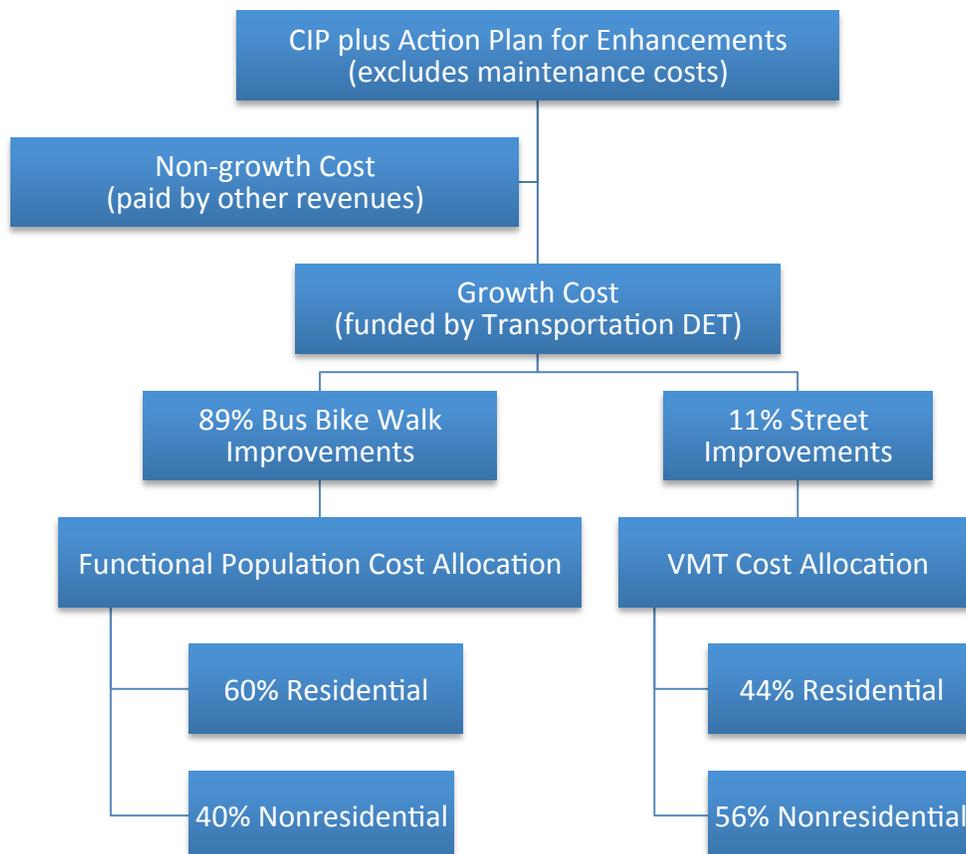
2016 Transportation DET	<i>Development Unit</i>	<i>Bus Bike Walk</i>	<i>Streets</i>	<i>Preliminary Transportation DET *</i>	<i>Current Transportation DET</i>	<i>Increase/ Decrease</i>	<i>Percent Change</i>
Residential (by square feet of finished living space)							
800 or less	Dwelling Unit	\$2,786	\$308	\$3,094	\$1,650	\$1,444	88%
801 to 1200	Dwelling Unit	\$4,286	\$486	\$4,772	\$1,650	\$3,122	189%
1201 to 1600	Dwelling Unit	\$5,214	\$597	\$5,811	\$1,939	\$3,873	200%
1601 to 2200	Dwelling Unit	\$6,000	\$691	\$6,691	\$2,227	\$4,464	200%
2201 or more	Dwelling Unit	\$6,738	\$780	\$7,518	\$2,227	\$5,291	238%
Nonresidential							
Retail / Restaurant	Square Foot	\$4.31	\$1.71	\$6.02	\$2.48	\$3.54	143%
Office	Square Foot	\$6.16	\$0.71	\$6.87	\$2.48	\$4.39	177%
Light Industrial	Square Foot	\$3.96	\$0.45	\$4.41	\$2.48	\$1.93	78%
Warehousing	Square Foot	\$1.58	\$0.23	\$1.81	\$2.48	-\$0.67	-27%
Institutional	Square Foot	\$1.39	\$0.60	\$1.99	\$2.48	-\$0.49	-20%
Hospital	Square Foot	\$5.05	\$0.85	\$5.90	\$2.48	\$3.42	138%
Nursing Home / Assisted Living	Bed	\$1,441	\$176	\$1,617			
Lodging	Room	\$978	\$525	\$1,503			

* Rates in red exceed voter-approved maximums.

MULTIMODAL TRANSPORTATION DET

The 2016 Transportation DET study uses a plan-based methodology that includes improvements for all modes of travel. Figure T1 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 size and type of nonresidential development. 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 89% of enhancement projects are for Bus Bike Walk facilities (primarily moving people), with the remaining 11% for street improvements (i.e. primarily moving vehicles). 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.

Figure T1: 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 T2 provides a reasonable means of quantifying the impact of growth on transportation facilities.

Figure T2: 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 T3, the ten-year growth-related cost of planned enhancement projects is approximately \$236 million. The upper two-thirds of the table lists CIP projects, as shown in the 4/4/16 draft transportation DIF study. 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-related share to be funded by DET revenue is 14.2% of the local cost (i.e. total cost, less grant funding), which equates to \$30.65 million over ten years. Based on the CIP analysis by staff, approximately 89% of the growth cost is for Bus Bike Walk improvements (i.e. \$30.08 million over ten years.) and 11% will be spent on vehicular capacity (i.e. \$3.57 million over ten years).

Figure T3: Growth-Related Cost of Transportation Enhancements

CIP#	Project Location	Description	Ten-Year Cost (less grants)	Enhancement Cost Due To Growth		Growth Share of Local Cost	
				FY16-25 Bus Bike Walk	FY16-25 Streets		
310TR052OG	Citywide Funds 2800 & 2	TIP local match & TMP impleme	\$18,363,000	\$1,642,800	\$182,500	9.9%	
310TR003OC	Citywide	Major capital reconstruction an	\$4,800,000	\$436,900	\$39,700	9.9%	
310TR773OC	Citywide	Pedestrian facilities repair/repl	\$3,774,000	\$375,500	\$0	9.9%	
310TR153NG	* 30th St & Colorado	Local share of bike/ped underp	\$3,150,000	\$588,500	\$149,600	23.4%	
310TR156NC	Boulder Creek & Arapa	Reconstruction and multimodal	\$2,500,000	\$248,300	\$0	9.9%	
3102ABCK03	Boulder Creek - Arapaho	Underpass	\$2,365,000	\$234,100	\$0	9.9%	
310TR152NG	* Broadway - Violet to	Local share of reconstruction &	\$1,825,000	\$661,000	\$34,800	38.1%	
310TR692OC	Citywide	Bikeway facilities enhancement	\$1,350,000	\$133,700	\$0	9.9%	
3102ABCK01	Boulder Creek	Path lighting	\$979,680	\$97,000	\$0	9.9%	
310TR743NC	28th St - Valmont to Iris	Multimodal improvements	\$860,000	\$76,900	\$8,500	9.9%	
3102ABCK02	Boulder Creek	Path improvements	\$770,000	\$76,200	\$0	9.9%	
310TR112OC	Citywide	Pedestrian facilities enhance	\$750,000	\$74,300	\$0	9.9%	
310TR692OC	Citywide	Tributary greenways	\$585,000	\$57,900	\$0	9.9%	
310BJ002NC	Bluff & 30th St	Traffic signal	\$532,000	\$10,500	\$42,100	9.9%	
310TD019NC	28th St - Baseline to Iris	Complete street elements; turn	\$470,000	\$42,000	\$4,700	9.9%	
310TDOO4OC	Citywide Funds 2810 & 3	Development coordination	\$450,000	\$337,500	\$112,500	100.0%	
310TR157NG	Citywide	Bldr Co/City Joint TIP Scoping &	\$289,000	\$289,000	\$0	100.0%	
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%	
310TR154NG	* 19th - Norwood to Up	Local share of reconstruction &	\$157,000	\$16,800	\$8,400	16.1%	
310TR480NC	East Arapahoe	Transportation Corridor Study	\$100,000	\$75,000	\$25,000	100.0%	
310TR151NG	* Boulder Slough - 30th	Local share of multiuse path (to	\$96,000	\$47,500	\$0	49.5%	
Years 7-10	Citywide	Additional improvements	\$29,710,500	\$3,783,600	\$449,100	14.2%	
Action Plan Capital Improvements			Action Plan Ten-Year Cost				
		Transit Capital Plan	\$38,900,000				
		New and Modified Community Transit Network Routes	\$26,165,000				
		Community Transit Network Routes Converted to BRT	\$12,833,000				
		Quiet Zones Improvements	\$5,000,000				
		HOP Conversion to Clean Vehicles	\$12,000,000				
		East Circulator / Williams Village Improvements	\$16,301,000				
		Other Non-Transit Enhancements	\$50,757,000				
* Projects with grant funding;			Ten-Year Total =>	\$236,232,180	\$30,083,900	\$3,570,700	14.2%
enhancement cost growth share is approximately 5.9% of total cost					89%	11%	
				\$33,654,600	<= Ten Year Total to be funded by DET		
				\$202,577,580	<= Total to be funded by other revenues		

COST ALLOCATION FOR BUS BIKE WALK FACILITIES

The demand for walk/bike/transit facilities is a function of both residential and nonresidential development. As shown in Figure T4, 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 T4: Functional Population

Boulder Functional Population Analysis				<i>Demand Hours/Day</i>	<i>Person Hours</i>
<i>Service Units in 2015</i>					
Nonresidential					
	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
					Nonresidential Subtotal
					1,189,316
					Nonresidential Share =>
					40%
Residential					
	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
					Residential Subtotal
					1,773,636
					Residential Share =>
					60%
					TOTAL
					2,962,952

* 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 T3 above) Bus Bike Walk improvements account for approximately \$30.08 million over the next ten years. As shown in Figure T4, 60% of this amount, divided by the projected increase in Boulder’s population over the next ten years, yields a capital cost of \$2,381 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 size range (i.e. square feet of finished living space). For example, an apartment building with small units (800 or less square feet) would have to pay \$2,381 per person multiplied by an average of 1.17 persons per dwelling, or 2,786 per dwelling unit (rounded). The DET for nonresidential development is equal to the capital cost per additional job, multiplied by the average number of jobs per development unit, for each type of development.

Figure T5: Bus Bike Walk Improvements Allocated to Population & Jobs

Ten Year Growth Cost of Bus Bike Walk Improvements =>			\$30,083,900
Cost Range and Allocation per Service Unit			
	<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	\$2,381
Boulder Jobs	40%	7,013	\$1,716
	2015	2025	
Population	104,808	112,388	
Jobs	98,510	105,523	
Ten Year Increase in Population plus Jobs		7.2%	
Residential			
<i>Square Feet of Living Space</i>	<i>Development Unit</i>	<i>Persons per Housing Unit</i>	<i>Preliminary Bus Bike Walk Component</i>
800 or less	Dwelling Unit	1.17	\$2,786
801 to 1200	Dwelling Unit	1.80	\$4,286
1201 to 1600	Dwelling Unit	2.19	\$5,214
1601 to 2200	Dwelling Unit	2.52	\$6,000
2201 or more	Dwelling Unit	2.83	\$6,738
Nonresidential			
<i>Type</i>	<i>Development Unit</i>	<i>Jobs per Development Unit</i>	<i>Preliminary Bus Bike Walk Component</i>
Retail / Restaurant	Sq Ft of Floor Area	0.00251	\$4.31
Office	Sq Ft of Floor Area	0.00359	\$6.16
Light Industrial	Sq Ft of Floor Area	0.00231	\$3.96
Warehousing	Sq Ft of Floor Area	0.00092	\$1.58
Institutional	Sq Ft of Floor Area	0.00081	\$1.39
Hospital	Sq Ft of Floor Area	0.00294	\$5.05
Nursing Home / Assisted Living	Bed	0.84	\$1,441
Lodging	Room	0.57	\$978

VEHICLE MILES OF TRAVEL

Figure T3 above indicates street improvements to provide additional vehicular capacity account for 11% of the growth cost, or \$3.57 million over the next ten years. The streets component of the Transportation DET 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 length¹. 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 9th 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 streets. For example, when someone stops at a convenience store on the way home from

