
DEVELOPMENT EXCISE TAX STUDY

City of Boulder, Colorado



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Prepared By:

TischlerBise
Fiscal, Economic & Planning Consultants

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4701 SANGAMORE ROAD | SUITE S240 | BETHESDA, MD 20816

T: 800.424.4318 | F: 301.320.4860

80 ANNANDALE ROAD | PASADENA, CA 91105-1404

T: 818.790.6170 | F: 818.790.6235

WWW.TISCHLERBISE.COM

EXECUTIVE SUMMARY

OVERVIEW

The City of Boulder retained TischlerBise to prepare an excise tax study for various infrastructure categories. This report is an update to a Development Excise Tax (DET) study prepared in 1996 when the same consulting firm was known as Tischler & Associates, Inc. Although the City currently has development excise taxes in place for libraries, parks/recreation, human services, municipal services, police, and fire infrastructure, the City's may decide to implement impact fees for these facilities. In addition, the City of Boulder is considering continuation of excise taxes for transportation and affordable housing, while adding new excise taxes for vehicles/equipment and park land.

Excise taxes are one-time revenues often used to fund new infrastructure needed to accommodate new development. 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. The City of Boulder has legislative authority to impose development excise taxes upon approval of the voters.

Excise taxes differ from impact fees in that they are primarily a tool for raising revenue, as opposed to a land use regulation designed to provide growth-related facilities. In addition, excise taxes do not have to be earmarked or accounted for separately from the City's general revenue, do not have to specifically benefit new growth, and are generally more flexible than impact fees. Excise taxes can be applied in several ways. Some communities apply a rate to the construction value of the new development; others use a flat fee per acre of development, while other communities apply a straight fee by type of housing unit or square-foot of development. In Boulder, the current DET is assessed per housing unit by type of unit (detached and attached) and per square foot of nonresidential development regardless of type.

DEVELOPMENT EXCISE TAX SUMMARY

Figure 1 summarizes the proposed development excise tax methodologies and cost components. Updated development excise taxes have been calculated for Transportation and Affordable Housing. The Transportation development excise tax is based on capital costs from the 2003 Transportation Master Plan (TMP) and is provided for both the Action Plan and Vision Plan. The improvements on which the excise tax is based include projects to enhance mobility and access through multimodal facilities including roads, intersections, bike lanes, underpasses, and pedestrian enhancements. The Transportation DET would be paid by both residential and nonresidential development.

The Affordable Housing development excise tax is based on the cost to the City to meet Boulder's future affordable housing needs. This excise tax would be paid only by nonresidential development, as employment is the most direct generator of affordable housing needs. The recommended DET component uses a plan-based methodology driven by the City's adopted goal for affordable housing and the cost to the City to subsidize the provision of affordable units.

A new excise tax for Vehicles and Equipment will be used to expand the City's fleet to maintain the current infrastructure standard. This excise tax uses the same calculation steps as the impact fee for Municipal Facilities, with both residential and nonresidential development paying the cost of additional vehicles and equipment.

The City of Boulder has a high level of service for park land. Boulder's 2006 Parks Master Plan documents numerous undeveloped park sites (see page 20) and states park acreage "meets the guidelines for Boulder's projected population at build-out." (see page 23) Consistent with this finding, the Park Land excise tax is derived using the current inventory of park and recreation sites and projected population in 2030.

Figure 1. Summary of Proposed Excise Tax Methodologies and Cost Components

Type of Public Facility	Method	Cost Allocation
<i>Transportation</i>	▪ Plan-based cost of multimodal transportation corridor improvements	Residential and Nonresidential Average Weekday Vehicle Trips
<i>Affordable Housing</i>	▪ Plan-based City cost to subsidize affordable housing	100% Nonresidential
<i>Vehicles and Equipment</i>	▪ Incremental expansion cost of vehicles and equipment	Population and Jobs
<i>Park Land</i>	▪ Buy-in	100% Residential

DEVELOPMENT EXCISE TAXES BY TYPE OF LAND USE

Figures 2, 3, and 4 provide schedules of Development Excise Taxes for residential and nonresidential development. The Transportation Excise Tax is provided for both the Action Plan and Vision Plan (see the Transportation chapter for additional details on these options). Residential excise taxes vary by type and size of housing, based on finished floor area. Figure 2 indicates transportation excise tax amounts for single family housing. For comparison with the current transportation excise tax, the proposed amount for an average size unit is shown with grey shading at the top of the following table. On the right side of the table below, proposed increases assume implementation of excise taxes for transportation, vehicles/equipment, and park land.

Figure 1. Summary of Development Excise Taxes for Single Family Residential

Single Family	TRANSPORTATION				Current Transportation Excise Tax	Proposed Increase	
	Action Plan	Vision Plan	Vehicles and Equipment	Park Land		Action Plan	Vision Plan
Average Size	\$9,143	\$11,132	\$391	\$4,241	\$2,062	\$11,713	\$13,702
Square Feet							
900 or less	\$4,033	\$4,910	\$170	\$1,844		\$3,985	\$4,862
1,000	\$4,644	\$5,654	\$197	\$2,138		\$4,917	\$5,927
1,100	\$5,196	\$6,326	\$221	\$2,397		\$5,752	\$6,882
1,200	\$5,700	\$6,940	\$243	\$2,634		\$6,515	\$7,755
1,300	\$6,164	\$7,505	\$263	\$2,852		\$7,217	\$8,558
1,400	\$6,593	\$8,027	\$281	\$3,053		\$7,865	\$9,299
1,500	\$6,993	\$8,514	\$299	\$3,241		\$8,471	\$9,992
1,600	\$7,367	\$8,969	\$315	\$3,416		\$9,036	\$10,638
1,700	\$7,718	\$9,397	\$330	\$3,581		\$9,567	\$11,246
1,800	\$8,050	\$9,800	\$344	\$3,736		\$10,068	\$11,818
1,900	\$8,363	\$10,182	\$358	\$3,883		\$10,542	\$12,361
2,000	\$8,660	\$10,544	\$371	\$4,023		\$10,992	\$12,876
2,100	\$8,943	\$10,888	\$383	\$4,155		\$11,419	\$13,364
2,200	\$9,213	\$11,216	\$395	\$4,282		\$11,828	\$13,831
2,300	\$9,470	\$11,530	\$406	\$4,403		\$12,217	\$14,277
2,400	\$9,717	\$11,830	\$416	\$4,518		\$12,589	\$14,702
2,500	\$9,953	\$12,118	\$427	\$4,629		\$12,947	\$15,112
2,600	\$10,181	\$12,395	\$436	\$4,736		\$13,291	\$15,505
2,700	\$10,399	\$12,661	\$446	\$4,838		\$13,621	\$15,883
2,800	\$10,610	\$12,918	\$455	\$4,937		\$13,940	\$16,248
2,900	\$10,813	\$13,165	\$464	\$5,033		\$14,248	\$16,600
3,000	\$11,010	\$13,404	\$472	\$5,125		\$14,545	\$16,939
3,100	\$11,200	\$13,636	\$481	\$5,214		\$14,833	\$17,269
3,200	\$11,384	\$13,860	\$489	\$5,300		\$15,111	\$17,587
3,300	\$11,562	\$14,077	\$496	\$5,384		\$15,380	\$17,895
3,400	\$11,735	\$14,287	\$504	\$5,465		\$15,642	\$18,194
3,500	\$11,903	\$14,492	\$511	\$5,544		\$15,896	\$18,485
3,600	\$12,066	\$14,691	\$518	\$5,621		\$16,143	\$18,768
3,700	\$12,225	\$14,884	\$525	\$5,695		\$16,383	\$19,042

Figure 3 indicates transportation excise tax amounts for multifamily housing. For comparison with the current transportation excise tax, the proposed amount for an average size unit is shown with grey shading at the top of the following table. On the right side of the table below, proposed increases assume implementation of excise taxes for transportation, vehicles/equipment, and park land.

Figure 2. Summary of Development Excise Taxes for Multifamily Residential

Multifamily	TRANSPORTATION				Current Transportation Excise Tax	Proposed Increase	
	Action Plan	Vision Plan	Vehicles and Equipment	Park Land		Action Plan	Vision Plan
Average Size	\$6,819	\$8,301	\$272	\$2,950	\$1,245	\$8,796	\$10,278
<i>Square Feet</i>							
600	\$5,625	\$6,848	\$179	\$1,949		\$6,508	\$7,731
700	\$5,992	\$7,295	\$217	\$2,359		\$7,323	\$8,626
800	\$6,359	\$7,742	\$250	\$2,714		\$8,078	\$9,461
900	\$6,726	\$8,189	\$279	\$3,028		\$8,788	\$10,251
1,000	\$7,093	\$8,636	\$305	\$3,308		\$9,461	\$11,004
1,100	\$7,460	\$9,083	\$328	\$3,562		\$10,105	\$11,728
1,200	\$7,827	\$9,530	\$350	\$3,794		\$10,726	\$12,429
1,300	\$8,195	\$9,977	\$369	\$4,007		\$11,326	\$13,108
1,400	\$8,562	\$10,424	\$387	\$4,204		\$11,908	\$13,770
1,500	\$8,929	\$10,871	\$404	\$4,388		\$12,476	\$14,418
1,600	\$9,296	\$11,318	\$420	\$4,560		\$13,031	\$15,053

Current excise taxes for nonresidential development do not vary by type. Proposed excise taxes for nonresidential development are shown in Figure 4. At the top of the table are development categories with tax amounts per square foot of floor area. Development categories shown at the bottom have unique demand indicators, such as the number of students in a day care center. On the right side of the table below, proposed increases assume implementation of excise taxes for transportation, affordable housing, and vehicles/equipment.

Figure 3. Summary of Development Excise Taxes for Nonresidential Development

ITE Code	TRANSPORTATION				Current Transportation plus Housing Excise Tax	Proposed Increase		
	Action Plan	Vision Plan	Affordable Housing	Vehicles and Equipment		Action Plan	Vision Plan	
<i>Nonresidential (per Square Foot of Floor Area)</i>								
820	Retail / Restaurant	\$55.27	\$67.29	\$6.65	\$0.19	\$2.28	\$59.83	\$71.85
770	Business Park	\$13.14	\$16.00	\$7.35	\$0.22	\$2.28	\$18.43	\$21.29
710	Office	\$18.90	\$23.01	\$9.10	\$0.27	\$2.28	\$25.99	\$30.10
610	Hospital	\$18.09	\$22.03	\$7.86	\$0.23	\$2.28	\$23.90	\$27.84
520	School	\$9.85	\$11.99	\$2.14	\$0.06	\$2.28	\$9.77	\$11.91
151	Mini-Warehouse	\$2.57	\$3.13	\$0.09	\$0.00	\$2.28	\$0.38	\$0.94
150	Warehousing	\$5.10	\$6.21	\$2.97	\$0.08	\$2.28	\$5.87	\$6.98
110	Light Industrial	\$7.17	\$8.74	\$5.37	\$0.16	\$2.28	\$10.42	\$11.99
<i>Other Nonresidential (per unique demand indicator)</i>								
620	Nursing Home (per bed)	\$2,441	\$2,971	\$838	\$25			
565	Day Care (per student)	\$2,214	\$2,696	\$372	\$11			
320	Lodging (per room)	\$5,798	\$7,060	\$1,024	\$30			

TRANSPORTATION EXCISE TAX

It is common practice for jurisdictions to require project-level improvements to be addressed through development exactions that remain roughly proportional to a specific project. Project-level improvements are typically specified in a development agreement. In contrast, system improvements may benefit multiple development projects or even the entire jurisdiction. System improvements are funded by development impact fees or development excise taxes. The City of Boulder has legislative authority to impose a transportation excise tax upon approval of the voters.

