City of Louisville
COLORADO • SINCE 1878

Louisville Impact Fee Liaison Committee

Agenda

October 11, 2016
Louisville City Hall
Spruce Conference Room
749 Main Street
7:30 AM

1) Introductions

2) Impact Fee Basics

3) New Directions in Impact Fees

4) Current Louisville Impact Fee Program

5) 2016 Update

6) Next Steps
   A) Schedule
   B) Next Meeting Date

7) Adjournment

Citizen Information

If you wish to speak at the City Council meeting, please fill out a sign-up card and present it to the City Clerk.

Persons with disabilities planning to attend the meeting who need sign language interpretation, assisted listening systems, Braille, taped material, or special transportation, should contact the City Manager's Office at 303 335-4533. A forty-eight-hour notice is requested.

City of Louisville
City Council 749 Main Street Louisville CO 80027
303.335.4533 (phone) 303.335.4550 (fax) www.ci.louisville.co.us

Impact Fee Study Overview

Workshop with Stakeholder Group

October 11, 2016

TischlerBise

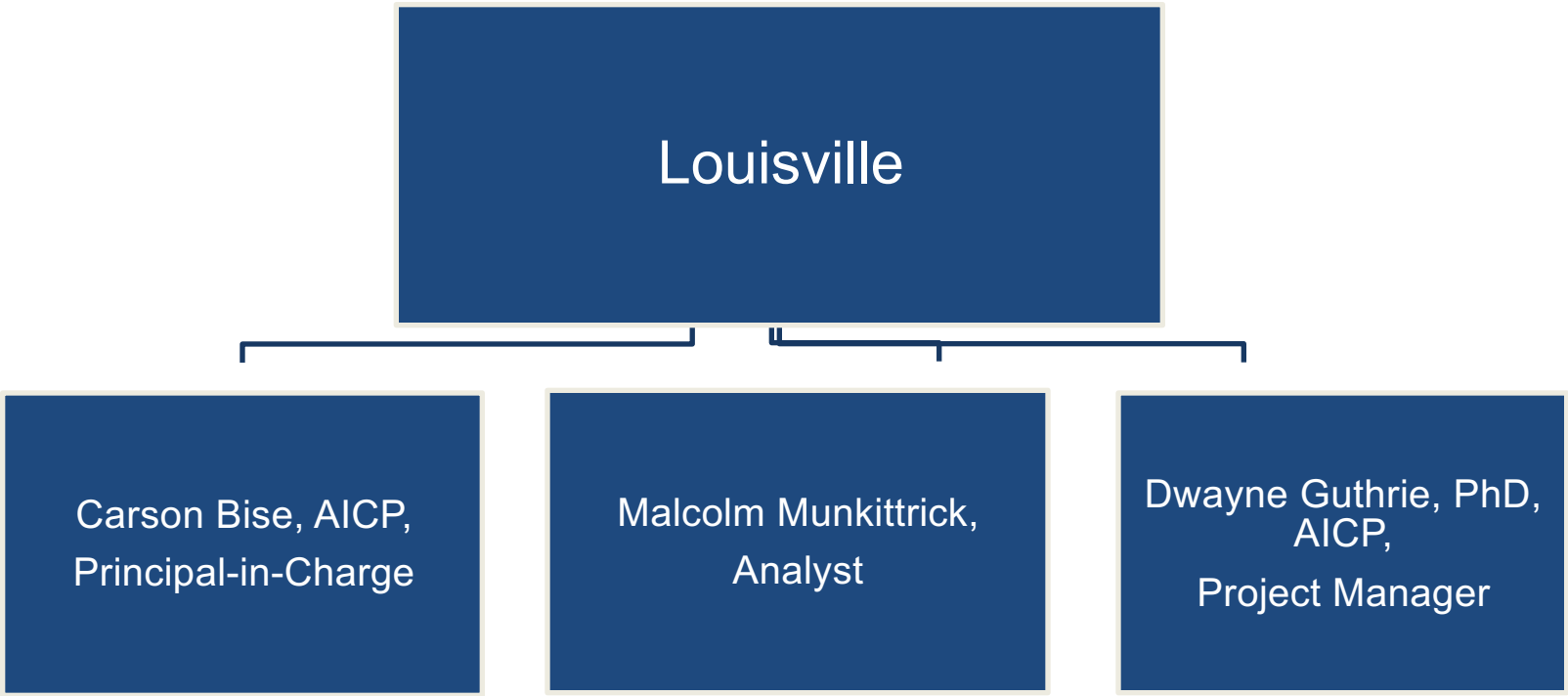
FISCAL | ECONOMIC | PLANNING

TischlerBise
FISCAL | ECONOMIC | PLANNING

- ✧Impact fees/infrastructure financing strategies
- ✧Fiscal/economic impact analyses
- ✧Capital improvement planning
- ✧Infrastructure finance/revenue enhancement
- ✧Real estate and market feasibility

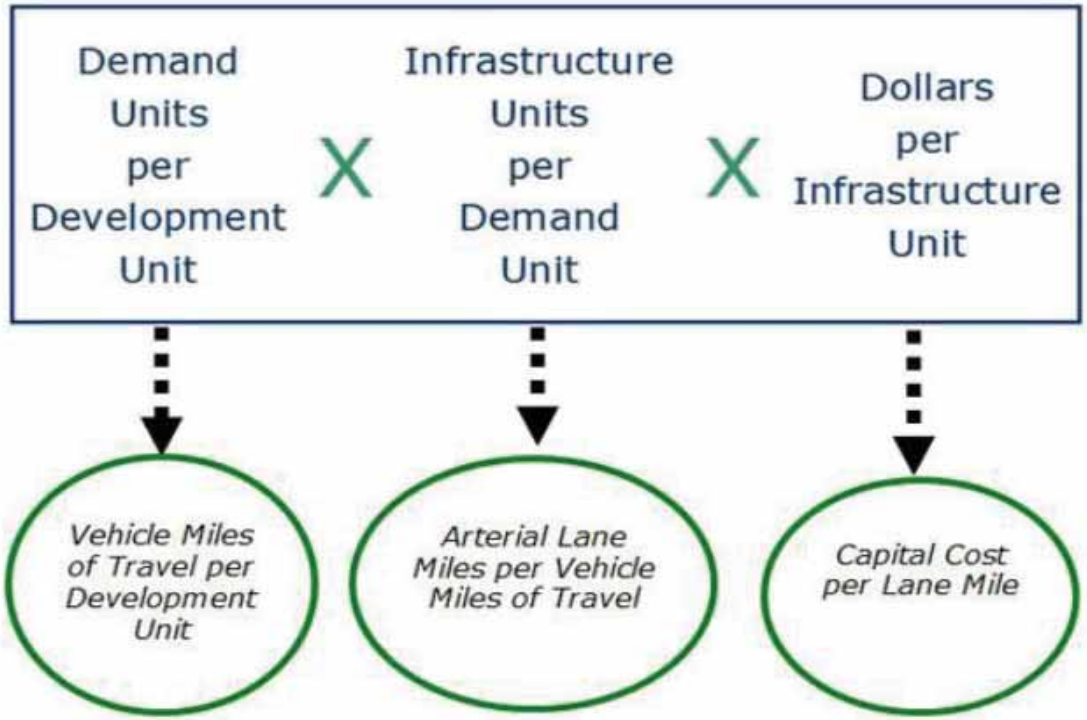
- Arapahoe County
- Boulder
- Castle Rock
- Durango
- Eaton
- Erie
- Evans
- Johnstown
- Fort Collins
- Garfield County
- Greeley
- Mead
- Larimer County
- Longmont
- Mead
- Montezuma County
- Pitkin County
- Steamboat Springs
- Thornton
- Vail

Project Organization



Legal

- One time payments to fund system improvements
- Cannot be deposited into City General Fund
- Basic legal requirements are need, benefit, and proportionality



History with City of Louisville

- ✧2014 Fiscal Impact Model
- ✧2012 Market Analysis for Comprehensive Plan
- ✧2011 Impact Fee Study
- ✧2006 Impact Fee Study
- ✧2002 Impact Fee Study

City of Louisville Impact Fee Study

- Transportation
  - Lane capacity
  - Intersection improvements
- Public Buildings
  - Recommend discontinuing Fire
- Recreation Buildings
  - Senior Centers
  - Pools
  - Youth Centers
  - Community Centers

Impact Fees in Colorado

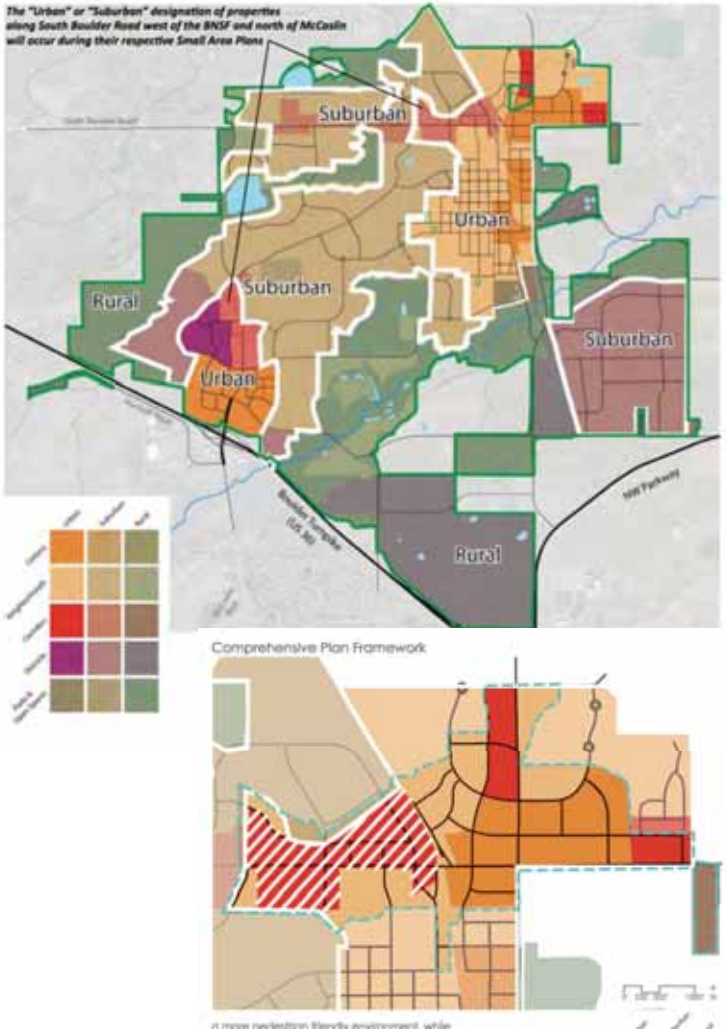
- Governed by Senate Bill 15
  - October 2001
- Improvement or facility that:
  - Is directly related to any service that a local government is authorized to provide;
  - Has a useful life of five years or longer
- Specific accounting requirements
- Allows a local government to waive an impact fee on the development of low/moderate income housing
  - Does not address whether the local government is required to “make up” the difference