¹ 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 DET 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, 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 DET methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As shown in Figure T6, 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 work/business travel. Conversely, shopping and eating-out 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 T6: 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	1.13
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	
1-Residential Total			14,327		3,342	4.3	
2-Retail/Restaurant	Shopping	8.4%	1,533	11.1%	536	2.9	0.68
2-Retail/Restaurant	Eat a Meal	4.0%	730	7.1%	343	2.1	
2-Retail/Restaurant Total			2,263		879	2.6	
3-Other Nonresidential	Personal Business	5.7%	1,040	6.3%	304	3.4	0.72
3-Other Nonresidential	School	3.4%	621	6.3%	304	2.0	
3-Other Nonresidential Total			1,661		609	2.7	
TOTAL			18,251	100.0%	4,830	3.8	

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 T7. 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 T7: 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 DET Street Improvements => \$3,570,700
 DET Cost per Additional VMT => \$64.22

COST ALLOCATION FOR STREET IMPROVEMENTS

Input variables for the streets portion of Boulder’s 2016 Transportation DET schedule are shown in Figure T8. Inbound VMT by type of development, multiplied by the capacity cost per VMT, yields the DET amount. For example, Lodging generates 8.18 VMT per room, multiplied by the capital cost of \$64.22 per VMT, yields a DET charge of \$525 per room (rounded) 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 T8: Cost of Street Improvements Allocated by VMT

Residential DET 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	Preliminary Streets DET Component
800 or less	Dwelling Unit	3.94	51%	55.5%	113%	4.79	\$308
801 to 1200	Dwelling Unit	6.23	51%	55.5%	113%	7.57	\$486
1201 to 1600	Dwelling Unit	7.65	51%	55.5%	113%	9.30	\$597
1601 to 2200	Dwelling Unit	8.85	51%	55.5%	113%	10.76	\$691
2201 or more	Dwelling Unit	9.99	51%	55.5%	113%	12.14	\$780

Nonresidential DET 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	Preliminary Streets DET Component
Retail / Restaurant	Sq Ft	0.04270	33%	73.2%	68%	0.02665	\$1.71
Office	Sq Ft	0.01103	50%	73.2%	72%	0.01105	\$0.71
Light Industrial	Sq Ft	0.00697	50%	73.2%	72%	0.00698	\$0.45
Warehousing	Sq Ft	0.00356	50%	73.2%	72%	0.00356	\$0.23
Institutional	Sq Ft	0.01403	33%	73.2%	72%	0.00927	\$0.60
Hospital	Sq Ft	0.01322	50%	73.2%	72%	0.01324	\$0.85
Nursing Home / Assisted Living	Bed	2.74	50%	73.2%	72%	2.74	\$176
Lodging	Room	8.17	50%	73.2%	72%	8.18	\$525

FUNDING STRATEGY FOR TRANSPORTATION IMPROVEMENTS

The revenue projection shown in Figure T9 assumes implementation of the preliminary 2016 Transportation 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.

Preliminary DET rates are expected to yield almost \$32 million over the next ten years, which will cover 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 proposed 2016 methodology, residential development will pay approximately 52% of growth-related cost for transportation system improvement, with nonresidential development covering the remaining 48%.

Figure T9: Projected Transportation DET Revenue

		<i>Residential</i>	<i>Light Industrial</i>	<i>Retail</i>	<i>Office & Other Services</i>
Preliminary DET Rates =>		\$5,811	\$4.41	\$6.02	\$6.87
Year		per housing unit	per 1000 Sq Ft	per 1000 Sq Ft	per 1000 Sq Ft
		<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 =>		\$16,372,000	\$4,280,000	\$3,668,000	\$7,257,000
Total Projected Transportation DIF Revenue (rounded) =>					\$31,577,000
Res Share =>		52%		Nonres Share => 48%	

APPENDIX A: LAND USE ASSUMPTIONS RELATED TO TRANSPORTATION

Most of the demographic data for Boulder’s 2016 transportation studies may be found in memo dated January 27, 2016 regarding “Draft 3 Land Use Assumptions for Impact Fee/Excise Tax Studies.” 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

<i>2013 Summary by Two House Types</i>							
<i>Units in Structure</i>	<i>Persons</i>	<i>House-holds</i>	<i>Persons per Household</i>	<i>Housing Units</i>	<i>Persons per Housing Unit</i>	<i>Housing Mix</i>	<i>Vacancy Rate</i>
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	2.14		4%
Group Quarters	8,674						
TOTAL	103,163						

* 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	1.55

(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

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)	Unadjusted VehAvl/HU	Adjusted VehAvl/HU (2)
0-1	114	89	89	19%	1.28	1.31	1.00	0.95
2	220	162	121	25%	1.82	1.86	1.34	1.27
3	296	236	134	28%	2.21	2.26	1.76	1.66
4+	372	300	135	28%	2.76	2.83	2.22	2.10
Total	1,002	787	479		2.09	2.14	1.64	1.55

National Averages According to ITE						
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	8.17		2.92	1.45

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

(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.

AWVTE per Dwelling by House Type						
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)	Boulder Persons/HU	Boulder VehAvl/HU	
All Other	5.15	8.11	6.63	1.77	1.45	
210 SFD	7.22	9.11	8.17	2.48	1.63	
All Types	6.23	8.66	7.45	2.14	1.55	

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, across five size thresholds. TischlerBise does not recommend average fees for all house sizes because it makes small units less affordable and essentially subsidizes larger units.

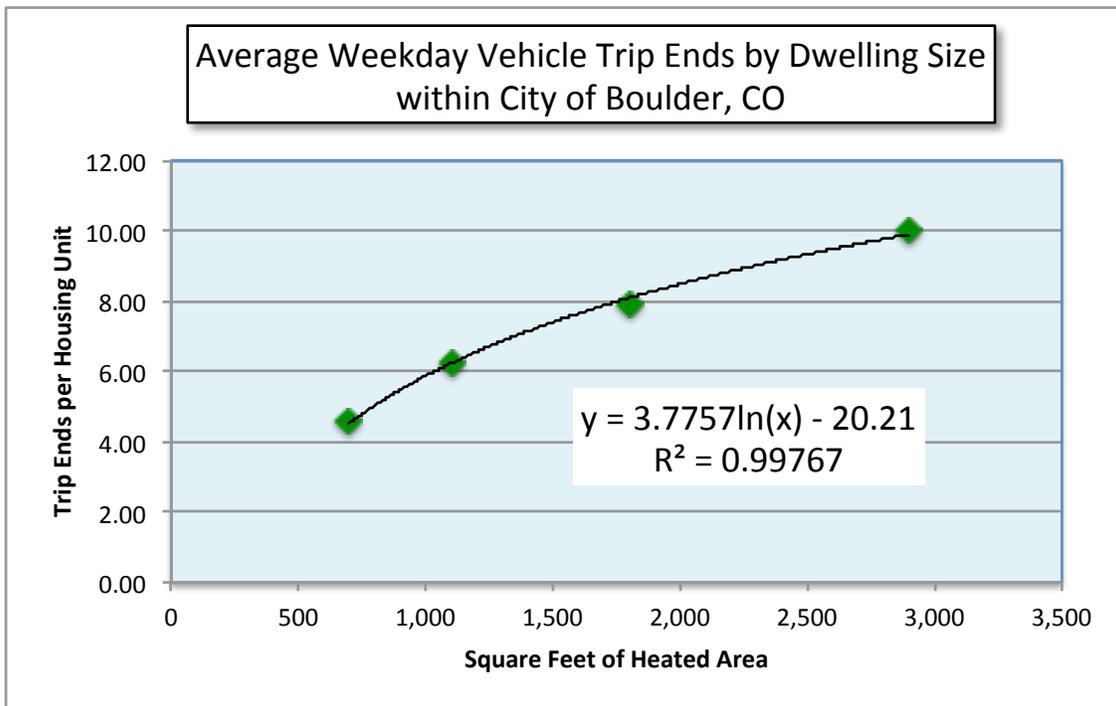
Apartment units will generally be in the three smallest size thresholds, with one-bedroom units being 800 square feet or less, two-bedroom units ranging from 801 to 1200 square feet, and a few three-bedroom apartments being at least 1201 square feet.

Single-unit dwellings (both detached and attached) will have floor areas that correspond to the three largest size thresholds. Smaller units will likely have 1201 to 1600 square feet of living space. The most common single-unit dwelling will have three bedrooms and likely range from 1601 to 2200 square feet. All units with 2201 or more square feet of living space are assumed to generate a maximum 9.99 AWWTE per dwelling.

Figure A4: Vehicle Trips by Dwelling Size

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Sq Ft Range	Trip Ends
0-1	700	4.56	800 or less	3.94
2	1,100	6.26	801 to 1200	6.23
3	1,800	7.93	1201 to 1600	7.65
4+	2,900	9.99	1601 to 2200	8.85
			2201 or more	9.99

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).





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DRAFT FOR DISCUSSION

MEMORANDUM

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To: Chris Meschuk and Kristin Hyser
City of Boulder

From: David Doezema and Reed Kawahara

Date: February 24, 2016

Subject: Affordable Housing Linkage Fee - Draft Analysis Materials for
Distribution to Working Group

KMA has prepared the attached series of draft analysis materials in relation to the affordable housing commercial linkage fee. The draft materials include the nexus technical analysis as well as other analyses prepared to provide additional context for policy decisions. Each of the attachments is anticipated to be incorporated into a full report to be drafted subsequently. Some of the analyses are accompanied by a complete draft narrative while others consist of draft technical tables only at this stage.

The attachments are as follows:

1. **Draft Nexus Technical Tables (Page 4):** The nexus technical analysis establishes the maximums or ceilings on potential affordable housing fees applicable to new non-residential development. The identified “total nexus cost” presented on Table 1 of Attachment 1, represents the draft findings regarding maximum fees that could potentially be charged consistent with the requirements of Colorado’s impact fee statute. The identified maximum fee levels reflect the cost to provide affordable housing to workers in new non-residential buildings with incomes ranging from 0% up to 120% of Area Median Income (AMI). The results are technical impact analysis conclusions only, and are not recommended fee levels. The City is free to consider fees anywhere below the maximums identified.

In addition to the total nexus cost findings presented on Table 1, which are reflective of housing needs for all workers, Table 1 also presents findings after making an

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optional “commute adjustment” to reflect the current 39% share of Boulder’s workforce housed within the City. Since existing commute patterns are impacted by a lack of affordable housing, some communities also consider applying alternative policy-based targets to house a greater share of their workforce locally.

Tables 2 through 6 walk through the major analysis steps used to arrive at the maximum supported fee levels. Appendix Tables 1 through 16 identify the worker occupation and compensation levels for each building type which are a key input to the analysis of housing needs by income.

2. **Mitigation Cost / Affordability Gap (Page 39):** The narrative on Mitigation Cost describes the analysis of the net cost to create each new unit of affordable housing, referred to as an affordability gap. A separate affordability gap is determined for each of four income categories from Extremely Low through Middle Income. The affordability gap is used to determine the cost of providing the needed affordable housing, a key factor in calculating the maximum supported fee levels identified in Attachment 1.
3. **Development Cost Context (Page 45):** One approach to establishing fee amounts is based on an understanding of the relative cost burdens that a new fee can have on various types of 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 attached narrative summarizes KMA’s review of total development costs for five different prototypical non-residential project types in Boulder. Existing and illustrative potential fee levels are then presented as a percentage of total development costs for each of the project types. This section also includes an illustration of the market changes, such as decreases in land values or increases in market rents, which would be sufficient to absorb each \$1 / Sq.Ft. fee increase. This type of analysis can be useful in scaling fees relative to the costs of various types of development and to help evaluate the likelihood that fees will impact development decisions.
4. **Market Context Summary (Page 50):** This attachment provides a brief narrative overview of the Boulder economy and real estate market in order to provide more general context for the City’s consideration of fees on new non-residential development. Local real estate and macro- economic conditions are among the factors that are often considered by policy makers in adopting new fees.

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5. **Fees in Other Communities (Page 56):** Linkage fee and affordable housing mitigation programs in the cities of Cambridge, Aspen, Vail, plus 33 cities and counties in California are summarized in a series of tables included as Attachment 5. This information is to provide context regarding the requirements adopted in other communities.