To derive a maximum supportable Transportation Excise Tax for the city of Boulder, TischlerBise used the planned capital enhancements and improvements from the 2003 Transportation Master Plan (TMP). The TMP provides three transportation investment programs based on different levels of funding: Current Funding, the Action Plan and the Vision Plan. For the Transportation Excise Tax, planned improvements at two funding levels in the TMP—Action Plan and Vision Plan—have been included as potential policy options in selection of the appropriate transportation excise tax.

The Action Plan represents the next best steps toward reaching the community's transportation goals, as outlined in the TMP, if additional funding becomes available. Pursuing and funding the Action Plan would approximately double the number of corridor segments that could be fully developed into multimodal environments. The Vision reflects the completed multimodal system desired by the community, as reflected in the TMP. Using both Plan levels provides information and flexibility for the City in its decision making regarding transportation improvements and funding.

To derive the maximum supportable Transportation Excise Tax, total City costs benefiting growth from the TMP, at both Action and Vision Plan levels, are used and allocated 100 percent to new development. Projects included in the Plans are enhancements and capital improvements and do not reflect replacement or maintenance of existing facilities. The TMP Action Plan and Vision Plan improvements are shown in Figure 5 and include such multimodal improvements and enhancements as road improvements, intersections, bike lanes, underpasses, and pedestrian enhancements for the corridors shown. Since construction costs have increased almost 40 percent (per Colorado Department of Transportation) over the past five years, the City's share of the capital cost is inflated to 2008 dollars and is now estimated to be approximately \$176 million for the Action Plan and \$214 for the Vision Plan.

Figure 5. Transportation Action and Vision Plans and Capital Costs

	Rank	Multimodal Corridor	Total Cost	City Cost	
ACTION PLAN	VISION PLAN	1	28th St- Iris to Arapahoe	\$128,434,372	\$35,612,585
		2	28th St- Arapahoe to Baseline	\$9,391,715	\$4,349,322
		3	Arapahoe- Folsom to 33rd St	\$7,152,295	\$2,433,915
		4	Broadway- Balsam to 27th Way	\$8,416,263	\$5,697,951
		5	Broadway- 27th Way to Table Mesa	\$3,169,117	\$3,142,237
		6	Pearl Pkwy- 28th St to Foothills	\$20,420,800	\$11,946,350
		7	Arapahoe- 33rd to 55th St	\$14,553,999	\$6,791,248
		8	Table Mesa- Moorehead to 55th St	\$3,776,511	\$3,509,050
		9	Pearl- Broadway to 28th St	\$435,921	\$406,143
		10	Arapahoe- 55th St to Westview Dr	\$24,938,766	\$8,850,750
		11	Arapahoe/Canyon- Pearl to Folsom	\$574,029	\$574,029
		12	Diagonal Hwy- 28th St to Fourmile Creek	\$8,905,728	\$6,393,203
		13	Table Mesa- Broadway to Moorehead	\$211,037	\$211,037
		14	Broadway- Table Mesa to Greenbriar Blvd	\$2,405,353	\$614,032
		15	Pearl Pkwy- Foothills to 55th St	\$9,997,108	\$7,019,306
		16	55th St- Valmont to Arapahoe	\$2,722,832	\$1,585,380
		17	Foothills Hwy- Baseline to US 36	\$51,914	\$51,914
		18	Broadway- Iris Av to Balsam Av	\$11,307,368	\$2,521,668
		19	Broadway- North US 36 to Violet AV	\$26,221,677	\$10,355,789
		20	28th St- Jay Rd to Iris Av	\$6,075,386	\$4,839,406
		21	Diagonal Hwy- Fourmile Creek to 71st St	\$12,053,797	\$8,894,628
ACTION PLAN TOTAL			\$301,215,989	\$125,799,942	
Construction Cost Increase 2003 to 2008*				1.4	
ACTION PLAN Current City Cost (rounded)				\$176,120,000	
		22	Baseline- 32nd St to 55th St	\$856,782	\$606,298
		23	US 36- Baseline easement to planning area boundary	\$6,361,787	\$3,382,173
		24	Broadway Violet Av to Iris Av	\$6,592,970	\$4,866,254
		25	Baseline- Broadway to 33rd	\$0	\$0
		26	Table Mesa- Vassar to Broadway	\$1,843,153	\$1,843,153
		27	Valmont- 28th St to Foothills Hwy	\$3,307,986	\$2,556,856
		28	South Boulder Rd- 55th to 76th St	\$97,880	\$97,880
		29	Foothills Hwy- Goose Creek to Colorado Blvd	\$3,584,379	\$200,000
		30	Foothills Hwy- Colorado to Baseline	\$349,469	\$349,469
		31	Arapahoe- Westview Dr to 75th St	\$3,443,587	\$403,177
		32	Balsam/Edgewood/Valmont- Broadway to 28th St	\$26,688	\$26,688
		33	Valmont- Foothills Hwy to Pearl Pkwy	\$2,283,663	\$2,149,913
		34	Pearl Pkwy- 55th to Jay Rd	\$1,752,170	\$583,338
		35	28th St- North Broadway to Jay Rd	\$7,067,035	\$5,387,596
		36	Baseline- 9th St to Broadway	\$844,226	\$673,070
		37	Foothills Hwy- Diagonal to Goose Creek	\$309,848	\$179,608
		38	55th St- Arapahoe to Baseline	\$433,520	\$433,520
		39	Iris Av- Broadway to 28th St	\$1,926,498	\$1,108,098
		40	63rd Street- Jay Rd to Diagonal	\$6,585,692	\$2,500,412
		41	Baseline- 55th St to 75th St	\$209,793	\$0
VISION PLAN TOTAL			\$349,093,114	\$153,147,445	
Construction Cost Increase 2003 to 2008*				1.4	
VISION PLAN Current City Cost (rounded)				\$214,406,000	

* Colorado Department of Transportation (per City of Boulder)

Calibration of the transportation excise tax requires projected development in the City of Boulder to be converted into average weekday vehicle trips, as described in the following sections. It should be noted that while Boulder's transportation system is multimodal in nature, use of vehicle trips is a reasonable proxy to determine the relative demand and resulting proportionate share, by type of land use, for transportation improvements.

Trip Generation by Size of Housing

TischlerBise used Census 2000 data for the City of Boulder to derive custom trip generation rates by type of housing, as shown in Figure 6. Boulder-specific trip generation rates for residential development are lower than the national averages.

Figure 6. Residential Trip Generation Rates by Type of Housing in Boulder

Boulder, Colorado		<i>Households (2)</i>			<i>Vehicles per Household by Tenure</i>
		<i>Vehicles Available (1)</i>	<i>Single Family</i>	<i>Multi-family</i>	
Owner-occupied	35,163	16,596	2,992	19,588	1.80
Renter-occupied	29,294	4,864	15,187	20,051	1.46
TOTAL	64,457	21,460	18,179	39,639	1.63
		54.14%	45.86%		

	<i>Persons (3)</i>	<i>Trip Ends (4)</i>	<i>Vehicles by Type of Housing</i>		<i>Average Trip Ends</i>	<i>Trip Ends per Household</i>
				<i>Trip Ends (5)</i>		
Single Family	53,709	139,467	36,898	213,240	176,353	8.22
Multifamily	33,292	114,162	27,559	108,875	111,518	6.13
TOTAL	87,001	253,628	64,457	322,116	287,872	7.26

(1) Vehicles available by tenure from Table H46, SF3, Census 2000.

(2) Households by tenure and units in structure from table H32, SF3, Census 2000.

(3) Persons by units in structure from table H33, SF3, Census 2000.

(4) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2003). For Single Family, fitted curve equation is $EXP(0.91*LN(\text{persons})+1.52)$. To fit within the data range of the ITE studies, the number of persons was divided by 100 and the equation result multiplied by 100. For Multifamily, fitted curve equation is $(3.43*\text{persons})+30.02$.

(5) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2003). For Single Family, fitted curve equation is $EXP(0.99*LN(\text{vehicles})+1.81)$. To fit within the data range of the ITE studies, the number of vehicles available was divided by 140 and the equation result multiplied by 140. For Multifamily, fitted curve equation is $(3.94*\text{vehicles})+293.58$.

As noted above, Boulder's transportation excise tax calculations are based on average weekday vehicle trip ends. Trip generation rates are from the reference book Trip Generation (ITE 2003). 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 excise taxes, trip generation rates are adjusted 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 excise tax methodology includes additional adjustments to make the tax rates proportionate to the infrastructure demand for particular types of development. Residential development has a larger trip adjustment factor of 54% to account for commuters leaving the City of Boulder for work. According to the 2001 National Household Travel Survey (see Table 29, in the Federal Highway Administration publication dated 12/04), home-based weekday work trips are typically 31% of production trips (i.e., all out-bound trips, which are 50% of all trip ends). Also, Census 2000 data from Table P26 in Summary File 3 indicates that 28% of Boulder workers travel outside the city for work. In combination, these factors ($0.31 \times 0.50 \times 0.28 = 0.04$) support the additional 4% allocation of trips to residential development.

Data contained in the 2004 ITE publication titled Trip Generation Handbook indicate an inverse relationship between commercial building size and pass-by trips. Appropriate trip adjustment factors may be calculated according to commercial building size. For commercial developments, the trip adjustment factor is less than 50% because retail development often attracts 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 a small commercial building of 50,000 square feet of floor area, the ITE data indicates that on average 39% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 61% of attraction trips have the commercial building as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 61% multiplied by 50%, or approximately 31% of the trip ends.

Figure 7 summarizes the input variables used to determine the transportation cost allocation by type of development. Please see Appendix A for a more detailed explanation of the demographic data. In the table below HU means housing unit, KSF means square feet of nonresidential development, in thousands, and ITE stands for the Institute of Transportation Engineers.