Process

- Determine existing development base and project future growth/redevelopment
- Determine existing levels of service and capital needs due to new growth
- Determine appropriate indicators of demand
- Evaluate methodological alternatives
- Evaluate need for credits
- Calculate fees
- Meetings with stakeholders
- Adoption process

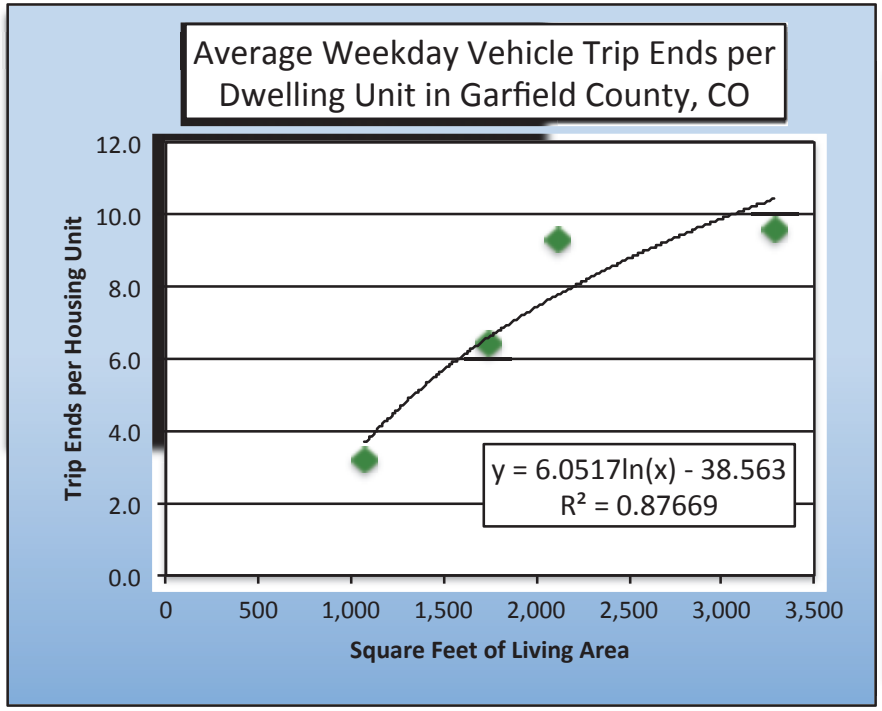
Fee Methods and Capital Improvements

- ✧ Match system improvements to service area
- ✧ Three time perspectives (past, present and/or future)
- ✧ Policy coordination of project-level vs. system improvements
- ✧ Collaborative process to balance infrastructure list and fees



Progressive Housing Multipliers

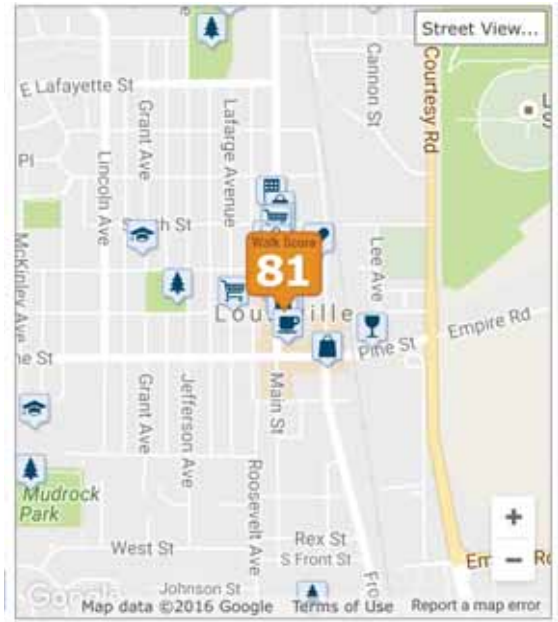
Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Sq Ft Range	Trip Ends
0-1	1,076	3.2	900 or less	2.60
2	1,744	6.4	901 to 1400	5.28
3	2,115	9.3	1401 to 1900	7.12
4+	3,283	9.6	1901 to 2400	8.54
			2401 or more	9.68



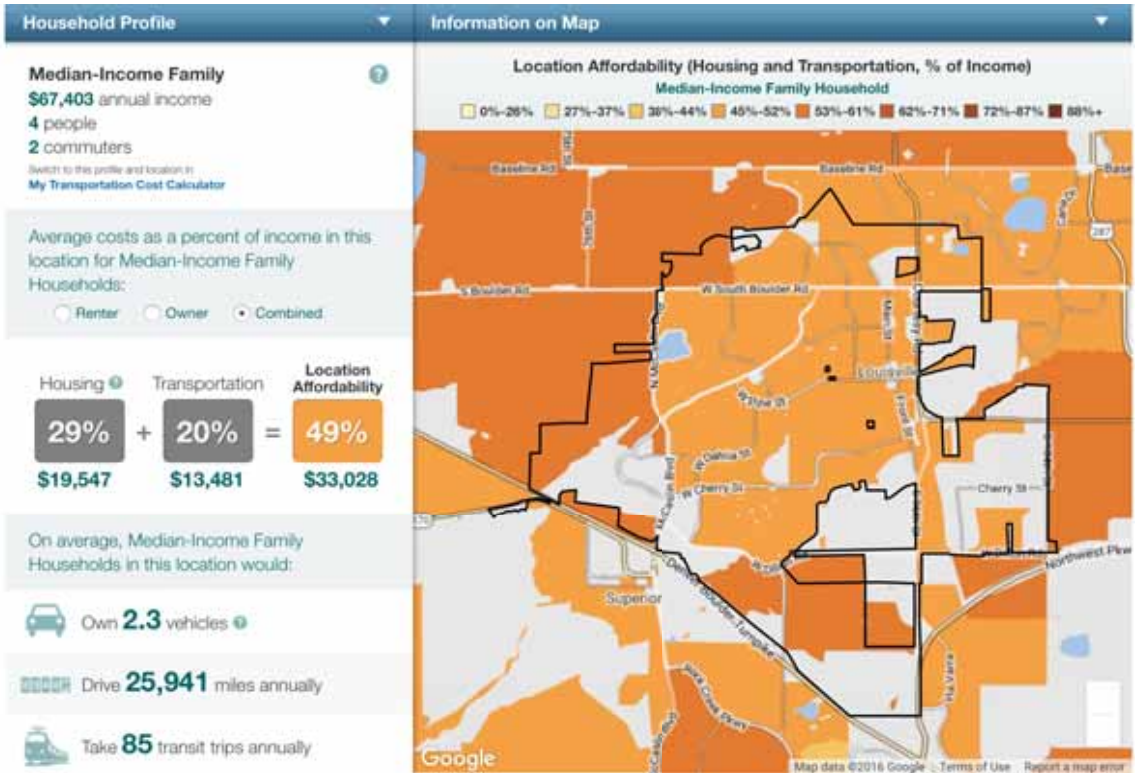
Average weekday vehicle trip ends per housing unit are derived from 2013 ACS PUMS data (PUMA 200). U.S. Census Bureau is the data source for average square feet by bedroom range. Unit size for 0-1 bedroom is the average of multifamily units constructed in the West Census Region during 2013. Unit size for 2, 3, and 4+ bedrooms is from 2013 Survey of Construction microdata for single detached and attached units in the Mountain West Census Division.

Transportation Approach

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 ten 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



Fiscal/Economic Reality Check



- How do we pay for the non-growth share?
- What are associated operating costs?
- What can the market bear?
  - Income levels
  - Sale price of new residential units

Next Steps

- Prepare Land Use Assumptions Memorandum
- Meetings with City service providers to determine existing levels of service and growth-related capital needs
- Agree on likely fee calculation methodology
- 2nd stakeholder meeting

Questions and Answers

IMPACT FEES

Prepared for:

City of Louisville, Colorado

October 18, 2011

TischlerBise
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EXECUTIVE SUMMARY

The City of Louisville retained TischlerBise to prepare an impact fee study for various infrastructure categories. This report updates TischlerBise's previous Impact Fee Report prepared for the City in 2006.

Impact fees are one-time payments used to fund system improvements needed to accommodate new 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.

- Parks and Trails
- Recreation
- Library
- Municipal Facilities
- Transportation

Note: these are the same infrastructure categories for which the City currently assesses impact fees.

IMPACT FEE SUMMARY

As documented in this report, impact fees for the City of Louisville 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. 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 **proportional** 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.

CALCULATION METHODOLOGIES

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. 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. 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. All three methodologies are employed for the fees included in this study and are described further in this report in the respective fee chapter. A summary is provided in Figure 1 showing the methodologies, infrastructure components, and allocations used to calculate impact fees for the City of Louisville.

The objective of evaluating these different methodologies is to determine the best measure of the demand created by new development for additional infrastructure capacity.

Figure 1: Recommended Calculation Methodologies

		Methodology		
Fee Category	***Component***	***Buy-in***	***Incremental Expansion***	***Plan-based***
Parks	Improvements		✓	
	Trails		✓	
Recreation	Facilities		✓	
General Government	City Hall	✓		
	City Shops			✓
	Police Headquarters	✓		
Library	Facility	✓		
	Materials		✓	
Transportation	Bicycle and Pedestrian Improvements		✓	
	Street Projects			✓

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. There is a potential for double payment of capital costs due to future payments on debt for public facilities. This type of credit is included for the Recreation and Library Impact Fees.

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.