KMA staff will be participating in the March 3rd 2016 Working Group meeting and will be available to walk through these draft materials and respond to comments and questions.

ATTACHMENT 1 - DRAFT NEXUS TECHNICAL TABLES

**TABLE 1
DRAFT NEXUS RESULTS
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO**

Working Draft for Discussion - Subject to Change

	Nexus Cost Per Sq.Ft. of Building Area							ASSISTED LIVING ⁽³⁾
	OFFICE	LIGHT INDUSTRIAL	RETAIL ⁽¹⁾	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL ⁽²⁾	
Total Housing Nexus Cost⁽⁴⁾	\$129.49	\$95.79	\$158.49	\$129.39	\$59.89 <i>\$35,900 Per Room</i>	\$54.19	\$44.79	\$127.19 <i>\$50,900 Per Bed</i>
Findings With Optional Adjustment for Boulder "Share" of Housing Need Based on Percent of Workforce Currently Housed in City @39%	\$50.50	\$37.40	\$61.80	\$50.50	\$23.40 <i>\$14,000 Per Room</i>	\$21.10	\$17.50	\$49.60 <i>\$19,800 Per Bed</i>
Adopted Fees⁽⁵⁾	\$9.53	\$5.62	\$6.96	\$8.23	\$1.79 <i>\$1,072.44 Per Room</i>	\$3.11	\$2.24 school <i>\$389.60 per student: day care</i>	\$2.19 <i>\$877.64 per bed</i>

Notes:
 (1) Includes retail, restaurant, and service uses.
 (2) Includes educational, religious, childcare, cultural, and other institutional building types.
 (3) Includes assisted living, nursing home / skilled nursing, memory care and other senior care facilities.
 (4) Summarized from Table 6. Amount is net of an adjustment for the existing \$0.51 excise tax.
 (5) 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 adjusts to a square footage basis using an estimated 400 square feet per bed on average.

TABLE 2
NET NEW HOUSEHOLDS AND OCCUPATION DISTRIBUTION BY BUILDING TYPE
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO

Working Draft for Discussion - Subject to Change

<i>Per 20,000 Sq.Ft. of Building Area</i>	LIGHT							ASSISTED
	OFFICE	INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	LIVING
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 ⁽¹⁾								
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%	2.0%	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%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE 2
NET NEW HOUSEHOLDS AND OCCUPATION DISTRIBUTION BY BUILDING TYPE
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO

Working Draft for Discussion - Subject to Change

<i>Per 20,000 Sq.Ft. of Building Area</i>	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>
Totals	35.1	22.6	24.5	28.7	9.3	9.0	7.9	20.5

Notes:

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

TABLE 3
ESTIMATE OF QUALIFYING HOUSEHOLDS - EXTREMELY LOW INCOME
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO

Working Draft for Discussion - Subject to Change

Analysis for Households Earning up to 30% of Median

	OFFICE	LIGHT INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	ASSISTED LIVING
<i>Per 20,000 SF Building</i>								
Step 5, 6, & 7 - Households Earning up to 30% of Median⁽¹⁾								
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
Total Households Earning up to 30% of Median	0.9	1.1	6.4	0.7	2.8	1.2	0.8	3.1

Notes:

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

**TABLE 4
WORKER HOUSEHOLDS BY AFFORDABILITY LEVEL
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO**

Working Draft for Discussion - Subject to Change

Per 20,000 S.F. Building

	<u>OFFICE</u>	<u>LIGHT INDUSTRIAL</u>	<u>RETAIL</u>	<u>HOSPITAL</u>	<u>LODGING</u>	<u>WAREHOUSE</u>	<u>INSTITUTIONAL</u>	<u>ASSISTED LIVING</u>
NUMBER OF HOUSEHOLDS BY INCOME TIER ⁽¹⁾								
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
Subtotal - Affordable Categories	20.3	15.0	23.7	20.3	8.9	8.3	6.9	19.1
Above Middle Income (> 120% AMI)	14.8	7.6	0.9	8.4	0.4	0.7	1.0	1.4
Total New Worker Households	35.1	22.6	24.5	28.7	9.3	9.0	7.9	20.5
PERCENTAGE OF HOUSEHOLDS BY INCOME TIER								
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%
Subtotal - Affordable Categories	57.8%	66.2%	96.5%	70.8%	95.6%	92.4%	86.9%	93.0%
Above Middle Income (> 120% AMI)	42.2%	33.8%	3.5%	29.2%	4.4%	7.6%	13.1%	7.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Notes:

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

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

Working Draft for Discussion - Subject to Change

	Number of Housing Units per Square Foot of Building Area ⁽¹⁾							ASSISTED LIVING
	OFFICE	LIGHT INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	
Extremely Low (0% - 30% AMI)	0.00004376	0.00005263	0.00032202	0.00003405	0.00014061	0.00005975	0.00004115	0.00015597
Low Income (31% - 60% AMI)	0.00033487	0.00028960	0.00060163	0.00035722	0.00022241	0.00020339	0.00015098	0.00047506
Low to Moderate (61% to 76% AMI)	0.00020451	0.00014420	0.00014176	0.00020768	0.00004683	0.00007244	0.00006503	0.00017239
Middle Income (77% to 120% AMI)	0.00043218	0.00026126	0.00011837	0.00041844	0.00003405	0.00008013	0.00008699	0.00015148
Total	0.00101533	0.00074768	0.00118378	0.00101740	0.00044390	0.00041570	0.00034414	0.00095489

Notes:

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

TABLE 6
TOTAL HOUSING NEXUS COST
JOBS HOUSING NEXUS ANALYSIS
CITY OF BOULDER, CO

Working Draft for Discussion - Subject to Change

INCOME CATEGORY	Affordability Gap Per Unit	Nexus Cost Per Sq.Ft. of Building Area ³							
		OFFICE	LIGHT INDUSTRIAL	RETAIL	HOSPITAL	LODGING	WAREHOUSE	INSTITUTIONAL	ASSISTED LIVING
Extremely Low (0% - 30% AMI)	\$173,300 ¹	\$7.60	\$9.10	\$55.80	\$5.90	\$24.40	\$10.40	\$7.10	\$27.00
Low Income (31% - 60% AMI)	\$99,800 ¹	\$33.40	\$28.90	\$60.00	\$35.70	\$22.20	\$20.30	\$15.10	\$47.40
Low to Moderate (61% to 76% AMI)	\$219,900 ²	\$45.00	\$31.70	\$31.20	\$45.70	\$10.30	\$15.90	\$14.30	\$37.90
Middle Income (77% to 120% AMI)	\$101,700 ²	\$44.00	\$26.60	\$12.00	\$42.60	\$3.50	\$8.10	\$8.80	\$15.40
Total		\$130.00	\$96.30	\$159.00	\$129.90	\$60.40	\$54.70	\$45.30	\$127.70
Less: Existing Excise Tax		(\$0.51)	(\$0.51)	(\$0.51)	(\$0.51)	(\$0.51)	(\$0.51)	(\$0.51)	(\$0.51)
Total After Adjustment for Existing Excise Tax		\$129.49	\$95.79	\$158.49	\$129.39	\$59.89	\$54.19	\$44.79	\$127.19

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 gap.

APPENDIX TABLES

**APPENDIX TABLE 1
2014 NATIONAL OFFICE WORKER DISTRIBUTION BY OCCUPATION
JOBS-HOUSING NEXUS ANALYSIS
CITY OF BOULDER**

Working Draft For Discussion

Major Occupations (2% or more)	2014 National Office Industry Occupation Distribution	
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>
INDUSTRY TOTAL	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

Working Draft For Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Office Workers</u>
Page 1 of 3			
<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>
	Weighted Mean Annual Wage	100.0%	8.3%
<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>
	Weighted Mean Annual Wage	100.0%	11.6%
<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>
	Weighted Mean Annual Wage	100.0%	21.2%
<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>
	Weighted Mean Annual Wage	100.0%	5.1%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Office Workers</u>
Page 2 of 3			
<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>
Weighted Mean Annual Wage	\$56,700	100.0%	3.6%
<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>
Weighted Mean Annual Wage	\$80,900	100.0%	5.6%
<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>
Weighted Mean Annual Wage	\$35,600	100.0%	3.1%
<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>
Weighted Mean Annual Wage	\$27,000	100.0%	2.5%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Office Workers</u>
Page 3 of 3			
<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>
Weighted Mean Annual Wage	\$65,600	100.0%	6.9%
<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>
Weighted Mean Annual Wage	\$37,300	100.0%	2.0%
Weighted Average Annual Wage - All Occupations	\$74,000		90.5%

¹ Including occupations representing 4% or more of the major occupation group.

² 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.

³ 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

Working Draft for Discussion

Major Occupations (2% or more)	2014 National Light Industrial Industry Occupation Distribution	
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>
INDUSTRY TOTAL	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**

Working Draft for Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Light Industrial Workers</u>
Page 1 of 3			
<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>
Weighted Mean Annual Wage	\$135,300	100.0%	9.1%
<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>
Weighted Mean Annual Wage	\$76,700	100.0%	6.7%
<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>
Weighted Mean Annual Wage	\$101,800	100.0%	7.4%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Light Industrial Workers</u>
Page 2 of 3			
<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>
Weighted Mean Annual Wage	\$96,300	100.0%	13.5%
<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>
Weighted Mean Annual Wage	\$66,800	100.0%	5.0%
<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>
Weighted Mean Annual Wage	\$39,600	100.0%	12.8%
<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>
Weighted Mean Annual Wage	\$50,200	100.0%	6.4%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Light Industrial Workers</u>
Page 3 of 3			
<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>
Weighted Mean Annual Wage	\$38,700	100.0%	30.2%
<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>
Weighted Mean Annual Wage	\$29,900	100.0%	4.5%
Weighted Average Annual Wage - All Occupations	\$81,000		95.9%

¹ Including occupations representing 4% or more of the major occupation group.

² 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.

³ 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

Working Draft For Discussion

Major Occupations (2% or more)	2014 National Retail/Restaurant/Service Occupation Distribution	
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>
INDUSTRY TOTAL	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

Working Draft For Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$111,200	100.0%	2.3%
<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>
Weighted Mean Annual Wage	\$23,500	100.0%	45.3%
<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>
Weighted Mean Annual Wage	\$32,100	100.0%	3.1%
<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>
Weighted Mean Annual Wage	\$31,500	100.0%	28.6%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Retail Workers</u>
Page 2 of 2			
<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>
Weighted Mean Annual Wage	\$34,200	100.0%	8.4%
<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>
Weighted Mean Annual Wage	\$46,200	100.0%	2.3%
<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>
Weighted Mean Annual Wage	\$34,600	105.2%	2.1%
<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>
Weighted Mean Annual Wage	\$28,400	100.0%	4.2%
Weighted Average Annual Wage - All Occupations	\$30,000		96.4%

¹ Including occupations representing 4% or more of the major occupation group.

² 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.

³ 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

Working Draft For Discussion

Major Occupations (3% or more)	2014 National Hospital Industry Occupation Distribution	
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>
INDUSTRY TOTAL	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

Working Draft For Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$117,000	100.0%	4.2%
<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>
Weighted Mean Annual Wage	\$73,000	100.0%	50.5%
<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>
Weighted Mean Annual Wage	\$31,300	100.0%	11.8%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$36,800	100.0%	14.7%
Weighted Average Annual Wage - All Occupations	\$62,000		87.4%

¹ Including occupations representing 4% or more of the major occupation group.

² 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.

³ 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

Working Draft for Discussion

Major Occupations (3% or more)	2014 National Lodging Occupation Distribution (1)	
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>
INDUSTRY TOTAL	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

Working Draft for Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$99,300	100.0%	4.5%
<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>
Weighted Mean Annual Wage	\$23,800	100.0%	24.7%
<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>
Weighted Mean Annual Wage	\$22,300	100.0%	31.9%
<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>
Weighted Mean Annual Wage	\$25,800	100.0%	4.0%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Lodging Workers</u>
<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>
Weighted Mean Annual Wage	\$28,200	100.0%	20.3%
 <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>
Weighted Mean Annual Wage	\$42,100	100.0%	5.0%
 Weighted Average Annual Wage - All Occupations	 \$29,000		 90.4%

¹ Including occupations representing 3% or more of the major occupation group.

² 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.