Figure 7. Development Prototypes and Vehicle Trip Inputs

	<i>ITE Code</i>	<i>Dev Type</i>	<i>Wkdy Veh Trip Ends</i>	<i>Dev Unit</i>	<i>Trip Adj Factor</i>
R1	210	Single Family Res	8.22	HU	54%
R2	220	All Other Res	6.13	HU	54%
NR1	150	Goods Production	4.96	KSF	50%
NR2	820	Retail/Restaurant	86.56	KSF	31%
NR3	110	Other Services	6.97	KSF	50%

Figure 8 shows projected travel demand (average weekday trips) based on the input variables discussed above. Development projections at the top of the figure are multiplied by the input variables from the previous table to yield average weekday travel demand in the City of Boulder. (See Appendix A for further discussion of development projections included in Figure.) Trip generation rates and trip adjustment factors convert projected development into average weekday vehicle trips. For example, in the base year, single-family housing units will produce 131,495 weekday trips ($25,445 \times 8.22 \times 54\% = 112,945$). The same calculation is done for each land use type through 2030.

Figure 8. Projected Travel Demand Summary

Year->	<i>Base 2008</i>	<i>1 2009</i>	<i>2 2010</i>	<i>3 2011</i>	<i>4 2012</i>	<i>5 2013</i>	<i>22 2030</i>	<i>22-Year Increase</i>
CITY OF BOULDER DEMAND DATA								
SINGLE FAMILY HU	25,445	25,477	25,509	25,542	25,575	25,608	26,206	761
ALL OTHER HU	19,440	19,729	20,020	20,313	20,608	20,905	26,294	6,854
GOODS PRODUCTION KSF	16,090	16,230	16,360	16,500	16,640	16,780	19,330	3,240
RETAIL/RESTAURANT KSF	6,160	6,210	6,260	6,310	6,370	6,420	7,400	1,240
OTHER SERVICES KSF	25,820	26,030	26,250	26,470	26,690	26,920	31,010	5,190
<i>SF RES TRIPS</i>	112,945	113,087	113,231	113,375	113,520	113,667	116,325	3,380
<i>ALL OTHER RES TRIPS</i>	64,350	65,307	66,269	67,239	68,216	69,199	87,037	22,687
<i>GOODS PRODUCTION TRIPS</i>	39,903	40,250	40,573	40,920	41,267	41,614	47,938	8,035
<i>RETAIL/RESTAURANT TRIPS</i>	165,295	166,637	167,978	169,320	170,930	172,272	198,569	33,274
<i>OTHER SERVICES TRIPS</i>	89,983	90,715	91,481	92,248	93,015	93,816	108,070	18,087
<i>Total Vehicle Trips</i>	472,476	475,995	479,532	483,102	486,948	490,568	557,939	85,462

The cost of transportation improvements needed to accommodate new development through 2030 is shown at the top of Figure 9. For the Action Plan, the average cost is \$2,060 per additional vehicle trips anticipated through the year 2030. Improvements specified in the Vision Plan have an average cost of \$2,508 for each additional vehicle trip. The transportation excise tax by type of nonresidential development is shown below. To derive

the excise tax for each development category, multiply the trip generation rate by the trip adjustment factor and the capital cost per vehicle trip.

Figure 9. Transportation Excise Taxes for Nonresidential Development

		<i>Transportation Plan</i>		<i>Action</i>	<i>Vision</i>
				\$176,120,000	\$214,406,000
				85,462	85,462
				\$2,060	\$2,508
<i>ITE</i>		<i>Avg Weekday</i>	<i>Trip</i>	<i>Action Plan</i>	<i>Vision Plan</i>
<i>Code</i>		<i>Veh Trip Ends</i>	<i>Adjustment</i>	<i>Excise Tax</i>	<i>Excise Tax</i>
		<i>per 1,000 Sq Ft</i>	<i>Factors</i>	<i>per Sq Ft</i>	<i>per Sq Ft</i>
<i>Nonresidential (Based on Floor Area)</i>					
820	Retail / Restaurant	86.56	31%	\$55.27	\$67.29
770	Business Park	12.76	50%	\$13.14	\$16.00
710	Office	18.35	50%	\$18.90	\$23.01
610	Hospital	17.57	50%	\$18.09	\$22.03
520	School	14.49	33%	\$9.85	\$11.99
151	Mini-Warehouse	2.50	50%	\$2.57	\$3.13
150	Warehousing	4.96	50%	\$5.10	\$6.21
110	Light Industrial	6.97	50%	\$7.17	\$8.74
<i>Other Nonresidential</i>					
<i>Unique Demand Indicators</i>					
620	Nursing Home (per bed)	2.37	50%	\$2,441	\$2,971
565	Day Care (per student)	4.48	24%	\$2,214	\$2,696
320	Lodging (per room)	5.63	50%	\$5,798	\$7,060

The Institute of Transportation Engineers (ITE) publishes formulas for to derive average weekday vehicle trip ends based on the number of persons and vehicles available in residential development. Using year 2006 PUMS data, TischlerBise derived average persons and vehicles available by number of bedrooms, as shown in Figure 10.

Figure 10. Trip Generation Rates by Number of Bedrooms

	<i>Persons (1)</i>	<i>Trip Ends (2)</i>	<i>Vehicles Available (1)</i>	<i>Trip Ends (3)</i>	<i>Average Trip Ends</i>	<i>Households (1)</i>	<i>Trip Ends per Household</i>	<i>Recommended Trip Ends (4)</i>
SF 0-2 Bdrms	77	238	65	381	310	46	6.73	6.10
SF 3 Bdrms	248	690	192	1,113	902	109	8.27	7.50
SF 4 Bdrms	257	713	193	1,119	916	90	10.18	9.22
SF 5+ Bdrms	98	297	81	474	385	32	12.04	10.91
SF Subtotal	680	1,938	531	3,087	2,512	277	9.07	8.22
MF 0-1 Bdrm	81	248	58	522	385	71	5.42	5.24
MF 2+ Bdrms	192	629	121	770	699	100	6.99	6.76
MF Subtotal	273	876	179	1,292	1,084	171	6.34	6.13
GRAND TOTAL	953		710			448		

(1) 2006 American Community Survey, Public Use Microdata Sample for Colorado PUMA 00803 (unweighted data).

(2) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2003). For Single Family, fitted curve equation is $EXP(0.91 * LN(persons) + 1.52)$. For Multifamily, fitted curve equation is $(3.43 * persons) + 30.02$.

(3) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2003). For Single Family, fitted curve equation is $EXP(0.99 * LN(vehicles) + 1.81)$. For Multifamily, fitted curve equation is $(3.94 * vehicles) + 293.58$.

(4) Recommended trip ends are scaled down to make the average trip ends by type of housing match the average trip generation rates derived from Census 2000 Summary File 3 data.

To derive number of vehicle trip ends by square feet of housing TischlerBise combined demographic data from the Census Bureau and house size data from the Boulder County Assessor's database. The number of bedrooms per housing unit was the common connection between the two databases.

Average floor area and number of trip ends by bedroom range are plotted in the chart below, with a logarithmic trend line derived from the averages by bedroom range in the City of Boulder. TischlerBise derived the estimated average number of trip ends and preliminary road impact fees by size of housing, using 100 square foot intervals. The input variables used to derive the transportation excise tax are discussed above. For single-family housing in the City of Boulder, TischlerBise recommends a minimum impact fee based on a unit size of 900 square feet and a maximum impact fee based on a unit size of 3,700 square feet.

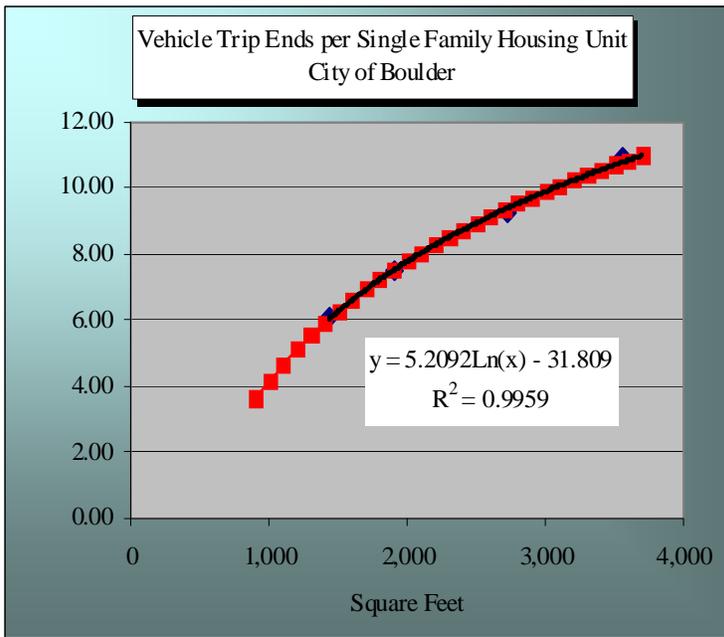
Figure 11. Transportation Excise Tax by Floor Area of Single Family Housing

Source: Average weekday vehicle trip ends by bedroom range from 2006 ACS PUMS. Finished square feet from Boulder County Assessor parcel database.

Residential Trip Adjustment Factor=> 54%
Capital Cost per Vehicle Trip=> \$2,060 \$2,508

Single Family Averages		
Bedrooms	Square Feet	Trip Ends
2 or less	1,428	6.10
3 bedrooms	1,903	7.50
4 bedrooms	2,724	9.22
5 or more	3,552	10.91

Square Feet	Vehicle Trip Ends	Action Plan	Vision Plan
900	3.63	\$4,033	\$4,910
1,000	4.17	\$4,644	\$5,654
1,100	4.67	\$5,196	\$6,326
1,200	5.12	\$5,700	\$6,940
1,300	5.54	\$6,164	\$7,505
1,400	5.93	\$6,593	\$8,027
1,500	6.29	\$6,993	\$8,514
1,600	6.62	\$7,367	\$8,969
1,700	6.94	\$7,718	\$9,397
1,800	7.24	\$8,050	\$9,800
1,900	7.52	\$8,363	\$10,182
2,000	7.79	\$8,660	\$10,544
2,100	8.04	\$8,943	\$10,888
2,200	8.28	\$9,213	\$11,216
2,300	8.51	\$9,470	\$11,530
2,400	8.74	\$9,717	\$11,830
2,500	8.95	\$9,953	\$12,118
2,600	9.15	\$10,181	\$12,395
2,700	9.35	\$10,399	\$12,661
2,800	9.54	\$10,610	\$12,918
2,900	9.72	\$10,813	\$13,165
3,000	9.90	\$11,010	\$13,404
3,100	10.07	\$11,200	\$13,636
3,200	10.23	\$11,384	\$13,860
3,300	10.39	\$11,562	\$14,077
3,400	10.55	\$11,735	\$14,287
3,500	10.70	\$11,903	\$14,492
3,600	10.85	\$12,066	\$14,691
3,700	10.99	\$12,225	\$14,884



TischlerBise also used American Community Survey 2006 PUMS data for Boulder to determine average weekday vehicle trips by size of multifamily housing. In contrast to the analysis of single family units, multifamily units are more uniform regarding floor area, with a limited number of units with three or more bedrooms. To avoid sample size problems, TischlerBise derived average floor area and trip generation for two bedroom ranges (0-1 bedroom and 2+ bedrooms) as shown in Figure 12. A linear formula was derived for the two bedroom ranges to derive trip generation rates in 100-foot intervals.