Residential Impact Fees by Number of Bedrooms

Impact fees are often assessed as a flat fee per housing unit, regardless of size or numbers of bedrooms. While legally defensible, the "one fee fits all" structure of this type of schedule can be regressive in nature as smaller homes and apartments pay disproportionately larger share of costs, while larger homes pay disproportionately smaller shares.

One of the fundamental requirements of impact fees is the concept of proportionate share. Proportionate share is the principle that impact fee amounts must correspond with the demand and cost for additional infrastructure capacity. This relationship is the critical difference which distinguishes impact fees from taxes. Smaller homes and apartments often have smaller household sizes compared to larger ones. These differences have a direct relationship on the need for additional infrastructure capacity resulting in differences in impact fee amounts. Impact fees based on number of bedrooms or size of units more accurately reflect actual proportionate demand for additional infrastructure capacity.

To better reflect the proportionate demand for additional infrastructure capacity created by different types of residential land uses, TischlerBise has calculated residential impact fees by types of housing units by number of bedrooms.

Proposed Impact Fees

The proposed impact fee amounts are listed in Figure 2A below. In order to provide a basis for comparison, the City's current impact fees are shown in Figure 2B with the dollar change between the proposed and current fees listed in Figure 2C.

Figure 2A: Proposed Impact Fees

Residential (per unit)	*Parks*	*Recreation Facilities*	*Library*	*Municipal Facilities*	*Transportation*	***TOTAL***
Single Family Detached						
0-2 Bedrooms	$1,822	$1,203	$325	$413	$185	**$3,947**
3 Bedrooms	$2,664	$1,759	$475	$604	$225	**$5,728**
4 Bedrooms	$3,464	$2,288	$617	$786	$287	**$7,443**
5+ Bedrooms	$4,233	$2,796	$754	$960	$379	**$9,121**
Single Family Attached						
0-2 Bedrooms	$1,653	$1,092	$295	$375	$93	**$3,507**
3+ Bedrooms	$2,580	$1,704	$460	$585	$149	**$5,477**
Multi-family	$1,516	$1,001	$270	$344	$144	**$3,276**
Nonresidential (per square foot or unit of development)						
Commercial / Shop Ctr 50,000 SF or less	N/A	N/A	N/A	$0.27	$0.43	**$0.70**
Commercial / Shop Ctr 50,001-100,000 SF	N/A	N/A	N/A	$0.24	$0.38	**$0.62**
Commercial / Shop Ctr 100,001-200,000 SF	N/A	N/A	N/A	$0.21	$0.33	**$0.55**
Business Park	N/A	N/A	N/A	$0.30	$0.19	**$0.49**
Medical-Dental Office	N/A	N/A	N/A	$0.39	$0.53	**$0.91**
General Office 50,000 SF or less	N/A	N/A	N/A	$0.37	$0.23	**$0.60**
General Office 50,001-100,000 SF	N/A	N/A	N/A	$0.35	$0.19	**$0.55**
General Office 100,001-200,000 SF	N/A	N/A	N/A	$0.33	$0.17	**$0.50**
Hospital	N/A	N/A	N/A	$0.30	$0.24	**$0.54**
Mini-Warehouse	N/A	N/A	N/A	$0.004	$0.04	**$0.0404**
Warehousing	N/A	N/A	N/A	$0.09	$0.05	**$0.14**
Manufacturing	N/A	N/A	N/A	$0.17	$0.06	**$0.23**
Light Industrial	N/A	N/A	N/A	$0.22	$0.10	**$0.32**
Lodging (per room)	N/A	N/A	N/A	$42	$82	**$124**
Elementary School (per student)	N/A	N/A	N/A	$8	$19	**$27**
Secondary School (per student)	N/A	N/A	N/A	$8	$25	**$33**
Day Care (per student)	N/A	N/A	N/A	$15	$65	**$81**
Nursing Home (bed)	N/A	N/A	N/A	$35	$35	**$69**

Figure 2B: Current Impact Fees

Residential (per unit)	*Parks*	*Recreation Facilities*	*Library*	*Municipal Facilities*	*Transportation*	***TOTAL***
Detached	$3,200	$200	$769	$733	$1,753	**$6,655**
Attached	$1,872	$117	$450	$429	$1,426	**$4,294**
Nonresidential (per square foot or unit of development)						
Com/Shop Ctr 50,000 SF or less	N/A	N/A	N/A	$0.17	$4.61	**$4.78**
Com/Shop Ctr 50,001-100,000 SF	N/A	N/A	N/A	$0.15	$3.85	**$4.00**
Com/Shop Ctr 100,001-200,000 SF	N/A	N/A	N/A	$0.13	$3.29	**$3.42**
Business Park	N/A	N/A	N/A	$0.19	$1.20	**$1.39**
Medical-Dental Office	N/A	N/A	N/A	$0.24	$3.41	**$3.65**
General Office 50,000 SF or less	N/A	N/A	N/A	$0.23	$1.47	**$1.70**
General Office 50,001-100,000 SF	N/A	N/A	N/A	$0.22	$1.26	**$1.48**
General Office 100,001-200,000 SF	N/A	N/A	N/A	$0.21	$1.07	**$1.28**
Hospital	N/A	N/A	N/A	$0.20	$1.66	**$1.86**
Mini-Warehouse	N/A	N/A	N/A	$0.00	$0.23	**$0.23**
Warehousing	N/A	N/A	N/A	$0.07	$0.46	**$0.53**
Manufacturing	N/A	N/A	N/A	$0.10	$0.36	**$0.46**
Light Industrial	N/A	N/A	N/A	$0.14	$0.65	**$0.79**
Lodging (per room)	N/A	N/A	N/A	$26	$532	**$558**
Elementary School (per student)	N/A	N/A	N/A	$4	$121	**$125**
Secondary School (per student)	N/A	N/A	N/A	$5	$161	**$166**
Day Care (per student)	N/A	N/A	N/A	$9	$423	**$432**
Nursing Home (bed)	N/A	N/A	N/A	$21	$223	**$244**

Figure 2C: Dollar Change between Current Fees and Proposed Fees

Residential (per unit)	*Parks*	*Recreation Facilities*	*Library*	*Municipal Facilities*	*Transportation*	***TOTAL***
Single Family	-$115	$1,838	-$219	-$33	-$1,482	**-$11**
Multi-family	$86	$1,176	-$101	$15	-$1,242	**-$65**
Nonresidential (per square foot or unit of development)						
Com/Shop Ctr 50,000 SF or less	N/A	N/A	N/A	$0.10	-$4.18	**-$4.08**
Com/Shop Ctr 50,001-100,000 SF	N/A	N/A	N/A	$0.09	-$3.47	**-$3.38**
Com/Shop Ctr 100,001-200,000 SF	N/A	N/A	N/A	$0.08	-$2.96	**-$2.87**
Business Park	N/A	N/A	N/A	$0.11	-$1.01	**-$0.90**
Medical-Dental Office	N/A	N/A	N/A	$0.15	-$2.88	**-$2.74**
General Office 50,000 SF or less	N/A	N/A	N/A	$0.14	-$1.24	**-$1.10**
General Office 50,001-100,000 SF	N/A	N/A	N/A	$0.13	-$1.07	**-$0.93**
General Office 100,001-200,000 SF	N/A	N/A	N/A	$0.12	-$0.90	**-$0.78**
Hospital	N/A	N/A	N/A	$0.10	-$1.42	**-$1.32**
Mini-Warehouse	N/A	N/A	N/A	$0.00	-$0.19	**-$0.19**
Warehousing	N/A	N/A	N/A	$0.02	-$0.41	**-$0.39**
Manufacturing	N/A	N/A	N/A	$0.07	-$0.30	**-$0.23**
Light Industrial	N/A	N/A	N/A	$0.08	-$0.55	**-$0.47**
Lodging (per room)	N/A	N/A	N/A	$16	-$450	**-$434**
Elementary School (per student)	N/A	N/A	N/A	$4	-$102	**-$98**
Secondary School (per student)	N/A	N/A	N/A	$3	-$136	**-$133**
Day Care (per student)	N/A	N/A	N/A	$6	-$358	**-$351**
Nursing Home (bed)	N/A	N/A	N/A	$14	-$188	**-$175**

PARKS AND TRAILS

The Parks and Trails Impact Fees include components for park improvements and trails. The incremental expansion methodology is used for both components. This methodology documents the current levels-of-service (LOS) for each component being provided to existing residential development. This methodology will allow the City to provide new development the same LOS being provided to existing development.

Figure 3 illustrates the formula used to derive the Parks and Trails Impact Fee. Note this fee is assessed on residential development only.

Figure 3: Parks Impact Fee Methodology Chart

PARK IMPROVEMENTS

The City's parks facilities include a variety of improvements including baseball/softball fields, athletic courts, picnic shelters, restrooms, playgrounds, and soccer/football fields.

LOS Analysis

The City currently has 89.3 acres of improved parks serving the current population of 18,376 persons. The current LOS being provided to existing residential development is 4.86 acres per 1,000 persons (89.3 acres/(18,376 persons/1,000) = 4.86 acres per 1,000 persons).

Figure 4: Current Park Improvement LOS

Site	*Acres*
Sports Complex	24
Community Park	11
Heritage	10
Cleo Mudrock	10
Annette Brand	10
Enrietto	9
Recreation Center	9
Memory Square	2.3
Cottonwood	4
TOTAL	**89.3**
Proportionate Share - Residential	100%
Current Population	18,376
Current LOS - Improved Acres/1,000 Persons	4.86

Cost Analysis

As shown in Figure 5, the City's current inventory of park improvements has a replication value of $15,340,000; an average of $171,781 per acre ($15,340,000/89.3 acres = $171,781 per acre).

Figure 5: Park Improvement Cost Analysis

Site	Acres	Baseball/Softball	Athletic Courts	Picnic Shelters	Restrooms	Playground	Soccer/Football	Swimming Pool	Miscellaneo
Sports Complex	24	4	0	3	1	1	0	0	$2,160,000
Community Park	11	0	1	2	1	1	1	0	$990,000
Heritage	10	1	1	1	1	1	0	0	$900,000
Cleo Mudrock	10	2	0	0	0	0	0	0	$900,000
Annette Brand	10	0	1	1	0	1	0	0	$900,000
Enrietto	9	2	0	0	0	0	0	0	$810,000
Recreation Center	9	0	4	1	0	1	0	0	$810,000
Cottonwood	4	0	0	1	1	1	0	0	$360,000
Memory Square	2.3	0	0	1	0	1	0	1	$360,000
TOTAL	**89.3**	**9**	**7**	**10**	**4**	**7**	**1**	**1**	
Unit Price		$400,000	$50,000	$50,000	$125,000	$100,000	$300,000	$1,200,000	
TOTAL Price		**$3,600,000**	**$350,000**	**$500,000**	**$500,000**	**$700,000**	**$300,000**	**$1,200,000**	**$8,190,000**

Source: City Department of Parks and Recreation.
* Includes parking lots, lighting, irrigation infrastructure, landscaping, hardscaping.