³ 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

Working Draft for Discussion

Major Occupations (3% or more)	2014 National Warehousing Occupation Distribution	
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>
INDUSTRY TOTAL	726,090	100.0%

Source: Bureau of Labor Statistics

Prepared by: Keyser Marston Associates, Inc.

Filename: \\SF-FS2\SFEmployee\ddoezema\My Documents\Projects\Boulder\Draft nexus\added\6. Warehouse;Major Occupations Matrix; 2/22/2016

APPENDIX TABLE 12
 AVERAGE ANNUAL COMPENSATION, 2014
 WAREHOUSING WORKER OCCUPATIONS
 JOBS-HOUSING NEXUS ANALYSIS
 CITY OF BOULDER

Working Draft for Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$118,000	100.0%	3.5%
<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>
Weighted Mean Annual Wage	\$34,900	100.0%	22.3%
<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>
Weighted Mean Annual Wage	\$45,700	100.0%	3.2%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Warehousing Workers</u>
<i>Page 2 of 2</i>			
<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>
Weighted Mean Annual Wage	\$37,000	100.0%	4.0%
<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>
Weighted Mean Annual Wage	\$32,400	100.0%	60.3%
Weighted Average Annual Wage - All Occupations	\$37,000		93.3%

¹ Including occupations representing 3% or more of the major occupation group.

² 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.

³ 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

Working Draft for Discussion

Major Occupations (3% or more)	2014 National Institutional Industry Occupation Distribution	
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>
INDUSTRY TOTAL	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

Working Draft for Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Institutional Workers</u>
<i>Page 1 of 2</i>			
<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>
	Weighted Mean Annual Wage	100.0%	5.7%
<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>
	Weighted Mean Annual Wage	100.0%	3.1%
<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>
	Weighted Mean Annual Wage	100.0%	9.1%
<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>
	Weighted Mean Annual Wage	100.0%	32.0%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Institutional Workers</u>
<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 Cate	<u>\$53,300</u>	<u>27.0%</u>	<u>1.0%</u>
Weighted Mean Annual Wage	\$41,700	100.0%	3.5%
<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>
Weighted Mean Annual Wage	\$26,000	100.0%	20.5%
<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>
Weighted Mean Annual Wage	\$39,300	100.0%	10.3%
Weighted Average Annual Wage - All Occupations	\$44,000		84.2%

¹ Including occupations representing 4% or more of the major occupation group.

² 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.

³ 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

Working Draft for Discussion

Major Occupations (3% or more)	2014 National Assisted Living Occupation Distribution	
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>
INDUSTRY TOTAL	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

Working Draft for Discussion

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<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>
Weighted Mean Annual Wage	\$60,300	100.0%	16.9%
<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>
Weighted Mean Annual Wage	\$28,400	100.0%	35.0%
<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>
Weighted Mean Annual Wage	\$25,000	100.0%	14.3%
<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>
Weighted Mean Annual Wage	\$23,100	100.0%	6.4%
<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>
Weighted Mean Annual Wage	\$26,300	100.0%	12.1%

Attachment G - Draft Affordable Housing Linkage Fee Analyses

<u>Occupation</u> ¹	<u>2014 Avg. Compensation</u> ²	<u>% of Total Occupation Group</u> ³	<u>% of Total Assisted Living Workers</u>
<i>Page 2 of 2</i>			
<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>
Weighted Mean Annual Wage	\$37,400	100.0%	5.0%
Weighted Average Annual Wage - All Occupations	\$34,000		89.7%

¹ Including occupations representing 3% or more of the major occupation group.

² 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.

³ 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.

ATTACHMENT 2 - MITIGATION COST (AFFORDABILITY GAP)

MITIGATION COSTS (Draft Report Section)

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 1 and 2 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

February 22, 2016

Boulder and based on discussions with affordable housing developers in Boulder¹. 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		
<i>Qualifying Income</i>	<i>Unit Tenure / Type</i>	<i>Development Cost</i>
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			
<i>Qualifying Income</i>	<i>Unit Tenure / Type</i>	<i>Unit Size</i>	<i>Maximum Housing Costs</i>
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.

¹ 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.

February 22, 2016

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:

<i>Affordability Gap Calculation</i>			
<i>Qualifying Income</i>	<i>Unit Value / Financing Sources*</i>	<i>Development Cost</i>	<i>Affordability Gap</i>
<i>Affordable Rental Units</i>			
30% AMI and under	\$119,700	\$293,000	\$173,300
31% to 60% AMI	\$193,200	\$293,000	\$99,800
<i>Affordable Ownership Units</i>			
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 1 and 2 present the detailed affordability gap calculations.

Table 1.
Affordability Gaps - Extremely Low and Low Income (Rental Prototype)
Boulder Commercial Linkage Nexus Analysis

WORKING DRAFT

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)	<u>(\$65)</u>	<u>(\$65)</u>
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% ⁽¹⁾	(\$364)	(\$632)
(Less) Operating Expenses	(\$5,000)	(\$5,000)
(Less) Property Taxes	\$0	\$0
(Less) Replacement Reserves	<u>(\$300)</u>	<u>(\$300)</u>
NOI - Annual	\$1,711	\$6,813
(Less) Debt Service 1.20	<u>(\$1,426)</u>	<u>(\$5,677)</u>
Cash Flow after Debt	\$285	\$1,135
<u>Affordability Gap</u>		
Total Development Costs ⁽²⁾	\$293,000	\$293,000
(Less) Supported Private Debt 4.0% 30 ⁽³⁾	(\$24,700)	(\$98,200)
(Less) 4% Tax Credit Equity	<u>(\$95,000)</u>	<u>(\$95,000)</u>
Affordability Gap	\$173,300	\$99,800

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

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

⁽³⁾ Tax exempt interest rate applicable to 4% tax credit projects.

Table 2.
Affordability Gaps - Ownership
Boulder Commercial Linkage Nexus Analysis

WORKING DRAFT

Affordable For-Sale Prototype	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</u> ⁽¹⁾		
% of AMI for pricing (not qualifying)	66.2%	100.0%
Household Income	\$59,250	\$89,500
Available for Housing Cost	28.0%	\$16,590
(Less) HOA Dues	\$299	(\$3,588)
(Less) Taxes & Insurance	22%	(\$2,860)
Available for Mortgage	\$10,142	\$16,748
Mortgage	4.06%	\$175,746
Plus Downpayment	5.0%	\$9,250
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 ⁽²⁾	\$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

⁽¹⁾ Affordable sale prices based on City's pricing methodology and assumptions for Q1 2016 (3br, 2.5ba).

⁽²⁾ 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.

ATTACHMENT 3 - DEVELOPMENT COST CONTEXT

DEVELOPMENT COST CONTEXT (Draft Report Section)

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 projects¹;
- 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.

¹ Developers interviewed for this assignment include Element Properties, Allison Management, WW Reynolds, Del Mar Interests (Michael Boyers), and LJD Enterprises (Lou DellaCava).

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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				65,000 [↑] GSF				50,000 GSF				50,000 GSF		
Stories	1 story				2-3 stories				3 stories				3-4 stories		
FAR	0.50 FAR				0.75 [↑] FAR				0.50 [↑] FAR				2.00 [↑] FAR		
Acres	2.3 acres				2.0 acres				2.3 acres				0.6 acres		
Development Costs															
		\$/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
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 [↑]	\$1,460,000
Financing		\$7	\$340,000		\$10	\$680,000		\$9	\$440,000		\$10	\$500,000		\$21	\$1,060,000
Total		\$206	\$10,290,000		\$248	\$16,100,000		\$268	\$13,380,000		\$301 [↑]	\$15,030,000		\$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.

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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)
Total Development Cost	\$206 /SF	\$248 /SF	\$268 /SF	\$301 /SF	\$489 /SF
Illustrative Fee Scenarios					
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
Current Fees					
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.

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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.

ATTACHMENT 4 - MARKET CONTEXT

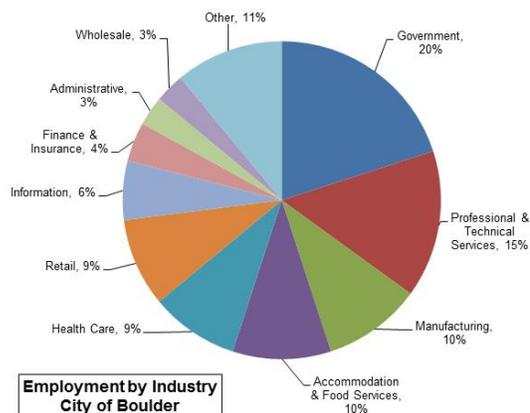
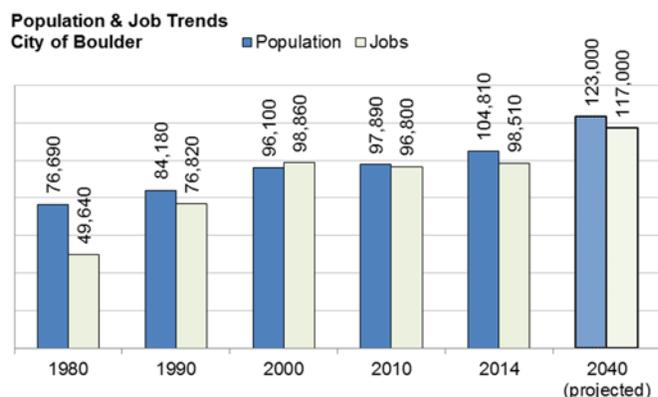
MARKET CONTEXT (Draft Report Section)

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. Other considerations, such as fee levels in other jurisdictions in the region, are discussed in other sections of this report.

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 Boulder¹; 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

¹ 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.

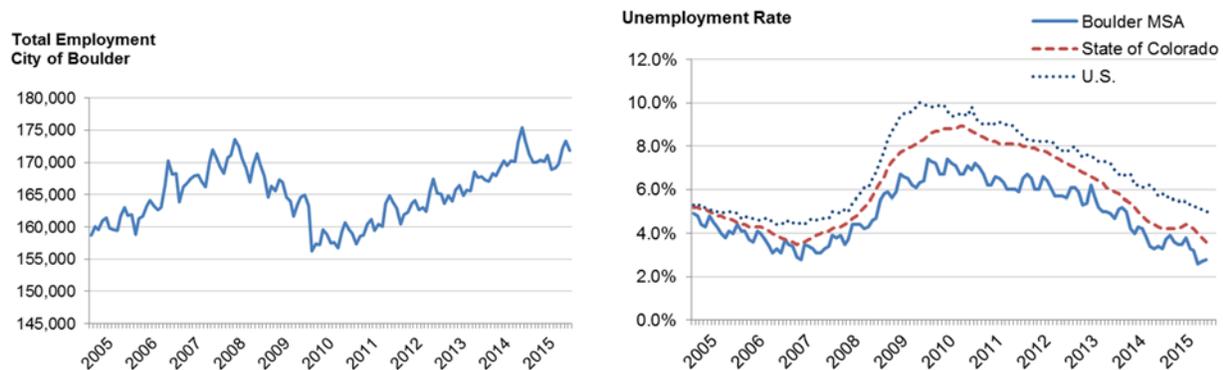
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large and small businesses, and significant in-state and out-of-state visitors which makes tourism a major contributor to the local economy as well.

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-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

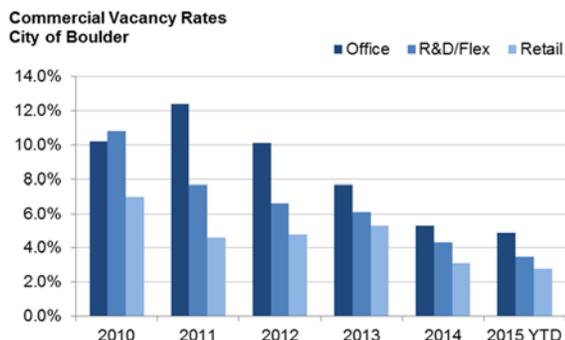
Among the strengths of the Boulder economy are its diversity, the presence of the university which generates a strong employment base and supplies a highly educated workforce, its natural setting, high quality of life, and its cultural and recreational amenities. These attributes have allowed Boulder's economy to weather market downturns better than other parts of the state and nation.