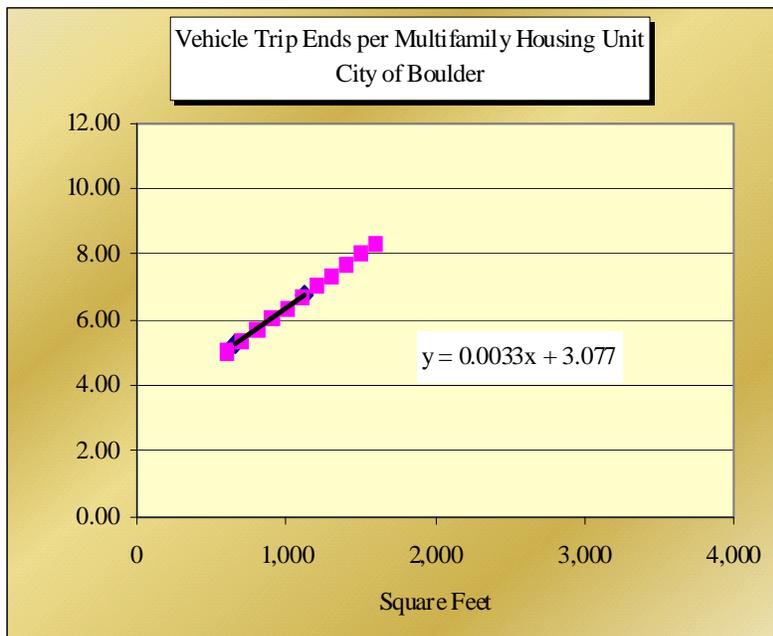
Figure 12. Transportation Excise Tax by Floor Area of Multifamily Housing

Source: Average weekday vehicle trip ends by bedroom range from 2006 ACS PUMS. Finished square feet from Boulder County Assessor parcel database.

Residential Trip Adjustment Factor=> 54%
Capital Cost per Vehicle Trip=> \$2,060 \$2,508

Averages for Multifamily Housing		
Bedrooms	Square Feet	Trip Ends
1 or less	656	5.24
2 or more	1,117	6.76

Square Feet	Vehicle Trip Ends	Action Plan	Vision Plan
600	5.06	\$5,625	\$6,848
700	5.39	\$5,992	\$7,295
800	5.72	\$6,359	\$7,742
900	6.05	\$6,726	\$8,189
1,000	6.38	\$7,093	\$8,636
1,100	6.71	\$7,460	\$9,083
1,200	7.04	\$7,827	\$9,530
1,300	7.37	\$8,195	\$9,977
1,400	7.70	\$8,562	\$10,424
1,500	8.03	\$8,929	\$10,871
1,600	8.36	\$9,296	\$11,318



AFFORDABLE HOUSING EXCISE TAX

Residential and nonresidential development in the City of Boulder currently pays a Housing Excise Tax (HET) to help provide permanent affordable housing in the City. As part of the Impact Fee/Excise Tax Study, TischlerBise was asked to calculate an impact fee or excise tax for Affordable Housing. Due to limitations in the State Impact Fee Act and impact fee case law, TischlerBise recommends an excise tax for Affordable Housing. If this Development Excise Tax is approved by the voters, the current HET should be repealed.

The City's current adopted goal for provision of permanent affordable housing is 10 percent of the City's housing stock. The breakdown of units by income category is 35 percent of units for very low-income households (<30% of Area Median Income (AMI)); 40 percent for low-income households (30-68% AMI) and 25 percent for moderate income households (69-80% AMI). The City's current inventory of approximately 2,800 permanently affordable units is short by approximately 1,700 units. The City will continue to pursue adding these units to the inventory to meet the current need through a variety of means such as funding, policies and planning, direct services, and asset management.¹

- Funding is currently from a variety of grants and loans—approximately \$3.5-4.5 million annually—provided to non-profit and for-profit agencies and housing developers. Public investment is used toward acquisition, rehabilitation, and/or new construction of permanently affordable rental or for-sale housing. Funding and financing sources include locally-controlled funds such as Affordable Housing Funds (from the General Fund and Cash-in-Lieu); Community Housing Assistance Program (CHAP); property tax dedicated mill levy; Housing Excise Tax; CDBG (federal funds); HOME (federal funds); and Private Activity Bonds (tax-exempt bond allocation that may be used to finance affordable housing). State and Federal funds and financing are available as well.
- Policies and Planning: Design, development and implementation of policies that increase affordable housing inventory. Planning efforts focus on identification of future housing needs and mechanisms to address them. Planning staff also implements the city's Inclusionary Zoning Ordinance, which requires that at least 20 percent of new residential development is committed as permanently affordable.

¹ Discussion below from, *City of Boulder Affordable Housing Report, February 2008*.

If the City were to stop growing today, the affordable housing goal would still be pursued through the above means. However, the City will not stop growing and additional units will be required to meet the needs of future development. To meet the City's future affordable housing needs, TischlerBise recommends implementation of a development excise tax for affordable housing, paid only by nonresidential development. Nonresidential development should pay the affordable housing excise tax because employment is the most direct generator of affordable housing needs. The recommended DET component uses a plan-based methodology driven by the City's adopted goal for affordable housing and the average cost to the City to subsidize the provision of affordable units.

It should be noted, that impact fees or development excise taxes on new residential development can be waived for affordable units. If the City were to adopt impact fees, the amount waived or foregone would have to be covered through other means (such as from the General Fund) to make each impact fee account whole. This should be addressed in the ordinance that adopts the fee. Without this waiver, the proposed impact fees will add to the cost of an affordable housing unit.

Furthermore, the consultant recommends that the existing dedicated property tax for housing and other existing funding sources be used to correct the existing deficiency in LOS and cover housing-related operating costs. With this funding strategy, Boulder will be able to correct the existing deficiency in affordable housing with property tax revenue and other means such as inclusionary zoning, while meeting its future growth-related affordable housing needs through the updated development excise tax.

Nonresidential development will be assessed the tax per square foot of gross floor area, or based on unique demand indicators, such as the number of rooms in a hotel. The tax rate is derived by multiplying the affordable housing cost per employee by the number of employees per demand indicator.

Figure 13 summarizes the demand for affordable housing units through 2030. The current employment base of 97,750 jobs is projected to increase to 117,400 jobs by 2030. Residential development is projected to increase by 7,500 units. Assuming the City's current target of 10 percent as permanently affordable, an additional 750 units are needed to accommodate future affordable housing needs brought about by nonresidential development in the City. The 750 units are further broken down by income category, per the City's targets at 35 percent for very low income, 40 percent for low income, and 25 percent for moderate income. The projected net increase of 19,650 jobs is used as the denominator in the LOS calculation for affordable housing.

Figure 13. Affordable Housing Demand

<i>Demand Units</i>	<i>Base Year</i> 2008	<i>2030</i> <i>Projection</i>	<i>Net</i> <i>Increase</i>
Jobs in Boulder	97,750	117,400	19,650
Housing Units*	45,000	52,500	7,500
<i>10% Permanently Affordable HU Goal</i>			<u>750</u>
<i>% of Aff. Units**</i>			
35% Very Low Income Aff. Units (<30% AMI)			262
40% Low Income Aff. Units (30-68% AMI)			300
25% Moderate Income Aff. Units (69-80% AMI)			187
TOTAL			<u><u>750</u></u>

* Current affordable housing goal is based on 45,000 total housing units, therefore this is base year figure.

** City of Boulder adopted targets.

Figure 14 provides detail on total subsidy required for each affordable housing unit income category and the City's estimated share of the subsidy. Income levels and affordable prices are from 2008 housing data, provided by City staff. City subsidy estimates were provided by City of Boulder staff based on recent practice. The City share of the subsidy is the basis for the excise tax calculation. However, it should be noted that staff notes that the external sources of subsidy that are used to leverage financing—namely Federal funds, foundation money, donations to non-profits, tax credits, etc.—are not anticipated to increase to meet additional future demand generated by new nonresidential development. If this is the case and the City share increases commensurately, the methodology used to calculate the Affordable Housing excise tax, which is based on current practice, may not fully cover future costs. This should be monitored for potential refinement in future updates.

Figure 14. Affordable Housing Costs / Subsidy Requirement

	<i>Median Income</i>	<i>Moderate Income</i>	<i>Low Income</i>	<i>Very Low Income</i>
<i>% of AMI (range) —></i>	100%	69-80%	30-68%	<30%
<i>% of AMI (assumption) —></i>		75.7%	50.0%	30%
Assumed Income for Household Size*	\$78,300	\$59,265	\$39,150	\$23,500
Affordable Price of Attached Unit**	\$220,600	\$156,700	\$89,078	\$36,500
Median Price of Attached Unit**	\$250,000	\$250,000	\$250,000	\$250,000
Total Subsidy Required	\$29,400	\$93,300	\$160,922	\$213,500
City Share of Subsidy***	\$0	\$50,000	\$60,000	\$70,000

* City of Boulder, 2008 Housing and Income Data; assume 3-person household

** City of Boulder, 2008 Housing and Income Data; assumes Attached Unit

*** City of Boulder

The City's total share of the cost to provide permanently affordable housing due to new nonresidential development between 2008 and 2030 is estimated to be approximately \$45.8 million. The estimated cost was derived from the projected increase in the need for affordable units and the current estimated City subsidy per unit. Based on the projected increase in employment from 2008 to 2030 of 19,650, the cost per job is \$2,328. Detail is provided in Figure 15.

Figure 15. Projected Future Affordable Housing Costs

<i>Cost of Affordable Housing</i>	<i>City Cost per Unit*</i>	<i>Affordable Units</i>	<i>Total Need**</i>
Very Low Income Aff. Units (<30% AMI)	\$70,000	262	\$18,375,000
Low Income Aff. Units (30-68% AMI)	\$60,000	300	\$18,000,000
Moderate Income Aff. Units (69-80% AMI)	\$50,000	187	\$9,375,000
TOTAL			\$45,750,000
Net Increase in Jobs (2008 thru Buildout)			19,650
Net City Cost per Additional Job in Boulder			\$2,328

* See "Subsidy Requirement"; represents the estimated City share of gap between median price and affordable price for attached units

** Based on net increase in affordable unit needs by income category multiplied by estimated City share of subsidy required.

To derive the affordable housing development excise tax per square foot, the City cost per job is multiplied by the number of employees per demand unit. For example for retail establishments, the cost per job of \$2,328 is multiplied by 2.86 employees per 1,000 square feet and divided by 1,000 ($\$2,328 \times 2.86 / 1,000 = \6.65 per square foot). As shown in Figure 16, the resulting affordable housing excise tax for office development is 19 times the City's current adopted tax rate of \$0.49 per square foot of nonresidential development.