Total Improvments al Improvments	**$15,340,000**
Improved Acres Improved Acres	89.3
Cost per Improved Acre · Improved Acre	**$171,781**

Based on the current LOS of 4.86 acres per 1,000 persons and an average cost of $171,781 per acre, the cost to provide the current LOS is $834.78 per person ((4.86 acres/1,000 persons) x $171,781 per acre = $834.78 per person).

Figure 6: Park Improvement Cost per Person

Current LOS - Improved Acres/1,000 Persons	4.86
Average Cost per Improved Acre	$171,781
Cost per Person	$834.78

TRAILS

The City currently has 26.3 miles of trails for recreation purposes. This does not include 3.7 miles of the Coal Creek Trail which is part of the regional trail system intended for multi-modal transportation purposes.

LOS Analysis

The City currently has 26.3 miles of trails serving the current population of 18,376 persons. The current LOS being provided to existing residential development is 1.43 miles per 1,000 persons (26.3 miles/(18,376 persons/1,000) = 1.43 miles per 1,000 persons).

Figure 7: Current Trails LOS

	*Miles**
Soft Surface	10.35
Hard Surface	15.95
TOTAL	**26.3**

* Does not include 3.7 section of Coal Creek Trail.

Proportionate Share - Residential	100%
Current Population	18,376
Current LOS - Miles/1,000 Persons	1.43

Cost Analysis

Soft surface trails cost $42,240 per mile while hard surface trails cost an average of $223,872 per mile. As shown in Figure 8, the City's current inventory of trails has a replication value of $4,007,942; an average of $152,393 per mile ($4,007,758/26.3 miles = $152,393 per mile).

Figure 8: Trails Cost Analysis

	Miles	*Cost/Mile**	*Cost*
Soft Surface	10.35	$42,240	$437,184
Hard Surface	15.95	$223,872	$3,570,758
	26.3		$4,007,942

Source: City Department of Parks and Recreation.

Average Cost per Mile => $152,393

Based on the current LOS of 1.43 miles per 1,000 persons and an average cost of $152,393 per mile, the cost to provide the current LOS is $218.11 per person ((1.43 miles/1,000 persons) x $152,393 per mile = $218.11 per person).

Figure 9: Park Improvement Cost per Person

Current LOS - Miles/1,000 Persons	1.43
Average Cost per Mile	$152,393
Cost per Person	$218.11

Parks and Trails Impact Fees

The variables used to calculate the Parks and Trails Impact Fees are shown in the figure below. Persons per household by number of bedrooms for different types of housing units are shown at the top of the figure. The total cost per person is $1,052.89.

Figure 10: Parks and Trails Impact Fee Variables

	Persons per Household
Single Family Detached	
0-2 Bedrooms	1.73
3 Bedrooms	2.53
4 Bedrooms	3.29
5+ Bedrooms	4.02
Single Family Attached	
0-2 Bedrooms	1.57
3+ Bedrooms	2.45
Multi-family	1.44

	Cost per Person
Park Improvements	$834.78
Trails	$218.11
TOTAL	$1,052.89

The number of persons per household by number of bedrooms for each type of housing unit is multiplied by the cost per person for each impact fee component. The Parks and Trails Impact Fees are shown below.

Figure 11: Parks and Trails Impact Fees

	Parks	*Trails*	*TOTAL*
Single Family Detached (per unit)			
0-2 Bedrooms	$1,444	$377	$1,822
3 Bedrooms	$2,112	$552	$2,664
4 Bedrooms	$2,746	$718	$3,464
5+ Bedrooms	$3,356	$877	$4,233
Single Family Attached (per unit)			
0-2 Bedrooms	$1,311	$342	$1,653
3+ Bedrooms	$2,045	$534	$2,580
Multi-family (per unit)	$1,202	$314	$1,516

RECREATION

The incremental expansion methodology is used for calculating the Recreation Impact Fees. This methodology documents the current levels-of- (LOS) being provided to existing residential development. This methodology will allow the City to provide new development the same LOS being provided to existing development. A credit for revenues used to pay future debt service associated with recreation facilities is deducted from the impact fees to avoid "double payment" for recreation facility capacity with both impact fees and future sales taxes.

Figure 12 illustrates the formula used to derive the Recreation Impact Fees. Note this fee is assessed on residential development only.

Figure 12: Recreation Impact Fee Methodology Chart

RECREATION FACILITIES

The City's recreation facilities include a recreation/senior center, in-line skating rink, skate park, and art center.

LOS Analysis

The City currently has 86,540 square feet of recreation facilities serving the current population of 18,376 persons. The current LOS being provided to existing residential development is 4.71 square feet per person (86,540 square feet/(18,376 persons) = 4.71 square feet per person).

Figure 13: Current Recreation Facilities LOS

	Square Feet
Recreation/Senior Center	57,400
In-Line Skating Rink	15,400
Skate Park	11,940
Arts Center	1,800
TOTAL	86,540
Proportionate Share	
Residential	100%
Current Demand Units	
Residential - Persons	18,376
Current LOS	
Square Feet per Person	4.71

Cost Analysis

As shown in Figure 14, the City's current inventory of recreation facilities has a total replication value of $13,951,492; an average of $161 per square foot ($13,951,492/86,540 square feet = $161 per square foot).

Figure 14: Recreation Facilities Cost Analysis

	*Replication Value**
Recreation/Senior Center	$12,000,000
In-Line Skating Rink	$407,830
Skate Park	$693,662
Arts Center	$850,000
TOTAL	$13,951,492
Total Square Footage of Facilities	86,540
Average Cost per Square Foot	$161

* City Department of Parks and Recreation.

Based on the current LOS of 4.71 square feet per person and an average cost of $161 per square foot, the cost to provide the current LOS is $759.22 per person ((4.71 square feet /1,000 persons) x $161 per square foot = $759.22 per person).

Figure 15: Recreation Facilities Cost per Person

Current LOS	
Square Feet per Person	4.71
Average Cost per Square Foot	$161
Cost per	
Person	$759.22

PRINCIPAL PAYMENT CREDIT

To avoid potential "double payment" of capital costs due to future principal payments on existing debt for recreation facilities, a credit is calculated to be deducted from the impact fees. A credit is not necessary for interest payments if interest costs were not included in the impact fees. As shown in the figure below, outstanding principal payments for the recreation center total $1,260,000. Annual principal payments per capita were discounted at a rate of 3.5% per year to yield the present value of future revenues.

Figure 16: Principal Payment Credit

Fiscal Year	*2003 Sales Tax Revenue Bonds Principal*	*Population*	*Credit per Person*
2011	$405,000	18,376	$22.04
2012	$420,000	18,410	$22.81
2013	$435,000	18,497	$23.52
TOTAL	$1,260,000		$68.37
		Discount Rate	3.5%
		Present Value	$63.80

RECREATION IMPACT FEES

The variables used to calculate the Recreation Impact Fees are shown in the figure below. Persons per household by number of bedrooms for different types of housing units are shown at the top of the figure. The total cost per person is $695.42.

Figure 17: Recreation Impact Fee Variables

	Persons per Household
Single Family Detached	
0-2 Bedrooms	1.73
3 Bedrooms	2.53
4 Bedrooms	3.29
5+ Bedrooms	4.02
Single Family Attached	
0-2 Bedrooms	1.57
3+ Bedrooms	2.45
Multi-family	1.44

	Cost per Person
Recreation Facilities	$759.22
Less Credit	-$63.80
TOTAL	$695.42

The number of persons per household by number of bedrooms for each type of housing unit is multiplied by the cost per person for each impact fee component. The Recreation Impact Fees are shown below.

Figure 18: Recreation Impact Fee

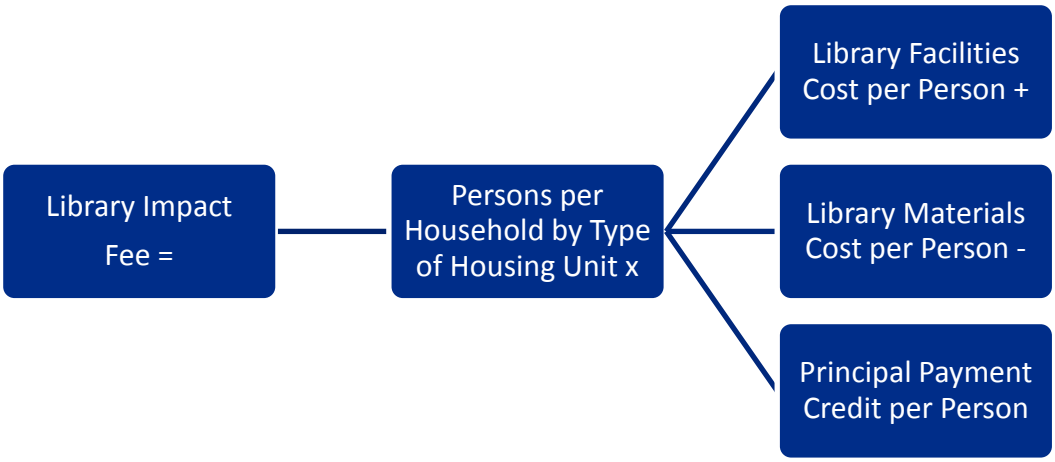
	Recreation Facilities	*Credit*	*TOTAL*
Single Family Detached (per unit)			
0-2 Bedrooms	$1,313	-$110	$1,203
3 Bedrooms	$1,921	-$161	$1,759
4 Bedrooms	$2,498	-$210	$2,288
5+ Bedrooms	$3,052	-$256	$2,796
Single Family Attached (per unit)			
0-2 Bedrooms	$1,192	-$100	$1,092
3+ Bedrooms	$1,860	-$156	$1,704
Multi-family (per unit)	$1,093	-$92	$1,001

LIBRARY

The Library Impact Fee includes components for facilities and materials. Since the library currently has sufficient capacity to serve future development, the buy-in methodology is used to calculate the facilities component of the Library Impact Fee. Under this methodology, the City will be able to recoup its previous investments in these facilities. The incremental expansion methodology is used for calculating the materials component of the Library Impact Fee. This methodology documents the current levels-of- (LOS) being provided to existing residential development. This methodology will allow the City to provide new development the same LOS being provided to existing development. A credit for revenues used to pay future debt service associated with library facilities is deducted from the impact fees to avoid "double payment" for library capacity with both impact fees and future property taxes.