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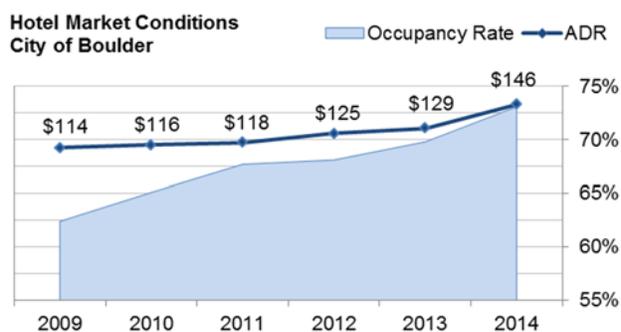
Median incomes for family households are currently 10% to 30% higher in Boulder than they are in Boulder County and the larger Denver-Aurora-Boulder region respectively but are slightly lower for non-family households. The latter is largely attributable to the influence of the City's sizable university student population which, at about 30,000, represents about 30% of Boulder's total population.

Real Estate Market Conditions

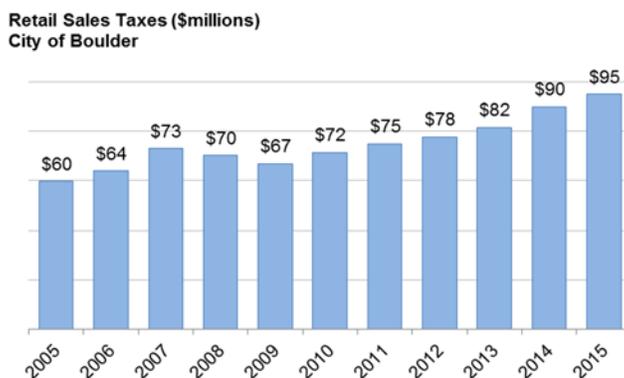
As has been the case for the larger Boulder economy, real estate market conditions in the City experienced a period of depressed conditions during the Great Recession but have rebounded strongly in the last several years. One broad indicator of commercial real estate conditions is vacancy rates, which 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



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 (RevPAR²) are high in comparison to non-ski destinations in the state.

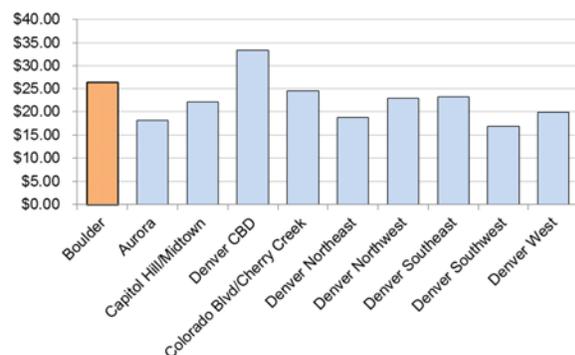
Demographic Snapshot

	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

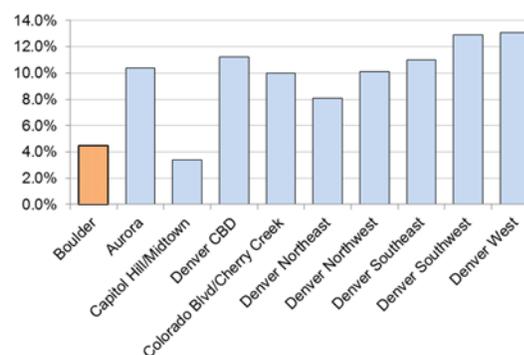
Office Rents

Cushman & Wakefield (Q3 2015)



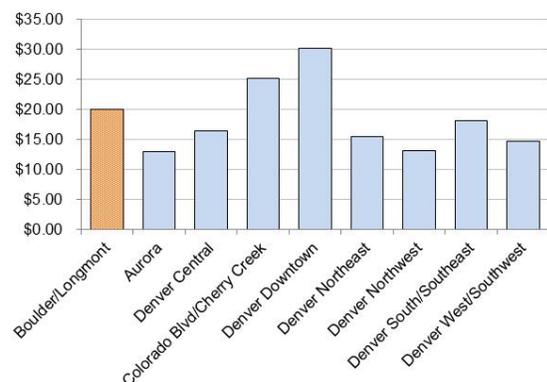
Office Vacancy Rates

Cushman & Wakefield (Q3 2015)



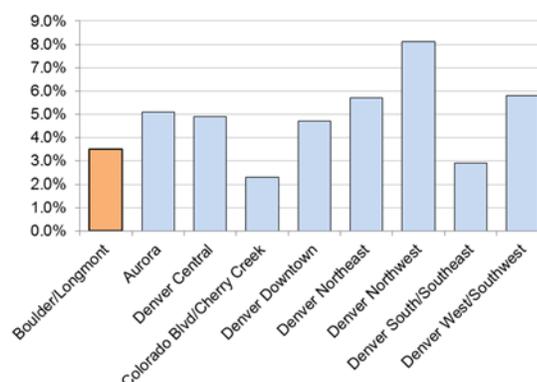
Retail Rents

Cushman & Wakefield (Q3 2015)

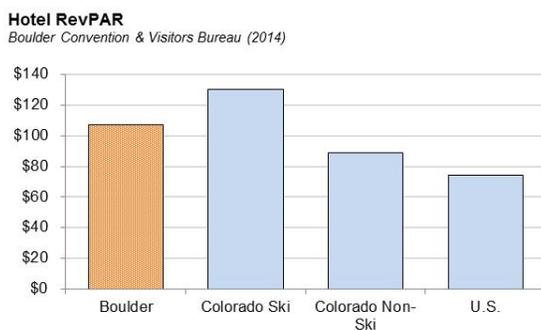


Retail Vacancy Rates

Cushman & Wakefield (Q3 2015)

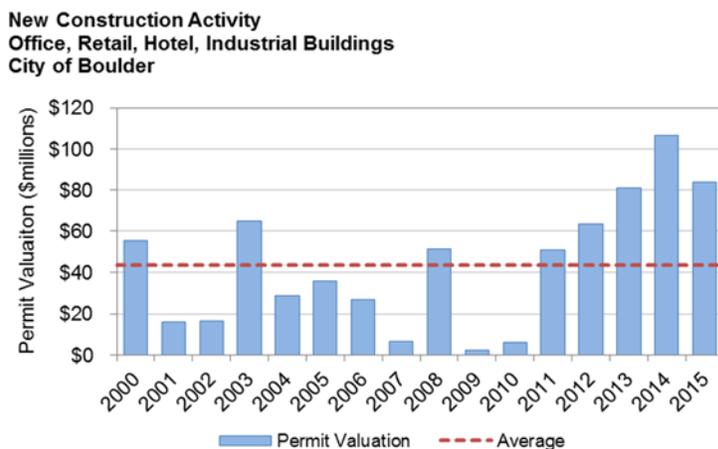


² Revenue per available room (RevPAR) is the average daily hotel room rate multiplied by the occupancy rate.



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)³.



Source: City of Boulder

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.

³ New building construction only; does not include renovations.

ATTACHMENT 5 - FEES IN OTHER JURISDICTIONS

**TABLE 1
HOUSING LINKAGE AND IN-LIEU FEE PROGRAMS IN BOULDER AND SELECTED COMMUNITIES
AFFORDABLE HOUSING LINKAGE FEE NEXUS
CITY OF BOULDER, CO**

DRAFT FOR DISCUSSION

	BOULDER, CO	CAMBRIDGE, MA	VAIL, CO¹	ASPEN, CO²
Year Established	2011 expanded 2015	1998 revised 2015	2007 revised 2008	n/a revised 2015
Minimum Project Size	None	30,000 SF	None	500 SF
Exempt Projects	Municipal/ Government Facilities	Municipal/ Government Facilities	n/a	"Essential Public Facilities"
On-Site Requirement				
On-Site Requirement	No	No	Yes	Yes
In-Lieu Fee by Right or Petition	n/a	n/a	100% by petition	50% by right, 50% by petition ³
In-Lieu/Impact Fee Schedule				
<i>Fees PSF⁴</i>				
<u>PSF Basis</u>	<u>/SF Gross Floor Area</u>	<u>/SF Gross Floor Area</u>	<u>/SF Gross Floor Area</u>	<u>/SF Net Leasable Area</u>
Retail/ Restaurant	\$6.96	\$12	\$36 - \$101 (Rest.)	\$482 (MU) - \$629
Business Park	\$7.70	\$12	\$48	\$482 (MU) - \$629
Office	\$9.53	\$12	\$48 - \$76 (RE)	\$482 (MU) - \$629
Hospital	\$8.23	\$12	custom calculation	\$482 (MU) - \$629
School	\$2.24	\$12	custom calculation	custom calculation
Mini-Warehouse	\$0.09	\$12	custom calculation	\$522
Warehousing	\$3.11	\$12	custom calculation	\$522
Light Industrial	\$5.62	\$12	\$36	\$522
Nursing Home ⁵	\$2.19	\$12	custom calculation	custom calculation
Day Care ⁵	\$7.79	\$12	custom calculation	custom calculation
Lodging ⁵	\$1.79	\$12	\$17	\$67 (LP) - \$134
Annual Escalation	RS Means Index	(increases to \$15 by 2018 + CPI escalation)	3 year avg. of affordability gap at 120% AMI	Engineering news record inflation

Notes

¹ Table 2

² Table 3

³ Only permitted under extraordinary circumstances.

⁴ For Aspen and Vail, assumes 100% of employee housing requirements mitigated with fee.

⁵ Converted to an equivalent fee per square foot to simplify comparison.

Abbreviations

Rest. Restaurant
RE Real Estate Office
MU Mixed Use Zoning District
LP Lodging Preservation District
CPI Consumer Price Index

Source: Municipal/land use codes and interviews with city staff

**TABLE 2
CALCULATION OF VAIL PER SQ.FT. MITIGATION COST
AFFORDABLE HOUSING LINKAGE FEE NEXUS
CITY OF BOULDER, CO**

DRAFT FOR DISCUSSION

Commercial Category	Employee Generation	Mitigation Requirement % of need	2015 Fee per FTE	Fee/Unit or SF (Implied)
100% Requirement¹				
Accommodation unit/ limited service lodge unit	0.7000 /unit	20%	\$74,481	\$10,427 /unit
Business office and professional office (excluding real estate office)	0.0032 /SF*	20%	\$74,481	\$48 /SF*
Conference facility	0.0008 /SF*	20%	\$74,481	\$12 /SF*
Eating and drinking establishment	0.0068 /SF*	20%	\$74,481	\$101 /SF*
Health club	0.0010 /SF*	20%	\$74,481	\$14 /SF*
Real estate office	0.0051 /SF*	20%	\$74,481	\$76 /SF*
Retail store/personal service/repair shop	0.0024 /SF*	20%	\$74,481	\$36 /SF*
Spa	0.0021 /SF*	20%	\$74,481	\$31 /SF*
50% Requirement¹				
Accommodation unit/ limited service lodge unit	0.7000 /unit	10%	\$74,481	\$5,214 /unit
Business office and professional office (excluding real estate office)	0.0032 /SF*	10%	\$74,481	\$24 /SF*
Conference facility	0.0008 /SF*	10%	\$74,481	\$6 /SF*
Eating and drinking establishment	0.0068 /SF*	10%	\$74,481	\$50 /SF*
Health club	0.0010 /SF*	10%	\$74,481	\$7 /SF*
Real estate office	0.0051 /SF*	10%	\$74,481	\$38 /SF*
Retail store/personal service/repair shop	0.0024 /SF*	10%	\$74,481	\$18 /SF*
Spa	0.0021 /SF*	10%	\$74,481	\$16 /SF*

¹ 50% or 100% of employee requirement mitigated through fees. 100% fee level shown for illustrative purposes although Town Code generally requires 50% of requirement be met through on-site construction.

*SF of floor area

Source: Town of Vail. Town Code, Chapter 23: Commercial Linkage. 2015 fee provided by Town of Vail Housing Coordinator.