Figure 16. Affordable Housing Development Excise Tax Calculation

<i>Level Of Service</i>	<i>Per Employee</i>
Affordable Housing City Cost per Job	\$2,328

<i>ITE Code</i>	<i>Employees Per 1,000 Sq Ft</i>	<i>Excise Tax per Sq Ft</i>	
<i>Nonresidential (Floor Area)</i>			
820	Retail / Restaurant	2.86	\$6.65
770	Business Park	3.16	\$7.35
710	Office	3.91	\$9.10
610	Hospital	3.38	\$7.86
520	School	0.92	\$2.14
151	Mini-Warehouse	0.04	\$0.09
150	Warehousing	1.28	\$2.97
110	Light Industrial	2.31	\$5.37
		<i>Excise Tax per Demand Indicator</i>	
<i>Other Nonresidential</i>			
620	Nursing Home (per bed)	0.36	\$838
565	Day Care (per student)	0.16	\$372
320	Lodging (per room)	0.44	\$1,024

VEHICLES AND EQUIPMENT EXCISE TAX

A new excise tax for Vehicles and Equipment may be used to expand the City's fleet to maintain the current infrastructure standard. This excise tax uses the same calculation steps as the impact fee for Municipal Facilities, with both residential and nonresidential development paying the cost of additional vehicles and equipment. As shown in Figure 17, the total value of Boulder's fleet (~\$24.7 million excluding fire apparatus that will be funded with fire impact fees) was allocated 72% to residential development and 28% to nonresidential development. This cost allocation is based on Boulder's functional population that accounts for residents and jobs, with adjustments for commuting patterns. The current count of vehicles and equipment by class, along with the average purchase price for each class, were provided by City staff.

Figure 17. Current Standards for Vehicles and Equipment

Class	Count	Description	Average Purchase Cost	TOTAL by Class
MA-100	14	SEDAN FULL SIZE NON-PATROL	\$28,877	\$404,278
MA-150	24	SEDAN COMPACT	\$21,614	\$518,736
MA-200	43	SEDAN POLICE PATROL	\$35,623	\$1,531,789
MA-300	73	TRUCK 1/2 TON AND 3/4 TON	\$30,867	\$2,253,291
MA-315	55	COMPACT PICKUP	\$23,376	\$1,285,680
MA-320	65	SPORT UTILITY	\$31,053	\$2,018,445
MA-325	15	FULL SIZE VAN	\$47,719	\$715,785
MA-350	17	MINI VAN	\$24,431	\$415,327
MA-400	39	TRUCK-1 TON	\$36,738	\$1,432,782
MA-401	5	TRUCK 1 TON DIESEL	\$39,110	\$195,550
MA-425	1	TRUCK-14500 GVWR GAS	\$26,559	\$26,559
MA-500	14	TRUCK-15K-19K GVWR	\$67,751	\$948,514
MA-600	9	TRUCK-20K-39K GVWR	\$125,611	\$1,130,499
MA-625	19	TRUCK-40K+ GVWR	\$133,414	\$2,534,866
MA-650	5	STREET SWEEPERS	\$156,384	\$781,920
MA-675	6	TRUCK-SEWER MAINTENANCE	\$131,249	\$787,494
MA-700	50	OFF ROAD/EARTH MOVING HVY DTY	\$51,313	\$2,565,650
MA-701	2	OFF ROAD/EARTH MOVING LT DTY	\$33,657	\$67,314
MA-800	153	MISC EQUIP W/METER W/ENGINE	\$15,874	\$2,428,722
MA-900	290	MISC EQUIP W/O METER W/ENGINE	\$8,071	\$2,340,590
MA-901	38	MISC EQUIP W/O METER W/O ENGIN	\$8,916	\$338,808
TOTAL	937			\$24,722,599

Weighted Average Cost per Unit => \$26,000

	Proportionate Share	2008 Demand Units	Cost per Demand Unit
Residential	72%	103,100 Population	\$170.13
Nonresidential	28%	97,750 Jobs	\$69.78

6.54 items per 1,000 persons

2.68 items per 1,000 jobs

Source: City of Boulder fleet database.

The current infrastructure standard for vehicles and equipment is an average expenditure of \$107.13 for each resident of Boulder. Excise taxes for both Single Family and Multifamily housing are shown in Figure 18. The excise tax amount is based on the average number of persons, by unit size, and the capital cost per person for vehicles and equipment. Appendix A provides documentation on the average number of persons by type and size of housing.

Figure 18. Vehicle and Equipment Excise Tax for Residential Development

<i>Level Of Service</i>	<u>Per Person</u>
Vehicles and Equipment Cost	\$170.13

<i>Square Feet</i> <i>(finished floor area)</i>	<i>Persons per Housing Unit</i>		<i>Excise Tax per Housing Unit</i>	
	<i>Single Family</i> <i>(SFD, SFA & MH)</i>	<i>Multifamily</i> <i>(all other types)</i>	<i>Single Family</i> <i>(SFD, SFA & MH)</i>	<i>Multifamily</i> <i>(all other types)</i>
Wt Avg	2.30	1.60	\$391	\$272
600	1.00	1.06	\$170	\$179
700	1.00	1.28	\$170	\$217
800	1.00	1.47	\$170	\$250
900	1.00	1.64	\$170	\$279
1,000	1.16	1.79	\$197	\$305
1,100	1.30	1.93	\$221	\$328
1,200	1.43	2.06	\$243	\$350
1,300	1.55	2.17	\$263	\$369
1,400	1.66	2.28	\$281	\$387
1,500	1.76	2.38	\$299	\$404
1,600	1.85	2.47	\$315	\$420
1,700	1.94		\$330	
1,800	2.03		\$344	
1,900	2.11		\$358	
2,000	2.18		\$371	
2,100	2.25		\$383	
2,200	2.32		\$395	
2,300	2.39		\$406	
2,400	2.45		\$416	
2,500	2.51		\$427	
2,600	2.57		\$436	
2,700	2.62		\$446	
2,800	2.68		\$455	
2,900	2.73		\$464	
3,000	2.78		\$472	
3,100	2.83		\$481	
3,200	2.87		\$489	
3,300	2.92		\$496	
3,400	2.96		\$504	
3,500	3.01		\$511	
3,600	3.05		\$518	
3,700	3.09		\$525	

Figure 19 indicates the vehicle and equipment excise tax for nonresidential development. The excise tax is derived from the average number of employees per demand unit and the capital cost per employee. Appendix A provides documentation on the ratio of jobs to nonresidential demand units (i.e. floor area or unique indicators such as rooms in a hotel).

Figure 19. Vehicle and Equipment Excise Tax for Nonresidential Development

<i>Level Of Service</i>		<i>Per Employee</i>	
Vehicles and Equipment Cost		\$69.78	
<i>ITE Code</i>		<i>Employees per 1,000 Square Feet</i>	<i>Excise Tax per Square Foot</i>
<i>Nonresidential (Floor Area)</i>			
820	Retail / Restaurant	2.86	\$0.19
770	Business Park	3.16	\$0.22
710	Office	3.91	\$0.27
610	Hospital	3.38	\$0.23
520	School	0.92	\$0.06
151	Mini-Warehouse	0.04	\$0.00
150	Warehousing	1.28	\$0.08
110	Light Industrial	2.31	\$0.16
<i>Other Nonresidential</i>			
		<i>Excise Tax per Demand Indicator</i>	
620	Nursing Home (per bed)	0.36	\$25
565	Day Care (per student)	0.16	\$11
320	Lodging (per room)	0.44	\$30

PARK LAND EXCISE TAX

The City of Boulder has a high level of service for park land. Boulder's 2006 Parks Master Plan documents numerous undeveloped park sites (see page 20). On page 23, the Plan concludes park acreage "meets the guidelines for Boulder's projected population at build-out." Consistent with this finding, the Park Land excise tax is derived using the current inventory of park and recreation sites and projected population in 2030 (i.e. a buy-in approach). This funding strategy is consistent with the development impact fee for parks and recreation, which excludes the cost of land.

Figure 20 itemizes Boulder's current inventory of park and recreation sites. With 1,631 acres of land and an estimated cost factor of \$134,000 per acre, Boulder has already invested approximately \$1,844 for each resident expected by the year 2030. The land cost factor (approximately \$3 per square foot) is the weighted average cost of three recent acquisitions by the City of Boulder (i.e., Elks, Mesa, and Valmont Parks purchased between 1999 and 2003).

Figure 20. Infrastructure Standard for Park Land

Site Name	Acres	General Use	Location
BOULDER RESERVOIR	390.0	Natural Lands	51st St., N. of Jay Rd.
AREA III	186.0	Natural Lands / Undeveloped	N. 26th St.
FLATIRONS GOLF COURSE	127.0	Golf Course	5706 Arapahoe
VALMONT CITY PARK	126.0	Park / Dog Park	Valmont Rd. & Airport Rd.
NATURAL AREA / HABITAT	118.0	Natural Lands	N. 51st St.
BOULDER RESERVOIR REC AREA	67.0	Marina, Beach	51st St., N. of Jay Rd.
FOOTHILLS COMMUNITY	65.5	Park / Office/Maintenance	800 Cherry Ave.
COOT LAKE	65.0	Park / Natural Lands	5600 63rd St.
EAST BOULDER COMMUNITY PARK	53.6	Park / Dog Park	5660 Sioux Dr.
PLEASANT VIEW FIELDS	52.0	Athletic Fields	3805 47th St.
HARLOW PLATTS COMMUNITY PARK	50.5	Park / Lake	Gillespie, S. of Grinnell
GERALD STAZIO BALLFIELDS	42.0	Athletic Fields	2445 Stazio
TOM WATSON	31.0	Park/Courts/Ballfields	6180 N. 63rd St.
EATON	28.5	Park / Natural Lands	E. end of Nautilus Ct.
SCOTT CARPENTER PARK/POOL	16.8	Park / Pool	30th & Arapahoe
TANTRA	16.8	Park	46th & Hanover
CHAUTAUQUA	14.8	Park	900 Baseline Rd.
NORTH BOULDER	12.5	Park	9th & Dellwood
PARK EAST	11.3	Greenway / Park	Aurora & Mohawk
MAXWELL LAKE	8.6	Undeveloped Park	Linden Park Dr. N. of Linden
MARTIN	8.3	Park	36th & Eastman
AURORA 7	7.9	Park	38th & Aurora
ELKS	7.9	Park	3995 N. 28th
CRESTVIEW	7.7	Park	17th & Sumac Ave.
EAST MAPLETON BALLFIELDS	7.6	Athletic Fields	30th & Mapleton
HOWARD HEUSTON	7.5	Park / Dog Park	34th St., S. of Iris Ave.
CENTRAL MUNICIPAL COMPLEX	7.4	Park / City Offices	Canyon & Broadway Ave.
VIOLET	7.3	Undeveloped	17th & Violet Ave.
EBEN G. FINE	7.0	Park	3rd & Arapahoe Ave.
BEAR CREEK	6.6	Park	Lehigh & Table Mesa
WEST HIGHLAND	6.5	Park	W. end of Dartmouth
BURKE	6.0	Park	Mohawk & Pawnee
CENTRAL PARK	5.5	Park / Bandshell	13th & Canyon Blvd.
PARKSIDE	5.5	Park	26th & Kalmia Ave.
N BOULDER REC CENTER / OLMSTED	5.2	Rec Center / Park	Broadway Ave. & Forest
HEATHERWOOD	5.0	Undeveloped Park	Heatherwood, E. of 75th
ARAPAHOE RIDGE	4.6	Park	Eisenhower Dr., S. of Arapahoe
KEEWAYDIN MEADOWS	4.5	Park	Manhattan & Sioux
CHRISTIENSEN	4.4	Park	3100 Kings Ridge Blvd.
SHANAHAN RIDGE	4.4	Park	Lehigh & Greenbriar
COLUMBINE	4.3	Park	23rd & Glenwood
ELMERS TWO MILE	4.0	Park	2700 Iris Ave.
PALO EAST	4.0	Park	Corriente Pl. & Campo Ct.
MEADOW GLEN	2.5	Park	Pennsylvania Ave., E. of 55th
PARK OPERATIONS FACILITY	2.0	Office / Maintenance	E. end of Old Pearl St.
ADM OFFICES / IRIS CENTER	1.4	Main Dept Offices	3198 N. Broadway Ave.
EAST BOULDER COMMUNITY CENTER	1.1	Recreation Center	5660 Sioux Dr.
TANTRA MAINTENANCE FACILITY	1.0	Office / Maintenance	Tantra Dr.
SPRUCE POOL	0.8	Pool	21st & Spruce
S BOULDER RECREATION CENTER	0.6	Recreation Center	1360 Gillespie
Total Acres	1,631.4	Population in 2030	118,500
Land Cost per Acre	\$134,000	Park Land Cost per Person	\$1,844