Figure 19 illustrates the formula used to derive the Library Impact Fees. Note this fee is assessed on residential development only.

Figure 19: Library Impact Fee Methodology Chart



LIBRARY FACILITIES

Louisville has an intergovernmental agreement with the City of Superior to provide library facilities. Thus, the number of users from both Louisville and Superior are used to calculate the LOS currently being provided and to be provided in the future.

LOS Analysis

The current library facility encompasses 32,229 square feet and is projected to provide sufficient capacity to a service population of 31,000 persons from both Louisville and Superior. The LOS to be provided when the facility is at capacity is 1.04 square feet per person (32,229 square feet/(31,000 persons) = 1.04 square feet per person).

Figure 20: Library Facilities Buy-In LOS Standards

		Square Feet
Library		32,229
Proportionate Share		
	Residential	100%
Buildout Demand Units		
	Residential - Service Population*	31,000
Buildout LOS		
	Square Feet per Person	1.04

* Includes users from Town of Superior.

Cost Analysis

The original cost of the library facility to the City of Louisville totaled $8,976,260; an average of $279 per square foot ($8,976,260/32,229 square feet = 1.04 square feet per person). Based on the buildout LOS of 1.04 square feet per person and a cost per square foot of $279 per person, the buy-in cost per person is $289.56

Figure 21: Library Facilities Cost Analysis

Buildout LOS		
	Square Feet per Person	1.04
Original Cost per Square Foot*		$279
Cost per		
	Person	$289.56

* Based on original cost of $8,976,260. Does not include materials.

LIBRARY MATERIALS

The City has 91,432 units of library materials including books, magazines, DVD's, CD's, etc.

LOS Analysis

The current LOS being provided to the existing residential service population is 3.66 units per person (91,432 units/(24,958 persons) = 3.66 units per person).

Figure 22: Library Materials Current LOS Analysis

	# of Units
Library Materials	91,432
Proportionate Share	
Residential	100%
Current Demand Units	
Residential - Service Population*	24,958
Current LOS	
Materials per Person	3.66

* Includes users from Town of Superior.

Cost Analysis

Based on City insurance records, the average cost per unit of library material averages $19.23 per person. When combined with the current LOS of 3.66 units per person, the cost per person is $70.45 ($19.23 per unit x 3.66 units per person = $70.45 per person).

Figure 23: Library Materials Cost Analysis

Current LOS	
Materials per Person	3.66
Average Cost per Unit*	$19.23
Cost per	
Person	$70.45

* Based on item records as of 12/31/10.

Principal Payment Credit

To avoid potential "double payment" of capital costs due to future principal payments on existing debt for library facilities, a credit is calculated to be deducted from the impact fees. A credit is not necessary for interest payments if interest costs were not included in the impact fees. As shown in the figure below, the City has $4,399,611 remaining to be collected to repay the principal portion of the bond. Annual principal payments per capita were discounted at a rate of 4.25% per year to yield the present value of future revenues.

Figure 24: Principal Payment Credit

Fiscal Year	*GO Bonds Series 2004 Principal**	*City of Louisville Population*	*Credit per Person*
2011	$267,516	18,376	$14.56
2012	$275,747	18,410	$14.98
2013	$288,094	18,497	$15.58
2014	$296,326	18,584	$15.95
2015	$308,672	18,671	$16.53
2016	$321,019	18,758	$17.11
2017	$333,366	18,848	$17.69
2018	$349,829	18,939	$18.47
2019	$358,060	19,031	$18.81
2020	$370,407	19,123	$19.37
2021	$390,985	19,215	$20.35
2022	$411,563	19,401	$21.21
2023	$428,026	19,588	$21.85
TOTAL	$4,399,611		$232.46
		Discount Rate	4.25%
		Present Value	$172.39

* Debt service adjusted to reflect existing debt service reserve which will be used to pay for future annual payments.

LIBRARY IMPACT FEES

The variables used to calculate the Library Impact Fees are shown in the figure below. Persons per household by number of bedrooms for different types of housing units are shown at the top of the figure. The total cost per person is $187.62.

Figure 25: Library Impact Fee Variables

	Persons per Household
Single Family Detached	
0-2 Bedrooms	1.73
3 Bedrooms	2.53
4 Bedrooms	3.29
5+ Bedrooms	4.02
Single Family Attached	
0-2 Bedrooms	1.57
3+ Bedrooms	2.45
Multi-family	1.44

	Cost per Person
Library Facility	$289.56
Library Materials	$70.45
Less Credit	-$172.39
TOTAL	$187.62

The number of persons per household by number of bedrooms for each type of housing unit is multiplied by the cost per person for each impact fee component. The Library Impact Fees are shown below.

Figure 26: Library Impact Fees

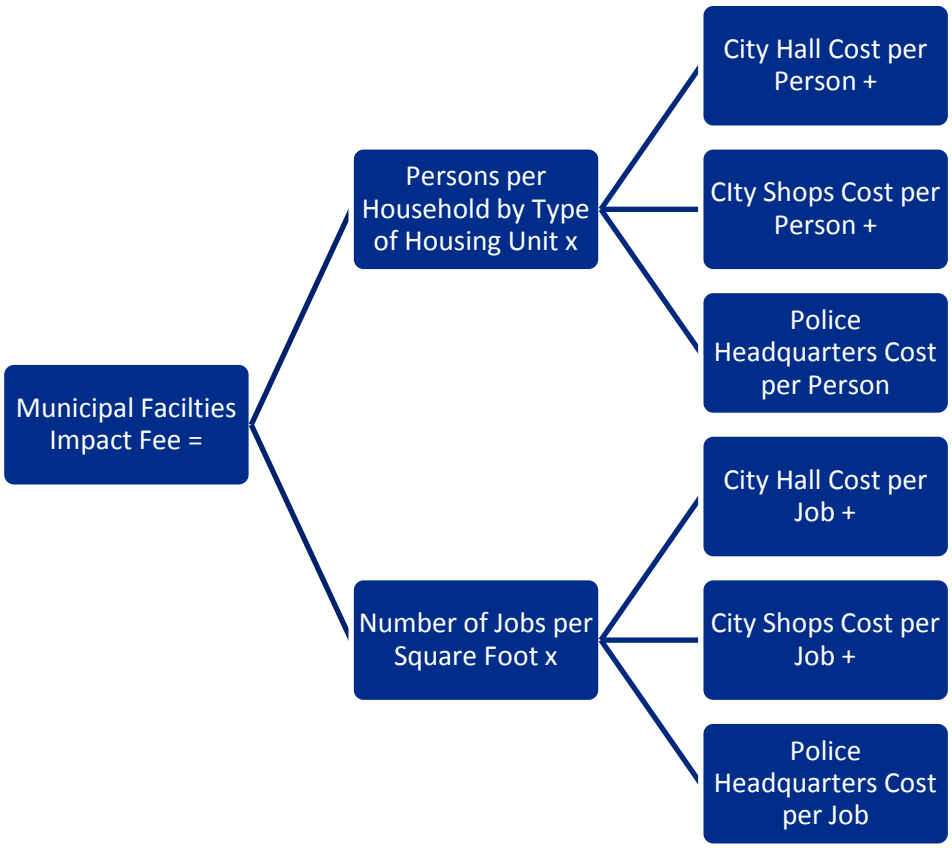
	Library Facility	*Library Materials*	*Credit*	*TOTAL*
Single Family Detached (per unit)				
0-2 Bedrooms	$501	$122	-$298	$325
3 Bedrooms	$733	$178	-$436	$475
4 Bedrooms	$953	$232	-$567	$617
5+ Bedrooms	$1,164	$283	-$693	$754
Single Family Attached (per unit)				
0-2 Bedrooms	$455	$111	-$271	$295
3+ Bedrooms	$709	$173	-$422	$460
Multi-family (per unit)	$417	$101	-$248	$270

MUNICIPAL FACILITIES

The Municipal Facilities Impact Fees includes components for City Hall, City Shops, and Police Headquarters. Both City Hall and the Police Headquarters facilities have sufficient, existing capacity to serve future development. The buy-in methodology is used to calculate these components. The plan-based methodology is used to calculate the component for City Shops. The planned City Shops project is the result of both existing and new development. Impact fees will be used to fund new development's share of the project, while existing development's share will have to be funded with non-impact fee revenues.

The Municipal Facilities Impact Fee is assessed for both residential and nonresidential development. Residential impact fees are calculated on a per person basis while nonresidential impact fees are calculated per job.

Figure 27: Municipal Facilities Impact Fee Methodology Chart



PROPORTIONATE SHARE

For the Municipal Facilities Impact Fees, an estimate of functional population was used to apportion capital costs to residential and nonresidential development. For residential development, the proportionate share factor is based on estimated person hours of non-working residents, plus the non-working hours of resident workers. Based on data from the Census Bureau for the City of Louisville, approximately 56% of Louisville's population works and 44% do not work. For resident workers, two-thirds of a day (i.e., 16 hours) is allocated to residential demand. Time spent at work (i.e., 8 hours) is allocated to nonresidential development. The U.S. Census Bureau estimates that 2,261 city residents also worked in Louisville. Therefore, of the total 16,200 jobs located in the City, 13,939 non-resident workers commute into Louisville for work. Based on estimated person hours, the cost allocation for residential development is 73% while nonresidential development accounts for 27% of the demand for infrastructure.