**TABLE 3
CALCULATION OF ASPEN PER SQUARE FOOT MITIGATION COST (2015 UPDATE)
AFFORDABLE HOUSING LINKAGE FEE NEXUS
CITY OF BOULDER, CO**

DRAFT FOR DISCUSSION

Land Use Category	Employee Generation¹	Mitigation Requirement % of need	2016 Adopted Fee per FTE	Fee/Unit (Implied)²
Commercial Core (CC)	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Commercial (C1-)	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Neighborhood Commercial (NC)	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Commercial Lodge (CL) commercial space	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Lodge (L) commercial space	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Lodge Preservation (LP) commercial space	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Lodge Overlap (LO) commercial space	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Ski Base (SKI) commercial space	0.0047 /SF ³	60%	\$223,072	\$629.06 /SF ³
Mixed-Use (MU)	0.0036 /SF ³	60%	\$223,072	\$481.84 /SF ³
Service-Commercial Industrial (S/C/I)	0.0039 /SF ³	60%	\$223,072	\$521.99 /SF ³
Public	0.0051 /SF ³	60%	\$223,072	\$682.60 /SF ³
Lodge Preservation (LP) lodge units ⁴	0.3000 /room	60%	\$223,072	\$40,153 /room
Lodge District units ⁴	0.6000 /room	60%	\$223,072	\$80,306 /room

¹ Employment densities reduced by 25% for commercial space within basement or upper floors.

² Assuming 100% of employee housing requirement mitigated with fee (no on-site construction).

³ SF net leasable area.

⁴ Historical lodging subject to partial exemption

Sources:

City of Aspen Land Use Code. Chapter 26.470. Growth Management Quota System (GMQS).

City of Aspen Ordinance 37, Series of 2015.

JOBS HOUSING LINKAGE FEE PROGRAMS, CALIFORNIA

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
SAN FRANCISCO, PENINSULA, SANTA CLARA COUNTY						
San Francisco Population: 829,000	1981 Updated 2002, 2007	Retail / Entertainment \$22.96 Hotel \$18.42 PDR \$19.34 Office \$24.61 Development \$16.39 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 Dvlpmt \$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.
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JOBS HOUSING LINKAGE FEE PROGRAMS, CALIFORNIA

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
EAST BAY						
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	Moderate	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 Retail/Restaurant Industrial/Manufacturing Hotel/Lodging Warehouse/Storage Self-Storage R&D \$4.50 \$4.50 \$2.25 \$4.50 \$2.25 \$4.37 \$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 Office Warehouse Manufacturing Hotel/Motel \$2.30 \$4.52 \$0.78 \$0.78 \$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 Office R&D Retail Services & Accommodation \$0.49 \$1.27 \$0.83 \$1.02 \$0.43	20,000 SF threshold	N/A	Moderate	
City of Newark Population: 44,000	2014	Commercial Industrial \$3.59 \$0.69	No min threshold Schools, recreational facilities, religious institutions exempt.	Yes	Moderate	Revised annually
City of Livermore Population: 84,000	1999	Retail Service Retail Office Hotel Manufacturing Warehouse Business Park Heavy Industrial Light Industrial \$1.19 \$0.90 \$0.76 \$583/ rm \$0.37 \$0.11 \$0.76 \$0.38 \$0.24	No minimum threshold Church, private or public schools exempt.	Yes; negotiated on a case-by- case basis.	Moderate	
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JOBS HOUSING LINKAGE FEE PROGRAMS, CALIFORNIA

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
MARIN, NAPA, SONOMA						
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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JOBS HOUSING LINKAGE FEE PROGRAMS, CALIFORNIA

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments
SACRAMENTO AREA						
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	

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Jurisdiction	Yr. Adopted/ Updated	Fee Level (per Sq.Ft. unless otherwise noted)	Thresholds & Exemptions	Build Option/ Other	Market Strength	Comments	
SOUTHERN CALIFORNIA							
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				
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KEYSER MARSTON ASSOCIATES

DRAFT

PRIVATE SECTOR ARTS REQUIREMENT

Prepared for

CITY OF BOULDER, CO

Prepared by

Keyser Marston Associates, Inc.

February 2016

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INTRODUCTION

The following report provides an exploration of key components of a private sector arts requirement and recommendations for the City of Boulder. The report was prepared by Keyser Marston Associates (KMA) for the City, pursuant to a contract with the City that also includes KMA analyses in support of an affordable housing fee on new non-residential development.

Many cities in the United States have adopted programs that require new private sector development to expend a percent of total construction cost on art. These programs require art on-site, placed within the project, or, in most cases, permit other means of compliance. The most common other means of compliance is payment of an in-lieu equivalent “fee.” Many programs also offer additional choices such as off-site art, and some even allow cultural programming on or off-site. Total construction cost is usually equated to Building Permit Valuation, with a 1% requirement for art representing the vast majority of programs.

Private sector arts requirements have been widely adopted in California, but are far less common in other states. A few cities in Colorado have an arts requirement of some kind, but none have a program fully comparable to that explored in this work scope. Tempe, Arizona is a non-California example that does have a program more similar to the one explored in this report.

This report provides a description for the framework of an arts requirement on private sector development in Boulder. The main focus of the KMA work is on the intersection between the City requirement and private sector development projects, covering topics such as thresholds of project size for application (art on-site v. fee payment), what land uses or building types might be subject to the program, suggested exemptions and other program features. Drawn from programs elsewhere, KMA also provides suggestions for the framework on topics such as criteria for art acceptable for on-site placement, location of artwork in projects, process aspects, and responsibility for long term maintenance and insurance coverage.

The City of Boulder’s Draft Community Cultural Plan has served as a starting point and reference guide throughout the preparation of this report.

Report Approach

To initiate the work program, KMA extensively surveyed arts requirement programs elsewhere in the U.S. and assembled information on key components. These survey results are presented in the last section of this report. In the framework Section I, material from other programs has been extensively used, adapted to Boulder. Ultimately, the City will likely want to customize the program to its own needs and desires, either before initial adoption or after a period of working with the initial program, recognizing that modifications will likely become desirable. This may be particularly true of the process aspects as briefly described in the report.

KMA has previously worked on three arts requirement programs. The first was for Santa Monica which entailed an extensive nationwide survey over a period of more than a year, and development of a program highly tailored to the specific interests of the City. A program was ultimately adopted in 2007. Later KMA worked for San Jose and a smaller California city; adoptions are still in process.

Report Organization and Disclaimer

Following is an overview of the content of the report and how it is organized.

- *Introduction* – introductory material including key clarifications with respect to nature of private arts requirements.
- *Summary of Key Components of a Private Sector Arts Requirements* – a discussion of each key component, citing of experience in other jurisdictions.
- *Summary of Surveys of Programs in other Jurisdictions* – KMA coordinated with staff in the selection of seven jurisdictions to closely examine and compare arts requirement programs.
- *Art Project Valuation Generated by the Program* – an overview of building permit valuation experience in Boulder for the building types potentially subject to the program, for the purposes of providing an initial estimate of revenue and/or art valuation likely to be generated by the program.

Keyser Marston Associates (KMA) has conducted the surveys and analyses using the highest professional standards. KMA believes that all data sources used, including data from the City of Boulder, is sufficiently accurate for the purposes of the analysis. However, KMA cannot guarantee the accuracy of any data or survey material and assumes no liability for conclusions drawn from these sources.

Important Note: Arts Requirement from the Developer Perspective

An arts requirement on private sector development essentially asks the developer to invest in art in his/her own project. On-site art is an asset, owned by the project. If the art is well selected, the art is an investment with value and appreciation potential. Art well integrated into a project can add value to the project overall. When the project is sold, any added value attributable to the art is recaptured by the developer in the project sales price. This aspect distinguishes arts requirements from many other City requirements.

Options to meet an arts requirement either through off-site art or an in lieu payment are offered for the convenience of the developer. On-site art entails time and process with the City such that for some projects, especially smaller ones, the developer often welcomes the opportunity to write a check instead. From the City's perspective, there are administrative considerations as well. This topic is explored at some length in the report.

SECTION I: KEY FEATURES OF A PRIVATE DEVELOPMENT ARTS REQUIREMENT PROGRAM AND RECOMMENDATIONS FOR BOULDER

This section addresses the key features of a program that requires private sector development to contribute to arts and culture in Boulder. Each feature is separately described and discussed, drawing from experience in other jurisdictions.

This section is the core of the report, in many ways a summary report.

It is probably helpful for the reader to review the whole section quickly for an overview before focusing on the individual features or components. For example, it is easier to understand how the land uses or building types subject to the program could possibly work when it is understood that the program will also have thresholds, exemptions, and multiple options for compliance.

Goals for program overall design are: make it a meaningful component of Boulder's Cultural Vision and implementation program, keep it simple and easily understood, make it as fair as possible, build in flexibility and choices.

Program Overview

The program proposed in this report is a requirement for new private sector development in the City of Boulder to spend a percent of building permit valuation on art. The program is proposed to include choices: on-site art, off-site art or payment of an in lieu fee.

Programs of this type have been adopted in numerous cities in the U. S., particularly in California where there are many in cities of all sizes. There are very few in Colorado that are similar, Aurora perhaps being the closest in concept.

It is highly recommended that if Boulder is to proceed with a requirement on private sector development, that the City also adopt a similar commitment for expenditure on arts in all public sector projects. This report focuses on the requirement levied on private sector projects.

Percent Requirement – What Percentage

The majority of developer arts requirement programs are levied as a percent of Building Permit Valuation (BPV), or the value of construction for the purposes of a building permit. By far the most common percentage requirement is 1%. Some jurisdictions charge a fraction of 1%, a few place the charge a little higher. The development project is asked to expend 1% of building permit valuation on public art that meets the criteria of the program.

In considering an appropriate percentage range for a private development program in Boulder, the following factors may be taken into account:

- Building permit valuation (BPV) usually represents roughly 50% to 60% of the total development project cost, or even less in very high land value locations. In addition to the construction cost on which the permit valuation is based, other project costs include land, site improvements, design and engineering, financing and an array of other “indirect” costs. (Note: public sector requirements are usually percent of total project costs and thus are greater.)
- Furthermore, construction valuation for permit purposes often does not reflect total construction costs. Cities vary on this matter.
- The actual value of the on-site art will be less than whatever percent is required because other related costs are typically allowed in the calculation. Related costs include transportation of artwork, installation, consultant services, insurance and other costs associated with art placement (or cultural event). A 1% program does not result in arts with a value of 1% of building permit valuation; the result is less than that.

Other Jurisdiction Precedents

The majority of programs requiring private sector contribution of art are established at 1% of building permit valuation. A few exceptions or variations are as follows:

- The City of Los Angeles has a charge per square foot, but the charge is capped at 1% of building permit valuation (BPV), and this cap typically applies.
- The City of Santa Monica has a 2% of construction cost (which the City distinguishes from building permit valuation) for on-site placement of art or an alternative 1% of construction cost in lieu payment. A few other cities also use a different percentage for the off-site options.
- A few cities have a percent requirement that is a little more or less than 1%.

In Colorado there is no other program that completely fits the model proposed here. Following is a very brief summary of other Colorado programs. More information is provided in Section II of this report.

- Aurora requires a fixed dollar amount for art per acre (ranging from \$300 to \$600). The program appears to be focused on landscaping and treatment of outdoor spaces.
- Wheat Ridge charges 1% of the Building Permit fee (not building permit valuation) – in other words, it is a fee on a fee. It does not have an on-site art component; it is a revenue generator for a Public Art Fund.

- Vail has a real estate transfer tax to fund parks, open space and recreation. It appears that a portion of the funds raised is used for art (in the parks, etc.) Presumably, like transfer taxes in general, the tax applies to all transactions, not just new development.

In summary, none of these require private development projects to provide on-site art or chose an alternative means of compliance.

Building Types Subject to the Requirement

A key question in the design of these programs is what land uses or building types should be subject to the requirement. As a generality, most programs address commercial uses. However, many others also include industrial and larger scale residential uses and some include virtually all private sector development.

When thinking about building types and land uses, it is helpful to bear in mind that the program will also have thresholds, exemptions and options for compliance.

Other Jurisdiction Precedents

San Diego and Los Angeles are examples of two large cities that have programs covering virtually all non-residential land uses or building types, including industrial. These two cities, have large scale commercial development and, in addition, have a mature but continually growing industrial base, supported by a policy framework that encourages future growth in the industrial sector. They cover a huge geographical expanse with a diversity of physical and economic conditions existing within the city.

Many other cities, including San Francisco, have a requirement on all land uses, including industrial and residential. These broad programs also typically contain an array of exemptions as explained in the next section.