Park Land excise taxes, by type and size of residential unit, are shown in Figure 21. The cost per person for park land, multiplied by the average number of persons per housing unit, yields the excise tax amount. Documentation on the average number of persons by finished floor area is provided in Appendix A.

Figure 21. Excise Tax Schedule for Park Land

<i>Level Of Service Standard</i>	<u>Per Person</u>
Park Land Cost	\$1,844

<i>Square Feet</i> (finished floor area)	<i>Persons per Housing Unit</i>		<i>Excise Tax per Housing Unit</i>	
	<i>Single Family</i> (SFD, SFA & MH)	<i>All Other</i> <i>Types</i>	<i>Single Family</i> (SFD, SFA & MH)	<i>All Other</i> <i>Types</i>
Wt Avg	2.30	1.60	\$4,241	\$2,950
600	1.00	1.06	\$1,844	\$1,949
700	1.00	1.28	\$1,844	\$2,359
800	1.00	1.47	\$1,844	\$2,714
900	1.00	1.64	\$1,844	\$3,028
1,000	1.16	1.79	\$2,138	\$3,308
1,100	1.30	1.93	\$2,397	\$3,562
1,200	1.43	2.06	\$2,634	\$3,794
1,300	1.55	2.17	\$2,852	\$4,007
1,400	1.66	2.28	\$3,053	\$4,204
1,500	1.76	2.38	\$3,241	\$4,388
1,600	1.85	2.47	\$3,416	\$4,560
1,700	1.94		\$3,581	
1,800	2.03		\$3,736	
1,900	2.11		\$3,883	
2,000	2.18		\$4,023	
2,100	2.25		\$4,155	
2,200	2.32		\$4,282	
2,300	2.39		\$4,403	
2,400	2.45		\$4,518	
2,500	2.51		\$4,629	
2,600	2.57		\$4,736	
2,700	2.62		\$4,838	
2,800	2.68		\$4,937	
2,900	2.73		\$5,033	
3,000	2.78		\$5,125	
3,100	2.83		\$5,214	
3,200	2.87		\$5,300	
3,300	2.92		\$5,384	
3,400	2.96		\$5,465	
3,500	3.01		\$5,544	
3,600	3.05		\$5,621	
3,700	3.09		\$5,695	

IMPLEMENTATION AND ADMINISTRATION

All costs in the development excise tax 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 the tax amounts. 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, which provides comparative cost multipliers for various geographies and types of construction. The multipliers can be applied against the calculated excise tax amounts. If cost estimates change significantly the City should redo the calculations.

It is recommended that the excise taxes be collected at the time of building permit. Revenue from excise taxes does not typically have to be earmarked or accounted for separately from the City's general revenue and does not have to specifically benefit new growth.

APPENDIX A. DEMOGRAPHIC DATA

In this Appendix, TischlerBise documents the demographic data and development projections used in the Impact Fee / Development Excise Tax study for the City of Boulder. Although long-range projections are necessary for planning capital improvements, a shorter time frame of five years is critical for the impact fees analysis. Infrastructure standards are calibrated using 2008 data and the first projection year for the cash flow model will be 2009. The City of Boulder's fiscal year begins January 1st.

POPULATION AND HOUSING CHARACTERISTICS

TischlerBise recommends the use of two residential categories in the impact fee calculations: 1) Single Family (detached and attached) and 2) All Other housing types. Differentiating impact fees by type of housing helps make the fees proportionate to the demand for public facilities. Single Family housing units are normally larger and have more persons than All Other housing types. According to the U.S. Census Bureau's American Community Survey data for 2006, Single Family housing in Boulder averages 2.3 persons per unit (see the rows with yellow shading in Figure A1). All Other housing averages 1.6 persons per unit (see the rows with tan shading in the table below).

Impact fees often use per capita standards and persons per housing unit or persons per household to derive proportionate-share fee amounts. When persons per housing unit multipliers are used in the fee calculations, infrastructure standards are derived using year-round population. When persons per household multipliers are used in the fee calculations, the impact fee methodology assumes all housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. In the City of Boulder impact fee will be derived using year-round population and the average number of persons per housing unit.

Figure A1. Persons per Housing Unit

<i>House Type Demographics</i>				<i>Housing</i>	<i>Persons Per</i>	
	<i>Persons</i>	<i>Hshlds</i>	<i>PPH</i>	<i>Units</i>	<i>Housing Unit</i>	<i>Hsg Mix</i>
Single Family (SFD, SFA & MH)	54,948	21,776	2.52	23,678	2.3	57%
All Other Types	28,671	16,097	1.78	17,651	1.6	43%
Group Quarters	8,855					
Total	92,474	37,873		41,329		

Source: U.S. Census Bureau, 2006 American Community Survey.

AVERAGE NUMBER OF PERSONS BY SIZE OF HOUSING UNIT

To derive impact fees by floor area of housing requires a linkage of demographic data from the U.S. Census Bureau and house size data from the Boulder County Assessor, with number of bedrooms as the common connection between the two databases. Number of persons by bedroom range may be determined from survey data provided by the U.S. Census Bureau. The City of Boulder is in Public Use Microdata Area (PUMA) 00803. PUMAs are areas of roughly 100,000 persons for which the Census Bureau makes available a 5% sample of responses to the long-form census questionnaire. TischlerBise used this data to prepare persons per housing unit multipliers that vary by type of housing and number of bedrooms. Because the number of persons increases with the number of bedrooms, this approach may be used to make impact fees more “progressive” with higher impact fees imposed on larger housing units and lower impact fees on smaller, more affordable housing.

The tables below indicate persons per housing unit by type of housing and number of bedrooms. Results for Single Family housing are shown in Figure A2, with Figure A3 indicating average persons by bedroom range for All Other housing types. To minimize sample size problems, TischlerBise aggregated bedroom ranges.

Figure A2. Persons per Single Family Housing Unit by Bedroom Range

Single Family Dwellings					
Boulder, Colorado					
	<i>0-2 Bdrms</i>	<i>3 Bdrms</i>	<i>4 Bdrms</i>	<i>5+ Bdrms</i>	<i>Wt Avg</i>
Single Family	1.63	2.15	2.73	2.95	2.32

Source: Data for Colorado PUMA 00803 (includes SFD, SFA and MH)
2006 American Community Survey, Public Use Microdata Sample.

Figure A3. Average Persons by Bedroom Range for All Other Housing Types

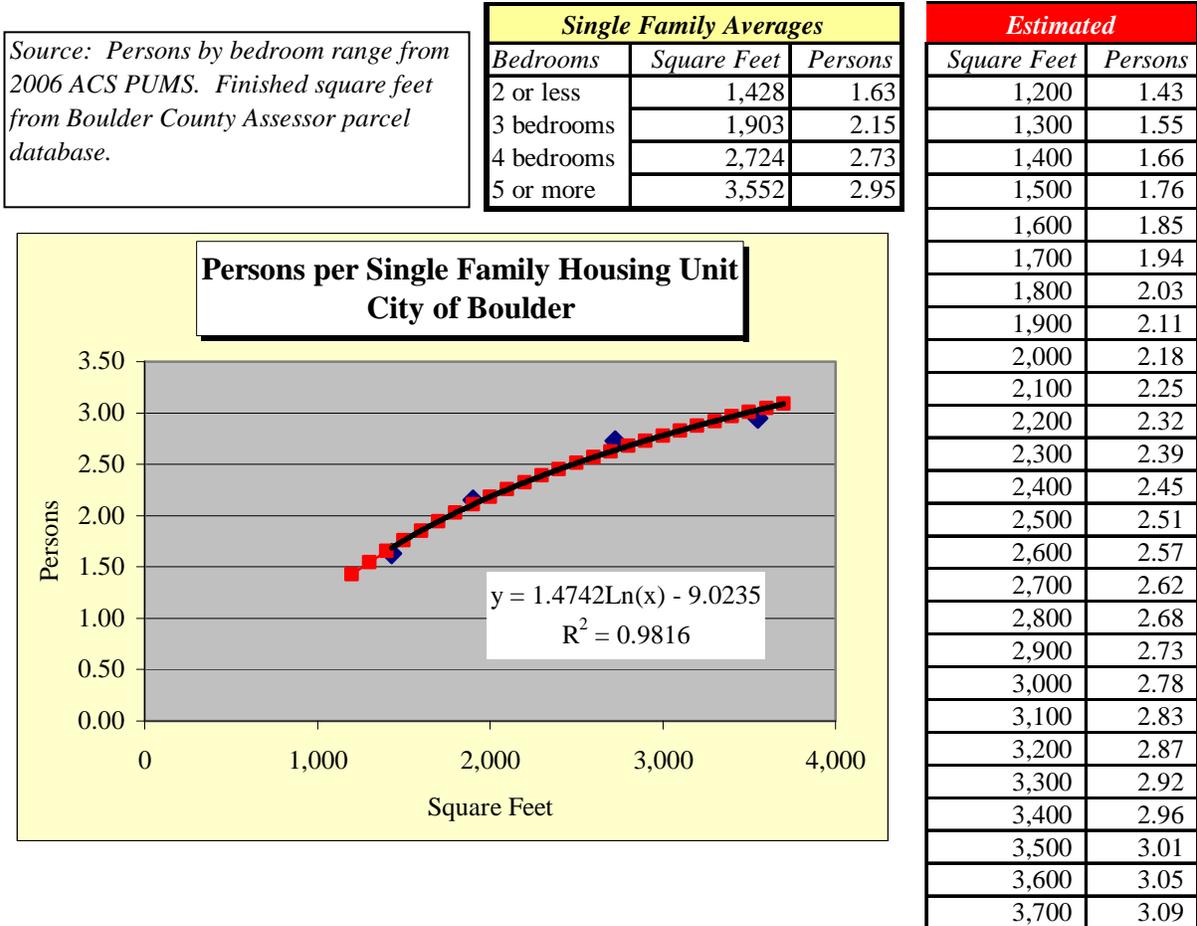
All Other Dwellings
Boulder, Colorado

	<i>0-1 Bdrm</i>	<i>2 Bdrms</i>	<i>3+ Bdrms</i>	<i>Wt Avg</i>
2+ Units per Structure	1.20	1.79	2.46	1.62

Source: Data for Colorado PUMA 00803 (all other housing types) 2006 American Community Survey, Public Use Microdata Sample.