Figure 28: Municipal Facilities Proportionate Share Analysis

	Demand Units		*Demand Hours/Day*	*Person Hours*
Residential				
Population*	18,376			
Residents Not Working		8,156	24	195,744
Workers Living in City**		10,220		
Residents Working in City***		2,261	16	36,176
Residents Working Outside City		7,959	16	127,344
			Residential Subtotal	359,264
				73%
Nonresidential				
Jobs Located in City****		16,200		
Residents Working in City**		2,261	8	18,088
Non-Resident Workers		13,939	8	111,512
			Nonresidential Subtotal	129,600
				27%
			TOTAL	488,864

* Table B01003, *2005-2009 American Community Survey 5-Year Estimates*, U.S. Census Bureau.
** Table B08130, 2005-2009 *American Community Survey 5-Year Estimates*, U.S. Census Bureau.
*** Table B08008, 2005-2009 *American Community Survey 5-Year Estimates*, U.S. Census Bureau.
**** Table 3-1, City of Louisville Comprehensive Plan.

CITY HALL

The current City Hall has sufficient capacity to serve new development through build out.

LOS Analysis

The current City Hall encompasses 14,471 square feet and is projected to provide sufficient capacity 23,000 persons and 21,300 jobs. The LOS to be provided to residential development when the facility is at capacity is 0.47 square feet per person ((14,741 square feet x 0.73)/23,000 persons = 0.47 square feet per person). The LOS to be provided to nonresidential development when the facility is at capacity is 0.19 square feet per job ((14,741 square feet x 0.27)/21,300 jobs = 0.19 square feet per job).

Figure 29: City Hall Buy-In LOS Analysis

		Square Feet
City Hall		14,741
Proportionate Share		
	Residential	73%
	Nonresidential	27%
Buildout Demand Units		
	Residential - Population	23,000
	Nonresidential - Jobs	21,300
Buildout LOS		
	Square Feet per Person	0.47
	Square Feet per Job	0.19

Cost Analysis

The original cost of City Hall was $2,927,400 including the building, improvements, and contents. This equates to an average cost per square foot of $199 ($2,927,400/14,741 square feet = $199 per square foot). Based on the buildout LOS of 0.47 square feet per person and 0.19 square feet per job, the buy-in cost per person is $92.91 (0.47 square feet per person x $199 per square foot = $92.91 per person). The buy-in cost per job is $37.11 (0.19 square feet per job x $199 per square foot = $37.11 per job).

Figure 30: City Hall Cost Analysis

Buildout LOS		
	Square Feet per Person	0.47
	Square Feet per Job	0.19
Original Cost per Square Foot*		$199
Cost per		
	Person	$92.91
	Job	$37.11

* Based on original cost of $2,927,400. Includes building, improvements, and contents.

CITY SHOPS

The City's five year Capital Improvements Plan includes construction of a 15,000 square foot City Shops project costing $3,500,000. Seventy five percent of the project is to be funded with dedicated revenues from the City's utility and conservation trust funds with the remaining twenty five percent being funded from capital project funds which includes impact fees. Thus, only twenty five percent of the planned project is included in the calculation of this component of the Municipal Facilities Impact Fee.

LOS Analysis

The twenty five percent of the planned City Shops project included in the impact fee calculations encompasses 3,750 square feet (15,000 square feet x 0.25 = 3,750 square feet). The planned project is expected to provide capacity to both existing and new development through build out of the City. The residential LOS to be provided when the project is at capacity is 0.12 square feet per person ((3,750 square feet x 0.73)/23,000 persons = 0.12 square feet per person). The nonresidential LOS to be provided when the project is at capacity is 0.05 square feet per job ((3,750 square feet x 0.27)/21,300 jobs = 0.05 square feet per job).

Figure 31: City Hall Shops Planned LOS

		Square Feet
Planned City Shops		3,750
Proportionate Share		
	Residential	73%
	Nonresidential	27%
Build Out Demand Units		
	Residential - Population	23,000
	Nonresidential - Jobs	21,300
Planned LOS		
	Square Feet per Person	0.12
	Square Feet per Job	0.05

Cost Analysis

The planned cost of the 15,000 square foot City Shops is $3,500,000, an average of $233 per square foot ($2,300,000/15,000 square feet = $233 per square foot). Based on the planned LOS of 0.12 square feet per person, the cost per person for the project is $27.77 (0.12 square feet per person x $233 per square foot = $27.77 per person). The cost per job is $11.09 (0.05 square feet per job x $233 per square foot = $11.09 per job).

Figure 32: City Hall Cost Analysis

Planned LOS		
	Square Feet per Person	0.12
	Square Feet per Job	0.05
Planned Cost per Square Foot*		$233
Cost per		
	Person	$27.77
	Job	$11.09

* City of Louisville, *2011 Annual Operating and Capital Budget* .

POLICE HEADQUARTERS

The recently constructed Police Headquarters building has sufficient, existing capacity to serve new development through build out of the City.

LOS Analysis

The current Police Headquarters encompasses 23,912 square feet and is projected to provide sufficient capacity for 23,000 persons and 21,300 jobs. The LOS to be provided to residential development when the facility is at capacity is 0.76 square feet per person ((23,912 square feet x 0.73)/23,000 persons = 0.76 square feet per person). The LOS to be provided to nonresidential development when the facility is at capacity is 0.30 square feet per job ((23,912 square feet x 0.27)/21,300 jobs = 0.30 square feet per job).

Figure 33: Police Headquarters Buy-in LOS Analysis

	Square Feet
Police Station	23,912
Proportionate Share - Calls for Service	
Residential	73%
Nonresidential	27%
Buildout Demand Units	
Residential - Population	23,000
Nonresidential - Jobs	21,300
Buildout LOS	
Square Feet per Person	0.76
Square Feet per Job	0.30

Cost Analysis

The original cost of the Police Headquarters facility was $3,725,000 including land and the building. This equates to an average cost per square foot of $156 ($3,725,000/23,912 square feet = $156 per square foot). Based on the buildout LOS of 0.76 square feet per person and 0.30 square feet per job, the buy-in cost per person is $118.23 (0.76 square feet per person x $156 per square foot = $118.23 per person). The buy-in cost per job is $47.22 (0.30 square feet per job x $156 per square foot = $47.22 per job).

Figure 34: Police Headquarters Cost Analysis

Buildout LOS	
Square Feet per Person	0.76
Square Feet per Job	0.30
Original Cost per Square Foot*	$156
Cost per	
Person	$118.23
Job	$47.22

* Based on original cost of $3.725 million. Includes building and land.

Municipal Facilities Impact Fees

The variables used to calculate the Municipal Facilities Impact Fees are shown in the figure below. Persons per household by number of bedrooms for different types of housing units are shown at the top of the figure along with employee density rates for various nonresidential land uses. The total cost per person is $238.91 and $95.42 per job.

Figure 35: Municipal Facilities Impact Fee Variables

	Standards:	
Residential	Persons per Household	
Single Family Detached (per unit)		
0-2 Bedrooms	1.73	
3 Bedrooms	2.53	
4 Bedrooms	3.29	
5+ Bedrooms	4.02	
Single Family Attached (per unit)		
0-2 Bedrooms	1.57	
3+ Bedrooms	2.45	
Multi-family (per unit)	1.44	
Nonresidential		Employees per sf/dev unit
Commercial / Shop Ctr 50,000 SF or less		0.00286
Commercial / Shop Ctr 50,001-100,000 SF		0.00250
Commercial / Shop Ctr 100,001-200,000 SF		0.00222
Business Park		0.00316
Medical-Dental Office		0.00405
General Office 50,000 SF or less		0.00391
General Office 50,001-100,000 SF		0.00370
General Office 100,001-200,000 SF		0.00349
Hospital		0.00317
Mini-Warehouse		0.00004
Warehousing		0.00092
Manufacturing		0.00179
Light Industrial		0.00231
Lodging (per room)		0.44
Elementary School (per student)		0.08
Secondary School (per student)		0.09
Day Care (per student)		0.16
Nursing Home (bed)		0.36
Cost Factors	Per Person	Per Employee
City Hall Component	$92.91	$37.11
City Shops Component	$27.77	$11.09
Police Headquarters Component	$118.23	$47.22
Net Capital Cost	$238.91	$95.42

Residential impact fees are calculated by multiplying the number of persons per household by number of bedrooms for each type of housing unit by the cost per person for each impact fee component. Nonresidential impact fees are calculated by multiplying the number of employees per square foot by the cost per job for each impact fee component. The Municipal Facilities Impact Fees are shown below.