In Colorado, the Wheat Ridge program applies to all types of projects. The Aurora program has a differentiated fee per acre, depending on whether the development is residential or non-residential. The transfer tax in Vail applies to everything.

Considerations for Boulder

Boulder could consider making the program as broad as deemed administratively practical, accompanied by special conditions for exemptions and off-site compliance options including in lieu payment.

Following is a hierarchy of building types, or land uses, for a private sector arts requirement in Boulder.

Highest priority for being subject to the requirement

- Hotels, resorts, and other lodging
- Office buildings, including medical office
- Retail and entertainment structures
- Other commercial/service projects
- Institutional uses to the extent possible (usually cannot apply to projects owned by other governmental entities.)

Lower priority for being subject to the requirement

- Multi-family residential projects (over size threshold?)
- Parking garages (see special conditions and exemptions)
- Industrial buildings – see special considerations
- Remodels and additions

For Boulder the biggest question may be whether to include the industrial sector.

- All sectors of the economy benefit from having arts enrichment, as articulated in the Draft Community Cultural Plan. There is fairness in treating all projects equally.
- The lines between industrial, research and development, and office uses are increasingly blurred; these uses are sometimes combined in a single building or campus in projects today. Treating all projects equally would simplify administrative decision making as to whether a project is subject to the requirement or not. One option would be to distinguish in a manner consistent with the City's zoning designations.

Exemptions and Special Conditions

Certain building types or land uses may be categorically exempted and/or special conditions for exemption might be adopted as part of the program.

Building Types/Land Uses: Exemption Candidates

- Buildings that serve a public purpose which might be exempted for reasons of other policy objectives, such as:
 - Affordable housing projects or inclusionary units within market rate projects
 - Child care centers

- Institutional uses (not owned by public sector), such as:
 - Schools
 - Hospitals
 - Places of worship
 - Fraternal organizations
- All buildings owned by non-profits, an alternative approach that would affect most of the institutional projects. San Diego, for example exempts all non-profits, other cities such as Pasadena do not exempt non-profit projects.

Special Condition Exemptions

- Development projects that are inaccessible for security or safety reasons (San Diego has well-articulated exemption language on this subject).
- Garages and other structures that are entirely below grade and/or have no significant street or walkway visibility. For example, a garage that is internal to a building and has only entrances and exits on the exterior might be exempted.

Thresholds for Application

The City may wish to incorporate one or more thresholds into the program. Several different types could be considered, as follows:

1. Threshold below which everything is exempt or has a reduced requirement.
2. Threshold range where the City prefers in lieu payment due to small amount of artwork gained relative to administrative cost and process associated with on-site art.
3. Threshold range in which developer has choices for compliance and there is no city preference.
4. Threshold above which the City requires on-site art, except in special cases, due to the size and significance of the project.

All thresholds could be expressed in terms of project size (square feet or number of residential units) or in dollar building permit valuation. The building permit approach is more consistent with the design of the rest of the program. Thresholds can also be tied to certain building types or land uses, or to project characteristics such as whether it is new construction or a remodel. Finally, the program could vary the threshold level by geographic area, such as a downtown area.

The ordinance could be written so that some of the thresholds (especially #2 and #3) are not explicitly articulated but are a matter of application and administrative policy. Some cities separately adopt guidelines which are easier to modify over time than ordinance revisions.

In the following discussion of each threshold, KMA is offering suggestions to illustrate how the thresholds would work. Clearly this is a subject for local decision making, customized to the development activity in Boulder and City's interest and policies related to art in individual projects.

Following is further description of each.

1. *Minimum threshold valuation*

A minimum threshold below which there is no requirement is a feature of most, but not all, programs. Reasons that cities have such thresholds are to relieve the cost burden on small projects (especially if there is a policy to encourage infill development) and to save administrative costs. It is noted, however, that the administrative cost is minor in the case of a simple payment collection as a percent of building permit valuation.

Other Jurisdiction Precedents

San Diego has a \$5 million BPV threshold. Most other adopted programs surveyed have lower thresholds. Los Angeles has a \$500,000 threshold. Many cities have different thresholds for non-residential and residential projects, and many have a lower threshold for remodels and additions than for new construction.

2. *Threshold range – in lieu payment preferred*

Projects in this building permit value range are deemed on the small side of average as far as contributing significant art of public benefit is concerned. Administrative costs to the City are also a factor, as well as demands on non-paid volunteers who serve on bodies responsible for reviewing art.

For the private sector developer, the in lieu payment option will likely be preferred, given the process requirements, both time and monetary, for on-site art placement.

Other Jurisdiction Precedents

Most programs do not have interim thresholds of this type in the ordinance language. It is possible that more informal policies and preferences exist, but more research would be required to learn of experience in this matter.

3. *Threshold Size – above which on-site art is required.*

This threshold essentially says that in very large projects the City requires a significant on-site arts project, except under special circumstances. A large project can result in a significant art

contribution to the City and it is worth the administrative cost and time to City staff, City volunteers who serve on public bodies, and the Developer to work together to achieve a notable result.

Other Jurisdiction Precedents

Santa Monica instituted an informal threshold to insure that it got significant art from very large projects. It was the City's opinion that developers of projects of this magnitude were accustomed and willing to work with the city toward mutually beneficial results.

On-Site Compliance Issues

There are several issues with respect to on-site compliance to which KMA calls attention and makes recommendations. For the most part, the criteria for what qualifies as art, what constitutes public art and/or public placement, and other aspects of on-site compliance are not the focus of the KMA work program.

One program feature and decision point for the program is whether on-site art compliance must be visual art or whether art may be more broadly defined to include performing and other cultural arts. Many of the more newly adopted programs permit cultural arts more broadly defined. The *Draft Community Cultural Plan* clearly embraces a broad definition of the arts in Boulder and it would be consistent for the private arts contribution requirement to do so as well.

Also consistent with the *Draft Plan* would be to allow on-site projects to include cultural facilities, multi-purpose space suitable for arts uses (but not necessarily dedicated only to arts uses), small scale venues and other arts needs articulated in the Plan.

Other Jurisdiction Precedents

As noted, no other programs in Colorado offer on-site compliance in the manner similar to the program envisioned for Boulder. The closest example is Aurora's program which is mainly about landscaping and outdoor spaces.

Some of the programs in California allow performing and cultural art as well as visual art to fulfill their on-site requirements. The Port of Oakland includes literature in its definition of artwork and Culver City allows architecture to qualify as art, whereas other cities such as Santa Monica preclude architecture in the fulfillment of the requirement.

Criteria for On-Site Art & Placement

Some cities try to articulate at length what kinds of art is acceptable to fulfill the requirements of the ordinance. Others use a general statement such as art works that are created uniquely by an artist and integrated into the development project. This includes sculptures, monument, mural, painting, drawing, mosaic, photography, textile, digital and media art.

Further clarity may be added by noting what does not qualify, such as:

- Directional elements and signage, except where they are integral parts of the original work of art
- Objects which are mass produced or standard design such as banners, signs, statuary, fountains, etc.

Areas of considerable disagreement among programs are those pertaining to architectural elements and landscape design. Some programs, such as Santa Monica's explicitly exclude these categories, others include and even encourage them. In Aurora, the program appears to be primarily oriented to landscape design elements.

Placement of art is another aspect of the program that is explicitly identified in the enabling ordinance or adopted guidelines. Generally, exterior art, either integrated into the building or free standing is acceptable. Other freely accessible areas of a project may be inside as long as there is public access during normal business hours.

What Counts toward the 1%

All of the programs studied allow a range of related expenses to count against the 1% total expenditure required. Some set guidelines, most do not.

Generally, the expenditures than can be counted include:

- Transportation of the artwork and related, such as insurance
- Installation, including structural elements
- Any additional labor as may be required, such as for engineering
- Any required permit fees
- Identification and didactic information
- Consultant (see below)

Generally, expenditures precluded, or not counted:

- Publicity
- Services or utilities necessary for long term operation and maintenance of the art
- Insurance post installation
- The cost of the process for approval

The matter of retaining an arts consultant seems to get widely divergent treatment. In some cities consultant costs can count toward the 1% total. In the City of Berkeley, a program that is close to adoption, the City will require that an arts consultant be retained by the developer and consultant costs are not eligible against the 1% total.

One obvious conclusion from the above is that the value of the artwork actually installed (or performed) on-site is less than the 1% of Building Permit Valuation.

Process Aspects of On-Site Art

If on-site art is to be a significant part of the program, there needs to be clear process and procedures for satisfying the program requirements and ultimate approval of the art installation by the City. The process, by definition, entails City staff and some sort of appointed Arts Commission.

The cities of Pasadena, Santa Monica and Berkeley (now in the process of adopting) have all borrowed from each other in matters of process. All require that:

- The developer indicate early in the application process that the he/she would like to fulfill the requirement by installing art on-site (or off site)
- The developer meet with the City Public Arts Coordinator (or other designated) staff prior to submitting a design.
- The developer must prepare and present a Conceptual Art Plan. In some cities, the Developer is required to retain a professional arts consultant to prepare the Plan. The Plan must contain a budget as well as the descriptive materials about the art work.
- The Conceptual Art Plan must be approved by the commission. (Commission approval usually having a time frame for response, such as 90 or 120 days.)
- At key points in the development project entitlement process, the on-site art Plan must be approved.

Other cities describe the approval process in far more general terms.

KMA understands that there currently exists an Arts Commission in Boulder. Before adopting an arts requirement, the City will need to address whether the current commission is suitably comprised to undertake the added responsibilities that will accompany a Private Sector Arts Program. As indicated later, fee revenues must be deposited into a Trust Fund which also will require commission oversight and responsibility to disburse funds and other obligations.

Legal Agreement with City/Long Term Issues

On-site public art remains the property of the developer/property owner. Generally, there is an agreement to keep the art in place for a certain number of years, or indefinitely, with a procedure for removal of the art or replacement with another art work.

Usually the property owner is responsible for the long term maintenance and repair of the artwork, for insurance and other ongoing needs.

Off-Site Compliance Issues

The off-site compliance option of arts requirement programs is an arena where programs differ widely. The newer programs tend to offer more choices than the older programs and, in fact, many of the older programs offer no off-site option at all. Off-site compliance by definition includes both arts projects off-site and in lieu payment arrangements. See next section for in-lieu payment issues and options.

Other Jurisdiction Precedents:

Only a few cities specifically permit off-site art of the same type as allowed on-site. San Francisco has a program that expands compliance options to include historic landmark exteriors. Pasadena which allows on-site performance art, also allow it for off-site compliance.

In Lieu Payment and Trust Fund

With the adoption of an arts requirement that has an in lieu fee option, the City will need to establish a trust fund to receive and disburse the fee revenues. The enabling legislation will need to specify the use of fee revenues but uses can be broadly and loosely described. Many cities prepare and adopt some sort of Master Plan to set priorities and guide the expenditure of trust fund monies. Sometimes these Master Plans are prepared after ordinance adoption, but within a short term time frame such as two years.

Process aspects of disbursing fee revenues should also be specified in the enabling legislation. Specifically, what local body – the Arts Commission? – will recommend and whether the City Council approval will be needed.

Regular reporting (annual or otherwise) to City Council on the Trust Fund is advisable to inform Council and the public on the fund revenues for the year, fund balance and fund disbursements.

In the enabling legislation or guidelines, it may be desirable to set some limits on how long the funds may be held in the trust fund, whether the trust fund can either loan to other parties or take out or borrow against future fee revenues.

In older programs, a need has emerged for cities to document and catalogue the art generated by the program, both on site and off site art. The City should produce public information on where to find and view the artworks, along with art produced by the public sector program if also adopted.

SECTION II: ARTS PROGRAMS IN OTHER SELECTED CITIES

This section summarizes the results of a survey to closely examine the programs in other cities. Nine cities were jointly selected by staff and consultant (KMA) to cover a range, drawing from the Draft Community Cultural Plan in some cases. In other cases, KMA sought to include some programs of the kind that KMA understands Boulder is seeking – namely, a requirement that private sector development projects contribute to local art accessible to the public. The nine cities may be grouped:

- Other Colorado Cities
 - Aurora
 - Wheat Ridge
 - Vail

- Other University cities of similar size
 - Tempe AZ
 - Eugene OR
 - Madison WI

- California programs similar to Boulder's interest
 - Santa Monica
 - Pasadena
 - Oakland

Materials from the nine cities were procured from publications on public art/private development, from on-line sources, and from prior KMA work on similar programs. The two page chart following this section summarizes the results of the survey. The chart is designed to communicate the basics of whether the program requires private development to contribute to art, what the requirement is, what types of development are subject to the requirement, and if there is a minimum threshold below which buildings are exempt. Other parts of the chart provide information on the options to meet the requirement, exemptions and miscellaneous comments of interest.