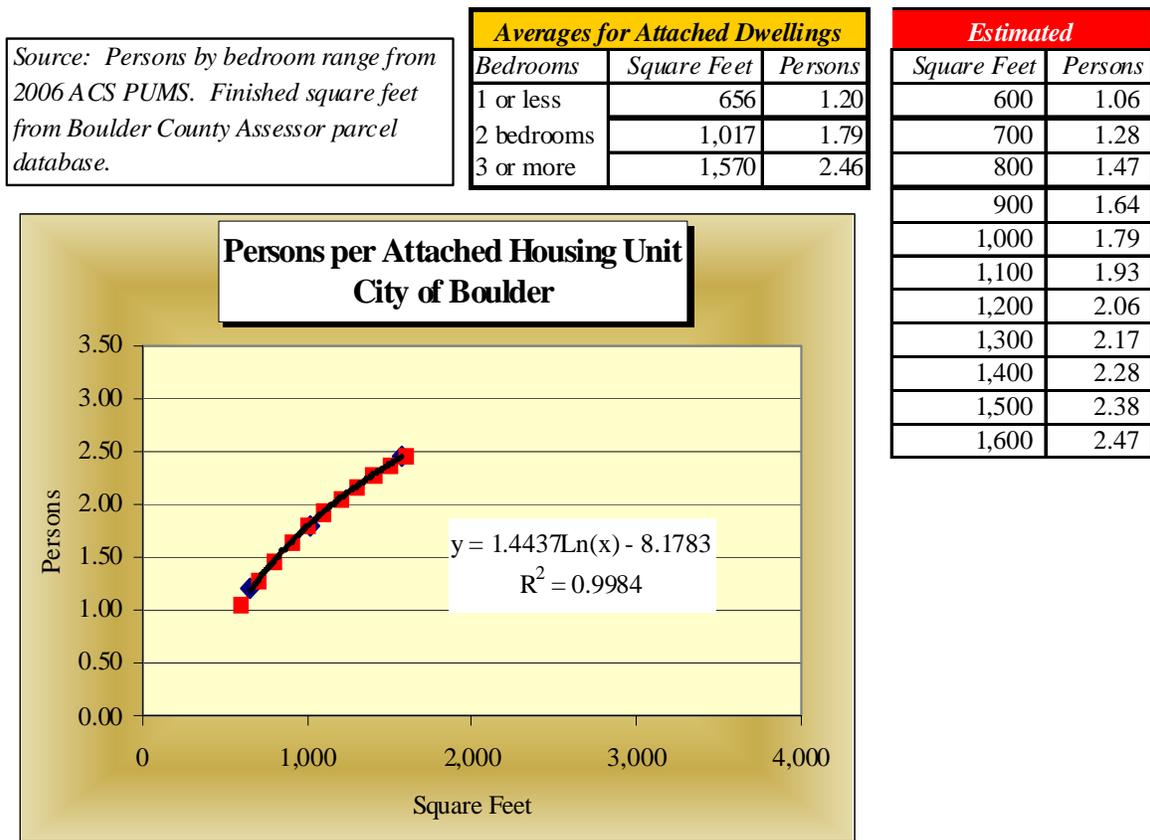
Using key variables from the County Assessor's parcel database, TischlerBise determined the average finished floor area by type of housing and bedroom range. For Single Family housing, average floor area and number of persons by bedroom range are plotted in Figure A4, with a logarithmic trend line derived from the four actual averages in the City of Boulder. Using the trend line formula shown in the chart, TischlerBise derived the estimated average number of persons by size of Single Family housing, using 100 square foot intervals. For the purpose of impact fees in City of Boulder if the City wishes to assess fees by size of unit, TischlerBise recommends a minimum fee based on a Single Family unit size of 1,200 square feet and a maximum fee based on a Single Family unit size of 3,700 square feet of finished floor area.

Figure A4. Average Persons by Floor Area of Single Family Housing



For All Other housing types, the average floor area and number of persons by bedroom range are plotted in Figure A5. A logarithmic trend line was determined from the three actual averages in the City of Boulder. Using the trend line formula shown in the chart, TischlerBise derived the estimated average number of persons by unit size, using 100 square feet intervals. For All Other housing types, TischlerBise recommends a minimum fee based on a unit size of 600 square feet and a maximum fee based on a unit size of 1,600 square feet of finished floor area, if the City wishes to assess fees by size of unit.

Figure A5. Average Persons by Floor Area of Attached Housing



RECENT RESIDENTIAL CONSTRUCTION

Figure A6 indicates City of Boulder 2006 estimates for year-round residents and housing units. From 2000 to 2006, Boulder added an average of 308 housing units per year. The chart at the bottom of Figure A6 indicates the estimated number of housing units added by decade in City of Boulder. If the recent rate of housing construction continues, the first decade of the

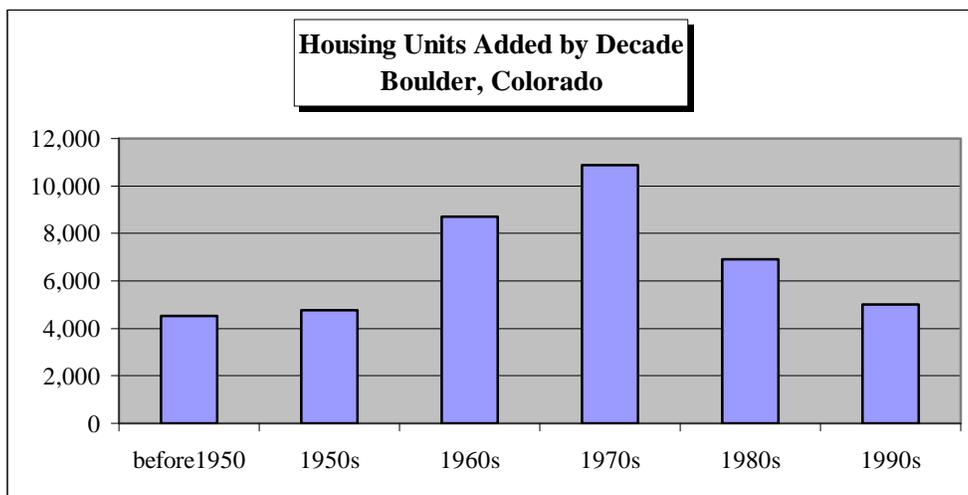
21st century will experience an increase of approximately 3,000 housing units, which is less than the number of housing units added during the 90s.

Figure A6. City of Boulder Housing Units and Population in 2006

Boulder, Colorado	
Estimated Population in 2006*	101,918
Housing Units 2000*	42,740
<i>New Housing Units 2000-2006</i>	<i>1,848</i>
Housing Units in 2006*	44,588

From 2000 to 2006, Boulder added approximately 308 housing units per year.

* City of Boulder estimates.



Source: Units by decade based on Table H34, SF3 Census 2000, U.S. Census Bureau.

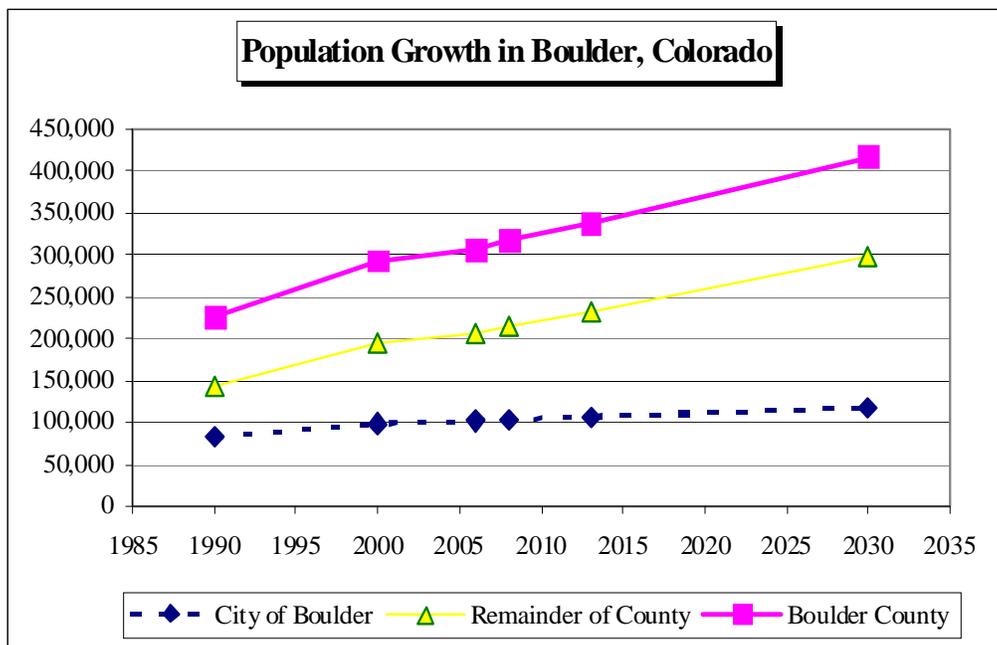
POPULATION PROJECTIONS

The impact fee study will use population and job projections as the key growth indicators, from which housing unit and nonresidential floor area data will be derived. According to the City's 2008 Community Data Report, Boulder will be home to 118,500 residents by the year 2030 (Area I only). In that same year, Boulder County is expected to have a population of 417,517 (Woods & Poole Economics 2007). As shown in Figure A7, Boulder's population share is expected to decrease from 33% of total county population in 2006, to 28% by the year 2030.