Figure 36: Municipal Facilities Impact Fees

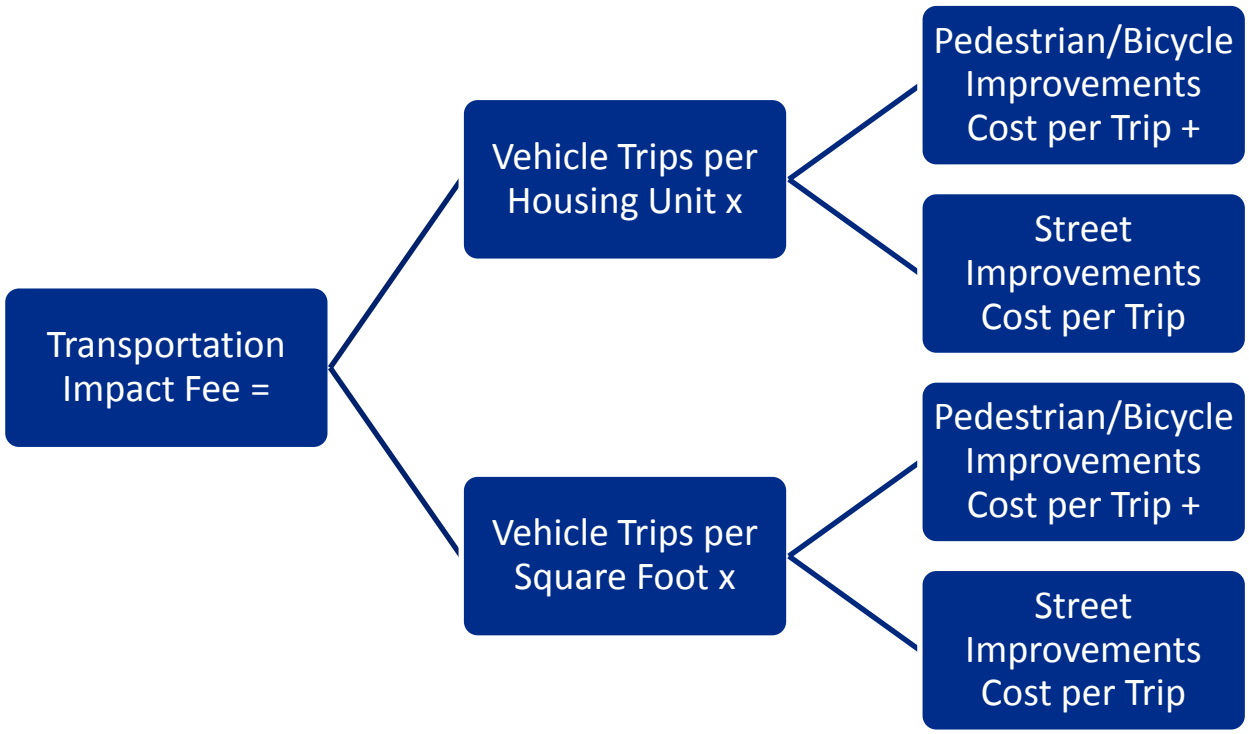
Residential	Per Housing Unit
Single Family Detached (per unit)	
0-2 Bedrooms	$413
3 Bedrooms	$604
4 Bedrooms	$786
5+ Bedrooms	$960
Single Family Attached (per unit)	
0-2 Bedrooms	$375
3+ Bedrooms	$585
Multi-family (per unit)	$344
Nonresidential	**Per Square Foot (unless otherwise noted)**
Commercial / Shop Ctr 50,000 SF or less	$0.27
Commercial / Shop Ctr 50,001-100,000 SF	$0.24
Commercial / Shop Ctr 100,001-200,000 SF	$0.21
Business Park	$0.30
Medical-Dental Office	$0.39
General Office 50,000 SF or less	$0.37
General Office 50,001-100,000 SF	$0.35
General Office 100,001-200,000 SF	$0.33
Hospital	$0.30
Mini-Warehouse	$0.004
Warehousing	$0.09
Manufacturing	$0.17
Light Industrial	$0.22
Lodging (per room)	$42
Elementary School (per student)	$8
Secondary School (per student)	$8
Day Care (per student)	$15
Nursing Home (bed)	$35

TRANSPORTATION

The Transportation Impact Fees includes components for street improvements and bicycle and pedestrian improvements. The plan-based methodology is used to calculate the street improvements component. The planned street improvements are the result of both existing and new development. Impact fees will be used to fund new development's share of the projects, while existing development's share will have to be funded with non-impact fee revenues. The incremental expansion methodology is used to calculate the bicycle and pedestrian improvements component. This methodology documents the current levels-of-service (LOS) being provided to existing development and will allow the City to provide new development the same LOS being provided to existing development.

The Transportation Impact Fee is assessed for both residential and nonresidential development on a per vehicle trip basis.

Figure 37: Transportation Impact Fee Methodology Chart



STREET IMPROVEMENTS

Figure 38 lists the planned street improvements to be built over the next five years needed to accommodate new development in the City. Given that the planned projects are for major streets in the City's street network, the projects will benefit new development throughout the entire City. The City is planning approximately $10.3 million of projects which will add 7.0 lane miles to the City's street network. Using data from the Denver Regional Council of Governments (DRCOG) on trips from existing

and new development in the City and trips from existing and new pass through traffic, the portion of the planned projects attributable to new development in the City is $682,800 and 0.66 lane miles.

Figure 38: Planned Street Improvements

*Project**	*Additional Lane Miles*	*Total Cost to City*	*Growth Share***	*Growth Related Lane Miles*	*Growth Related Cost*
Highway 42 Improvements - Locke to Northern City Limits	5.0	$4,700,000	7%	0.35	$329,000
Dillon and 104th Street Intersection Improvements	1.0	$100,000	22%	0.22	$22,000
McCaslin Signal Phasing, US 36 to Via Appia	1.0	$20,000	9%	0.09	$1,800
Planning, Preliminary Engineering, Construction for US 36 and McCaslin Interchange	0.0	$5,500,000	6%	0.00	$330,000
TOTAL	7.0	$10,320,000		0.66	$682,800

* Existing Master Plans and Development Agreements.
** Select Link Analysis for pass through traffic from Denver Regional Council of Governments (DRCOG).

Trip Generation

City of Louisville road impact fees are based on average weekday vehicle trip ends. Trip generation rates are from the reference book *Trip Generation* published by the Institute of Transportation Engineers (ITE, 2008). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

TischlerBise used American Community Survey (hereafter referred to as "ACS") 2005-2009 data from the U.S. Census Bureau for the City of Louisville to derive custom average weekday trip generation rates by type of housing, as shown in the figure below.

Figure 39: Average Weekday Vehicle Trip Ends by Housing Type in Louisville

		Households (2)				Vehicles per
	Vehicles Available (1)	Single Family Detached Units	Single Family Attached Units	Multifamily Units	Total	Household by Tenure
Owner-occupied	12,142	5,109	328	208	5,645	2.15
Renter-occupied	2,655	640	172	969	1,781	1.49
TOTAL	**14,797**	**5,749**	**500**	**1,177**	**7,426**	**1.99**
Housing Units (6) =>		5,821	554	1,259	7,634	

	Persons (3)	Trip Ends (4)	Vehicles by Type of Housing	Trip Ends (5)	Average Trip Ends	Trip Ends per Housing Unit
Single Family Detached Units	16,086	41,637	11,943	69,039	55,338	9.50
Single Family Attached Units	930	1,929	962	2,529	2,229	4.00
Multifamily Units	1,577	5,407	1,892	7,748	6,577	5.20
TOTAL	**18,593**	**48,973**	**14,797**	**79,316**	**64,145**	**8.40**

(1) Vehicles available by tenure from Table B25046, American Community Survey, 2005-2009.
(2) Households by tenure and units in structure from Table B25032, American Community Survey, 2005-2009.
(3) Persons by units in structure from Table B25033, American Community Survey, 2005-2009.
(4) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2008). For single family detached housing (ITE 210), the fitted curve equation is EXP(0.91*LN(persons)+1.52). To approximate the average population of the ITE studies, persons were divided by 28.9 and the equation result multiplied by 28.9 For single family attached housing (ITE 230), the fitted curve equation is (1.78*persons)+273.89. For multifamily housing (ITE 220), the fitted curve equation is (3.47*persons)-64.48.
(5) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2008). For single family detached 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 46.5 and the equation result multiplied by 46.5. For single family attached housing (ITE 230), the fitted curve equation is (2.31*persons)+307.36. For multifamily housing (ITE 220), the fitted curve equation is (3.94*vehicles)+293.58.
(6) Housing units from Table B25024, American Community Survey, 2005-2009.

Custom tabulations of demographic data by bedroom range can be created from survey responses provided by the U.S. Census Bureau in files known as Public Use Micro-data Samples (hereafter referred to as "PUMS"). Louisville is included in Colorado Public Use Micro-data Areas (hereafter referred to as PUMAs) 00804. TischlerBise derived trip generation rates and average persons per housing unit by bedroom range, from PUMS data. Recommended multipliers were scaled to make the average value by type of housing for Louisville PUMAs match the average value derived from ACS data for the City.

Figure 40: Average Persons and Trip Ends by Bedroom Range in Louisville

	Persons (1)	Trip Ends (2)	Vehicles Available (1)	Trip Ends (3)	Average Trip Ends	Housing Units (1)	Recommended Multipliers (4) Trip Ends per Housing Unit	Recommended Multipliers (4) Persons per Housing Unit
Single Family Detached 0-2 Bdrms	4,940	16,820	246	1,463	9,142	2,855	6.66	1.73
Single Family Detached 3 Bdrms	38,201	108,198	1,702	9,931	59,064	15,105	8.14	2.53
Single Family Detached 4 Bdrms	44,662	124,731	1,799	10,491	67,611	13,567	10.37	3.29
Single Family Detached 5+ Bdrms	16,259	49,731	581	3,427	26,579	4,044	13.68	4.02
Single Family Detached Subtotal	***104,062***	***299,480***	***4,328***	***25,312***	***162,396***	***35,571***	***9.50***	***2.93***
Single Family Attached 0-2 Bdrms	3,819	7,072	151	656	3,864	2,426	3.35	1.57
Single Family Attached 3+ Bdrms	2,846	5,340	124	594	2,967	1,161	5.37	2.45
Single Family Attached Subtotal	***6,665***	***12,411***	***275***	***1,250***	***6,831***	***3,587***	***4.00***	***1.86***
Multifamily Subtotal	***12,289***	***42,578***	***498***	***2,256***	***22,417***	***8,522***	***5.20***	***1.44***

(1) American Community Survey, Public Use Microdata Sample for CO PUMA 00804(unweighted data for 2005-2009).
(2) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2008). For single family 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 186.7 and the equation result multiplied by 186.7. For single family attached housing (ITE 230), the fitted curve equation is (1.78*persons)+273.89. For multifamily housing (ITE 220), the fitted curve equation is (3.47*persons)-64.48.
(3) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2008). For single family 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 16.85 and the equation result multiplied by 16.85. For single family attached housing (ITE 230), the fitted curve equation is (2.31*persons)+307.36. For multifamily housing (ITE 220), the fitted curve equation is (3.94*vehicles)+293.58.
(4) Recommended multipliers are scaled to make the average value by type of housing for CO PUMA 00804 match the average value for the City of Louisville, derived from American Community Survey 2005-2009 data, with persons adjusted to the Citywide average of 2.83 persons per housing unit.

Trip Rate Adjustments

To calculate road impact fees, 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 impact fee methodology includes additional adjustments to make the fees proportionate the infrastructure demand for particular types of development.

Residential Development

Residential development has a larger trip adjustment factor of 62% to account for commuters leaving Louisville for work. According to the 2001 National Household Travel Survey (see Table 29, Federal Highway Administration, published December 2004) 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, data from 2005-2009 ACS indicates that 78% of City of Louisville workers travel outside the city for work. In combination, these factors (0.31 x 0.50 x 0.78 = 0.12) support the higher allocation of trips to residential development.

An additional 3% reduction factor is also applied to account for transit trips which reduce the need for additional street improvements.

Commercial Development

The commercial category has a trip factor of less than 50% due to two characteristics of this land use. First, commercial development attracts vehicles as they pass-by on arterial and collector roads ("pass-by" trips). For example, when someone stops at a convenience store on their way home from work, the convenience store is not their primary destination.