The main findings of the survey are:

In Colorado, there are several programs that link art to new development but none highly comparable to what is contemplated for Boulder or described in Section I of this Report.

- Aurora has a program similar in concept in that new development is required to expend a fixed amount on art. In Aurora the amount is per acre, differentiated between non-residential and residential. Expenditure is on landscaping and art to enhance outdoor spaces. Certain zones of the city are exempt.

- Wheat Ridge has a revenue generating fee with no options for on-site art. The fee is 1% of the total City fees for building permit and other items. In other words, it is a fee on a fee, which would make it of far smaller magnitude than a fee on building permit valuation or construction cost. It is applied when the building permit valuation exceeds \$100,000.
- Vail uses a portion of the City's transfer tax on art. The transfer tax is on all real estate sales transaction, old structures and new, and funds recreation, parks and open space type projects in general with a portion directed to art.

Other Colorado cities such as Broomfield and Loveland have programs that are mostly about committing public sector projects to a percentage dedicated to art. As noted previously, it is generally viewed as a fairness issue that if the private sector is to be asked to expend on art, then the public sector should be similarly committed to expend on art.

In the next grouping, the cities were selected for the strong reputation the cities have for their arts programs. All three are home to a university.

- Eugene, Oregon and Madison, Wisconsin both have a long established tradition of public art, visual and performing and are noted nationally for the presence of art infused in the communities. Interestingly, in both cases, the City's Art Plan for Eugene, and the Public Art Framework and Field Guide for Madison, these cities cite as a goal the adoption of a 1% requirement on private sector development. It appears that neither city has yet taken the step.
- Tempe Arizona does have a program more akin to that contemplated for Boulder. Commercial development is charged per square foot. The current charge is \$0.44 per square foot, applicable to all buildings over 50,000 net floor area. On-site placement of art is encouraged but in lieu payment is also permitted.

The last grouping is three California cities selected for their well-developed arts programs that offer some interesting ideas. We estimate that over 50 California cities have adopted programs that require 1% of building permit valuation (some a little more, some a little less) be spent on art on-site, off-site or make an in lieu payment. Many of the program's, like San Francisco's, go back thirty years and have evolved over time; at this time there are a number of new adoptions under consideration, including cities like Berkeley and Palo Alto that were the early pioneers in other types of developer requirements, such as for affordable housing, but late coming to an arts requirement.

- The Pasadena program, adopted in 1992, charges 1% of Building Permit Valuation (BPV) on a wide range of commercial, industrial and residential development projects, over 25,000 square feet. Certain more distressed areas of the city are exempt. This city

defines art broadly, and allows satisfaction of the requirement in various forms of cultural arts. Also 25% of the total obligation is deposited into the City's Cultural Trust Fund.

- Santa Monica's program, adopted in 2006, borrowed much from the Pasadena model. To encourage in lieu payment, it set the in lieu amount at 1% BPV and the on-site requirement at 2%, part of the rationale being that developers owned the art on-site. Another feature of the Santa Monica program is that very large projects are required to do on-site art and work with the City to achieve art of significance.
- Oakland is a recent 2014 adoption that follows the other models with some interesting new ingredients. Developers can dedicate space in their projects for an art gallery or use for other forms of art, such as cultural and performing.

Materials from these and other cities will be made available for use in selecting and refining the design of a program for Boulder. Sample ordinances, guidelines, and other items should be helpful in augmenting the descriptive materials and recommendations contained in this report.

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**PRIVATE SECTOR ARTS REQUIREMENTS
PROGRAMS IN OTHER SELECTED CITIES
CITY OF BOULDER, CO**

Location & Name	Program Basics				Options to Meet Requirement				Exemptions	Comments
	Year Adopted/ Updated	Application Formula	Development Types	Thresholds	On Site Art	Off Site Art	Off Site Programs	In-Lieu payment/ Fee		
Aurora, CO	2010	Fixed dollar am't per acre; \$300/acre res to \$600+/acre non res.	All	None	Required	No	No	No		More about landscaping and outdoor spaces than buildings. Well-articulated process. Fee amount adjusted annually by CPI.
Wheat Ridge, CO	2011	1% City fees for BP, plan review, use tax, etc.	All	\$100,000 BPV	NA	NA	NA	1% BP, plan review and use tax or City review fees.		Public Art Fund; no on-site art component; a revenue raising measure only.
Vail, CO	NA	Transfer Tax 1% applied to all sales transactions (not just new development)	All	None	NA	NA	Yes	NA Transfer Tax		Not really an art program per se. Uses portion of real estate transfer tax for recreation, parks and open space.
Tempe, AZ	1990 2009 2011	Fee per square foot bldg. area.	Office and commercial	50,000 sf Net floor area	Yes	Not specified	Not specified	Yes \$0.43 psf (2011)		Fee adjusts annually with CPI
Madison, WI	NA	Voluntary – Encouraged & Expected	Non Residential	NA	Yes	Yes	NA	NA		Private requirement identified as a goal but not yet implemented.
Eugene, OR	NA	Voluntary	NA	NA	NA	NA	NA	NA		Private requirement to be explored but not yet adopted. Active public art program for 30+/- years.

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Location & Name	Program Basics				Options to Meet Requirement				Exemptions	Comments
Santa Monica, CA	2006	2% BPV on site Or 1% BPV in lieu fee	All	Res: 5 units Commercial: New 7500 sf Remodel 25,000 sf	Yes, incl cultural	Yes	No	1% Const. cost (which is BPV enhanced)	Cultural facilities Places of worship Affordable housing	
Pasadena, CA	1992 2002 2010	1% BPV	Commercial Industrial Residential	25,000 sf	Yes, incl cultural programs	Yes	Yes	Yes	Northeast Enterprise Zone	Had program in redevelopment areas; same except for 25% of amount deposited in Cultural Trust Fund.
Oakland, CA	2014	Residential: 0.5% total cost Commercial: 1%	Residential and Non- residential	Res. 20 du's Non-res: 2000 sf.	Yes	Not specified	Not specified	Yes; also may meet 75% of req. by dedicating bldg. space for art. See comments	Affordable housing	Challenge filed in Federal Court; being monitored. Unusual feature: can satisfy 75% req. by providing rotating gallery or 50% req. by providing at least 500 sf space for arts.

Footnotes:

Special exemptions. Virtually all programs exempt projects covered by other development agreements. Most programs grandfather projects that are already in the entitlement process or receive some type of permit by a cutoff date.

BP = Building Permit or Building Permit Fee

BPV = Building Permit Valuation

SECTION III: ART PROGRAM PROJECTION: REVENUE AND/OR ART AT 1% BPV

This section provides a look at historical building permit valuation experience in Boulder to ascertain an order of magnitude estimate of what a 1% Building Permit Valuation (BVP) requirement would deliver in the form of on-site art or fee revenue.

The period examined is the year 2000 through 2015, or sixteen years. This period covers years of vigorous construction since the recession, the recession period when activity was very thin, and the pre-recession period which was more notable for the residential boom than the action in the commercial sector. The sixteen-year average should be useful for gauging the future over a long period.

Table 1 that follows shows the valuation for commercial buildings – offices, stores, and hotel/motels – and then separately, industrial structures. The figures for the sixteen-year average are summarized below:

Annual Average BVP 2000-2015	
Offices, Banks, Professional	\$10,110,830
Stores	\$25,636,517
Hotels/Motels	\$4,301,156
Subtotal	<u>\$40,048,503</u>
Industrial	\$3,508,282
Total	<u>\$43,556,785</u>

If the annual average for the past sixteen years were to continue as an average into the future, the City would realize the value of about \$435,000 in annual on-site art or in lieu payments combined. This amount would, however, likely be reduced by the following:

- Application of any minimum size or building valuation threshold.
- Exemptions of various kinds – buildings built by the non-profit sector, inaccessible or inappropriate locations, such as interior garage structures, etc. In addition, buildings owned by various levels of government or governmental agencies are usually not subject to city requirements of this nature.

On the other hand, a broader application of the program to structures beyond the commercial and industrial sector, could increase the valuation subject to the 1% requirement. Building types that could be included in the program:

- Multifamily housing. Most programs apply a threshold, like the over five units suggested here. Over the 16-year period, the average number of units per year was 317. If 200

units per year were subject to the requirement, the art/payment value would be on the order of \$40,000 per year.

- Other Non-residential is a large miscellaneous category for which some or all structures might be subject to the program. Valuation in this categories averaged around \$25 million per year, an amount that would substantially add to the commercial and industrial valuation. However, any threshold and exemptions would substantially reduce the total subject to the 1% requirement.
- Additions, Alternations and Conversions is another huge category of permit valuation processed by the City. Over the sixteen-year period, the valuation on non-residential buildings alone was on the order of \$48 million per year. Again, various thresholds and criteria might eliminate much subject to the program, if the category is to be considered at all.

In summary, the amount of annual revenue or value of art at 1% building permit valuation could vary enormously by what kinds of structures are subject to the requirement, thresholds and exemptions. Most programs limit the requirement to commercial and industrial permits, some add multifamily residential, and some go for everything. If the Boulder program were to focus on commercial, industrial and multifamily, and the program does adopt a minimum threshold, we would place the order of magnitude estimate in the range of \$300,000 to \$400,000 per year.

The building permit valuation data was assembled for the sole purpose of providing the City a very rough estimate for the revenue stream/value of art that a program like this would generate. Without this exercise there may be either wildly exaggerated expectations or, on the other side, expectations that the amount would be so little, the program is not worth pursuing. In our view, the level produced by development activity in Boulder could result in meaningful additions to art and culture in the city.

**NON RESIDENTIAL PERMIT VALUATION
CITY OF BOULDER
2000-2015**

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Offices, Banks, Professional	\$25,116,123	\$10,662,703	\$7,475,000	\$3,660,425	\$18,626,843	\$8,279,428	\$2,387,570	\$2,811,436	\$6,114,371
Stores	\$3,425,000	\$5,291,230	\$6,781,163	\$33,024,535	\$9,997,525	\$27,866,979	\$24,084,625	\$985,981	\$44,558,495
Hotels, Motels	\$0	\$0	\$0	\$25,069,723	\$0	\$0	\$0	\$871,366	\$0
Subtotal	\$28,541,123	\$15,953,933	\$14,256,163	\$61,754,683	\$28,624,368	\$36,146,407	\$26,472,195	\$4,668,783	\$50,672,866
Industrial	\$26,704,060	\$0	\$2,219,875	\$3,154,787	\$0	\$0	\$601,658	\$1,785,048	\$961,153
TOTAL	\$55,245,183	\$15,953,933	\$16,476,038	\$64,909,470	\$28,624,368	\$36,146,407	\$27,073,853	\$6,453,831	\$51,634,019
Commercial Buildings	36	17	13	26	16	17	22	7	11

	2009	2010	2011	2012	2013	2014	2015	Average
Offices, Banks, Professional	\$0	\$554,341	\$3,876,918	\$1,471,583	\$3,462,594	\$16,683,179	\$50,590,769	\$10,110,830
Stores	\$2,490,089	\$5,689,955	\$47,422,490	\$47,825,307	\$57,782,902	\$64,263,708	\$28,694,284	\$25,636,517
Hotels, Motels	\$0	\$0	\$0	\$14,056,918	\$14,410,245	\$14,410,245	\$0	\$4,301,156
Subtotal	\$2,490,089	\$6,244,296	\$51,299,408	\$63,353,808	\$75,655,741	\$95,357,132	\$79,285,053	\$40,048,503
Industrial	\$0	\$0	\$0	\$0	\$5,164,066	\$11,062,083	\$4,479,786	\$3,508,282
TOTAL	\$2,490,089	\$6,244,296	\$51,299,408	\$63,353,808	\$80,819,807	\$106,419,215	\$83,764,839	\$43,556,785
Commercial Buildings	2	8	4	6	10	17	11	

Source: City of Boulder, Planning and Development Services