Figure A7. Population Growth in Boulder

	1990	2000	2006	2008	2013	2030
Boulder County	226,374	293,878	308,110	317,358	338,739	417,517
City of Boulder	83,312	99,093	101,918	103,100	106,414	118,500
Remainder of County	143,062	194,785	206,192	214,258	232,325	299,017
City of Boulder Share	37%	34%	33%	32%	31%	28%

Source: Boulder County from Woods & Poole Economics (2007). City of Boulder 1990 from U.S. Census Bureau; 2000 and 2006 estimates from City of Boulder. City of Boulder 2008 and 2030 (Area I) from 2008 Community Data Report.



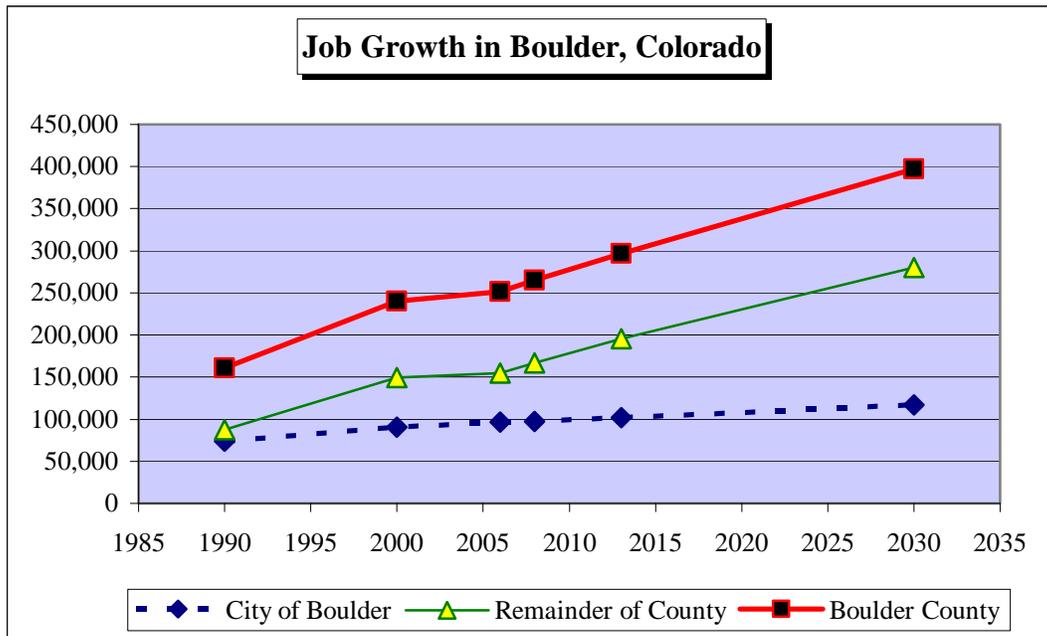
JOBS BY PLACE OF WORK

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. Similar to the above population share discussion, Boulder’s capture ratio of countywide jobs is shown in Figure A8. Boulder County job data were obtained from Woods & Poole Economics, Inc. (2007). Estimated jobs within the City of Boulder, in both 1990 and 2000, are from the Census Transportation Planning Package. Job projections from the 2008 Community Data Report indicate Boulder’s capture ratio decreases from 39% of countywide jobs in 2006 to 30% by the year 2030.

Figure A8. Job Growth in Boulder

	1990	2000	2006	2008	2013	2030
Boulder County	161,089	239,740	251,526	264,722	297,100	397,456
City of Boulder	73,650	90,255	96,968	97,750	101,905	117,400
Remainder of County	87,439	149,485	154,558	166,972	195,195	280,056
City of Boulder Share	46%	38%	39%	37%	34%	30%

Source: Boulder County from Woods & Poole Economics (2007) based on Bureau of Economic Analysis data. City of Boulder 1990 and 2000 from Census Transportation Planning Package. City of Boulder estimate for 2006. City of Boulder 2008 and 2030 (Area I) from 2008 Community Data Report.



NONRESIDENTIAL DEMAND INDICATORS

In the impact fee study, vehicle trips or employees per demand unit are used to differentiate fees by type of nonresidential development. In Figure A9, gray shading indicates the three nonresidential development prototypes used by TischlerBise to calculate vehicle trips and estimate potential impact fee revenue. The first prototype, for goods-producing jobs, is a warehouse with 784 square feet per employee. The second prototype, for retail and restaurant jobs, is a shopping center with 50,000 square feet of floor area. To more closely match Boulder's actual floor area determined by the County Assessor's parcel database, TischlerBise used Light Industrial as the prototype for Other Services.

Figure A9. Employee and Building Area Ratios

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit*	Wkdy Trip Ends Per Employee*	Emp Per Dmd Unit**	Sq Ft Per Emp
Commercial / Shopping Center						
821	25K gross leasable area	1,000 Sq Ft	110.32	na	3.33	300
820	50K gross leasable area	1,000 Sq Ft	86.56	na	2.86	350
820	100K gross leasable area	1,000 Sq Ft	67.91	na	2.50	400
820	200K gross leasable area	1,000 Sq Ft	53.28	na	2.22	450
820	400K gross leasable area	1,000 Sq Ft	41.80	na	2.00	500
General Office						
710	10K gross floor area	1,000 Sq Ft	22.66	5.06	4.48	223
710	25K gross floor area	1,000 Sq Ft	18.35	4.43	4.14	241
710	50K gross floor area	1,000 Sq Ft	15.65	4.00	3.91	256
710	100K gross floor area	1,000 Sq Ft	13.34	3.61	3.70	271
710	200K gross floor area	1,000 Sq Ft	11.37	3.26	3.49	287
Industrial						
770	Business Park***	1,000 Sq Ft	12.76	4.04	3.16	317
151	Mini-Warehouse	1,000 Sq Ft	2.50	56.28	0.04	22,512
150	Warehousing	1,000 Sq Ft	4.96	3.89	1.28	784
140	Manufacturing	1,000 Sq Ft	3.82	2.13	1.79	558
110	Light Industrial	1,000 Sq Ft	6.97	3.02	2.31	433
Other Nonresidential						
720	Medical-Dental Office	1,000 Sq Ft	36.13	8.91	4.05	247
620	Nursing Home	bed	2.37	6.55	0.36	na
610	Hospital	1,000 Sq Ft	17.57	5.20	3.38	296
565	Day Care	student	4.48	28.13	0.16	na
530	Secondary School	student	1.71	19.74	0.09	na
520	Elementary School	student	1.29	15.71	0.08	na
520	Elementary School	1,000 Sq Ft	14.49	15.71	0.92	1,084
320	Lodging	room	5.63	12.81	0.44	na

* Source: Trip Generation, Institute of Transportation Engineers (2003).

** Employees per demand unit calculated from trip rates, except for Shopping Center data, which are derived from Development Handbook and Dollars and Cents of Shopping Centers, published by the Urban Land Institute.

*** According to ITE, a Business Park is a group of flex-type buildings served by a common roadway system. The tenant space includes a variety of uses with an average mix of 20-30% office/commercial and 70-80% industrial/warehousing.

DEVELOPMENT PROJECTIONS

Key demographic data for the City of Boulder impact fee study are shown in Figure A10. Cumulative data are shown in the top section and annual increases at the bottom of the table. City of Boulder data shown with light green shading are from the 2008 Community Data

Report. Because of the recent downturn in development activity, TischlerBise used an exponential curve formula to derive interim year data between the 2008 and 2030 “end-points.” This method minimizes annual increases in the short run. Job allocation by nonresidential prototype is based on the most recent Labor Shed Area Profile Report from the U.S. Census Bureau’s website called Longitudinal Employer-Household Dynamics.

Figure A10. Citywide Demographic Data

	<i>Base Year</i>							
	2000	2008	2009	2010	2011	2012	2013	2030
<i>Cumulative</i>	<i>FY 08-09</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>22</i>	
Year-Round Population	99,093	103,100	103,754	104,413	105,076	105,743	106,414	118,500
Jobs	90,255	97,750	98,567	99,391	100,222	101,060	101,905	117,400
Housing Units	42,740	44,885	45,206	45,529	45,854	46,182	46,512	52,500
Single Family Hsg Units	23,080	25,445	25,477	25,509	25,542	25,575	25,608	26,206
All Other Hsg Units	19,660	19,440	19,729	20,020	20,313	20,608	20,905	26,294
Jobs to Housing Ratio		2.18	2.18	2.18	2.19	2.19	2.19	2.24
Persons per Hsg Unit		2.30	2.30	2.29	2.29	2.29	2.29	2.26
<u>Job Allocation by Type of Development</u>								
Goods Producing Share		21%	21%	21%	21%	21%	21%	21%
Retail/Restaurant Share		18%	18%	18%	18%	18%	18%	18%
Other Services Share		61%	61%	61%	61%	61%	61%	61%
<u>Nonres Sq Ft (x 1,000)</u>								
Goods Producing		16,090	16,230	16,360	16,500	16,640	16,780	19,330
Retail/Restaurant		6,160	6,210	6,260	6,310	6,370	6,420	7,400
Other Services		25,820	26,030	26,250	26,470	26,690	26,920	31,010
Total		48,070	48,470	48,870	49,280	49,700	50,120	57,740
Avg Sq Ft Per Job		492	492	492	492	492	492	492
								<i>2008 to 2030</i>
<u>Annual Increase</u>								<i>Increase</i>
Year-Round Population		654	659	663	667	671	676	15,400
Jobs		817	824	831	838	845	852	19,650
Housing Units		321	323	325	328	330	332	7,615
Goods Producing KSF*		140	130	140	140	140	140	3,240
Retail/Restaurant KSF*		50	50	50	60	50	50	1,240
Other Services KSF*		210	220	220	220	230	220	5,190
								Cumulative KSF Increase =>
								9,670
								Avg Anl KSF Increase =>
								440

* KSF = square feet of floor area in thousands.

Key land use assumptions for City of Boulder are summarized in Figure A11. Residential growth rates range from 0.1% annually for Single Family housing to 1.5% per year for Multifamily housing types. Nonresidential growth rates average 0.8% per year. Over the next five years, housing unit construction is projected to average 326 units per year.

Figure A11. Summary of Land Use Assumptions

Boulder, Colorado	2008 FY08-09	2013 FY13-14	2030 FY30-31	2008 to 2013	
				Average Annual	
				Increase	Growth Rate
Single Family Housing Units	25,445	25,608	26,206	33	0.1%
Multifamily Housing Units	19,440	20,905	26,294	293	1.5%
Goods Production Sq Ft x 1000	16,090	16,780	19,330	138	0.9%
Retail/Restaurant Sq Ft x 1000	6,160	6,420	7,400	52	0.8%
Other Services Sq Ft x 1000	25,820	26,920	31,010	220	0.9%