A second adjustment for diverted linked trips is made to the commercial category. Diverted linked trips are trips that are attracted from the traffic volume on roads in the vicinity of commercial development but require a diversion from one road to another road to gain access to the commercial development. These trips add traffic to streets adjacent to the development, but do not add trips to a community's transportation network.

Using a 100,000 square foot shopping center as an example, pass-by trips account for 34% of total trips while diverted link trip account for an additional 24% of total trips. The remaining 42% of primary trips (100%-34%-24% = 42%) is adjusted by 50% to avoid over-estimating the number of actual trips because one vehicle trip is counted in the trip rates of both the origination and destination points. The total commercial trip adjustment factor for a 100,000 square foot shopping center is 21% (42% x 50% = 21%).

The figure below summarizes the commercial trip adjustments for pass-by trips and diverted linked trips.

Figure 41: Commercial Trip Rates and Adjustment Factors

Floor Area in thousands (KSF)	All Commercial Trips (a)	Comm. Pass-by Trips (b)*	Comm. Diverted-Link Trips (c)**	Primary Comm. Trips (d=(a-(b+c))	Origin - Destination Adj. Factor (e)***	Commercial Trip Adj Factor (d x e)
10	100%	52%	24%	24%	50%	12%
25	100%	45%	24%	31%	50%	16%
50	100%	39%	24%	37%	50%	19%
100	100%	34%	24%	42%	50%	21%
200	100%	29%	24%	47%	50%	24%
400	100%	23%	24%	53%	50%	27%
800	100%	18%	24%	58%	50%	29%

* Based on data published by ITE in *Trip Generation Handbook* (2004), the best trendline correlation between pass-by trips and floor area is a logarithmic curve with the equation ((-7.6967*LN(KSF)) + 69.448).
** Based on data published by ITE in *Trip Generation Handbook* (2004).
*** To account for the origin-destination relationship of a trip, an adjustment factor of 50% is applied

Trip Length Adjustment by Land Use

The demand for street infrastructure is a function of both the number of vehicle trips and the distance traveled. Multiplying the number of vehicle trips by the average trip length (in miles) yields vehicle miles of travel (VMT). The Transportation Development Fee methodology includes a percentage adjustment to account for trip length variation by type of land use. As documented in Table 6 of the *National Household Travel Survey* (FHWA, 2001), vehicle trips from residential development are approximately 122% of the average trip length. Trips associated with residential development include home-based work trips plus social and recreational purposes. Conversely, shopping trips associated with commercial development are roughly 68% of the average trip length, while other nonresidential development typically accounts for trips that are 75% of the average trip length.

Vehicle Miles of Travel (VMT)

One vehicle traveling one mile is equal to one vehicle mile of travel (VMT). VMT is the product of the number of vehicle trips multiplied by the average trip length. Thus it is possible to determine the average trip length on street improvements if we know VMT and the number of vehicle trips. Intermediate steps in deriving the average trip length include defining lane capacity and determining the number of vehicle trips to development located within the City. These factors are discussed below:

- **Projected vehicle trips**: based on projected residential and nonresidential growth in the City as detailed in Appendix A
- **Lane miles:** total lane miles of planned projects needed for new development (0.66 lane miles).
- **Lane capacity:** 9,000 vehicles per lane.
- **Construction versus Capacity Time Frame:** The City plans to construct the street improvements within the next five years. However the improvements will provide sufficient capacity to serve new development ten years after construction. The development fees are based on a fifteen year capacity life of the planned projects through FY2025.
- **Average trip length:** Knowing the increase in vehicle trips, planned lane miles, and lane capacity, it is possible to derive the average trip length on the planned street projects from new residential and nonresidential growth. Because the VMT calculations include the same adjustment factors used in the impact fee calculations (i.e., residential commuting adjustment, commercial pass-by adjustment and average trip length adjustment by type of land use), the average trip length is determined through a series of iterations using spreadsheet software. As shown below, the average trip length on the planned street projects by new residential and nonresidential development is 0.31 miles.

Figure 42: VMT Analysis for Planned Street Improvements for New Development

INPUT VARIABLES	
Single Family Weekday VTE per Unit	9.10
Multi-Family Weekday VTE per Unit	7.30
Mobile Home VTE per Unit	4.99
Residential VTE Adjustment for Transit	3%
Commercial Weekday VTE/KSF	86.56
Office Weekday VTE/KSF	15.65
Public Weekday VTE/KSF	68.93
Industrial Weekday VTE/KSF	12.76
Residential Trip Adj Factor	62%
Commercial Trip Adj Factor	19%
Other Nonres Trip Adj Factor	50%
Average Miles/Trip	**0.31**
Residential Trip Length	122%
Commercial Trip Length	68%
Other Nonresidential Trip Length	75%
Capacity Per Lane	9,000

							5 Year Increments		
	Base	*1*	*2*	*3*	*4*	*5*	*10*	*15*
Fiscal Year Starting July 1,	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2020*	*2025*
DEMAND DATA								
SINGLE FAMILY UNITS	5,717	5,730	5,755	5,780	5,805	5,830	5,874	5,965
MULTI-FAMILY UNITS	1,699	1,699	1,709	1,719	1,729	1,739	1,895	2,218
MOBILE HOMES UNITS	343	343	343	343	343	343	343	343
COMMERCIAL KSF	1,575	1,579	1,582	1,586	1,590	1,594	1,635	1,701
OFFICE KSF	2,834	2,841	2,848	2,855	2,862	4,462	4,688	4,878
PUBLIC KSF	314	314	314	314	314	314	314	314
INDUSTRIAL KSF	3,308	3,317	3,325	3,333	3,342	3,350	3,434	3,574
SINGLE FAMILY TRIPS	31,323	31,394	31,531	31,668	31,805	31,942	32,183	32,682
MULTI-FAMILY TRIPS	7,467	7,467	7,511	7,555	7,599	7,643	8,328	9,747
MOBILE HOME TRIPS	1,030	1,030	1,030	1,030	1,030	1,030	1,030	1,030
COMMERCIAL TRIPS	25,215	25,278	25,341	25,405	25,468	25,532	26,177	27,240
OFFICE TRIPS	22,175	22,231	22,286	22,342	22,398	34,918	36,682	38,171
PUBLIC TRIPS	10,821	10,821	10,821	10,821	10,821	10,821	10,821	10,821
INDUSTRIAL TRIPS	21,107	21,160	21,213	21,266	21,319	21,372	21,912	22,802
TRIPS	119,139	119,381	119,734	120,087	120,440	133,258	137,133	142,492
VEHICLE MILES OF TRAVEL (VMT)	32,848	32,913	33,020	33,127	33,233	36,229	37,247	38,745
ANNUAL LANE MILES NEEDED		0.01	0.01	0.01	0.01	0.33	0.04	0.02
CUMULATIVE LANE MILES NEEDED		0.01	0.02	0.03	0.04	0.38	0.49	**0.66**

Cost per VMT

The total cost of the planned street projects attributable to new development is $682,800. The cost per VMT is calculated by dividing the total cost of the projects by the net increase in VMT's from new development over the next fifteen years (from the above figure) which is the projected capacity lifetime

of these projects. The calculation is as follows: (($682,800/(38,745 VMT's in FY2025 – 32,848 VMT's in FY2010= 5,897 net new VMT's) = $115.79 per VMT.

Figure 43: Cost per VMT for Planned Street Improvements for New Development

*Project**	*Additional Lane Miles*	*Total Cost to City*	*Growth Share***	*Growth Related Lane Miles*	*Growth Related Cost*
Highway 42 Improvements - Locke to Northern City Limits	5.0	$4,700,000	7%	0.35	$329,000
Dillon and 104th Street Intersection Improvements	1.0	$100,000	22%	0.22	$22,000
McCaslin Signal Phasing, US 36 to Via Appia	1.0	$20,000	9%	0.09	$1,800
Planning, Preliminary Engineering, Construction for US 36 and McCaslin Interchange	0.0	$5,500,000	6%	0.00	$330,000
TOTAL	7.0	$10,320,000		0.66	$682,800
			Net Increase in VMT 2010 to 2025		5,897
			Cost Per VMT		$115.79

Bicycle and Pedestrian Improvements

The Coal Creek Trail is a regional trial which is a venture between the cities of Louisville, Lafayette, Superior and Boulder County. The trail will eventually tie into the City of Boulder and Town of Erie trail systems as well as link to the Rock Creek Trail system and the City and County of Broomfield.

LOS Analysis

The City's portion of the Coal Creek is 3.7 miles long. The current LOS being provided to existing residential and nonresidential development is 0.000031 miles per vehicle trip. The residential LOS is calculated as follows: ((3.7 miles x 0.34)/40,257 vehicle trip from residential development) = 0.000031 miles per residential vehicle trip. This calculation is repeated for nonresidential development using the corresponding nonresidential factors.

Figure 44: Current Bicycle and Pedestrian Improvements LOS

	Miles
Coal Creek Trail - Soft Surface	3.0
Coal Creek Trail - Hard Surface	0.7
TOTAL	3.7

Current Demand Units	*Vehicle Trips*	*Prop. Share*
Residential	40,257	34%
Nonresidential	79,318	66%
TOTAL	119,575	100%

Current LOS	
Miles per Residential Veh. Trip	0.000031
Miles per Nonresidential Veh. Trip	0.000031

Cost Analysis

Soft surface trails cost $42,240 per mile while hard surface trails cost an average of $223,872 per mile. The City's current portion of the Coal Creek Trail has a replication value of $283,430; an average of $76,603 per mile ($283,430/3.7 miles = $76,603 per mile).

Figure 45: Bicycle and Pedestrian Improvements Cost Analysis

	Miles	*Cost/Mile**	*Cost*
Coal Creek Trail - Soft Surface	3.0	$42,240	$126,720
Coal Creek Trail - Hard Surface	0.7	$223,872	$156,710
TOTAL	3.7		$283,430
Average Cost per Mile			$76,603

* City Department of Parks and Recreation.

Based on the current LOS of 0.000031 miles per vehicle trip and an average cost of $76,603 per mile, the cost to provide the current LOS is $2.37 per vehicle trip ((0.000031 miles per trip x $76,603 per mile = $2.37 per trip).

Figure 46: Bicycle and Pedestrian Improvements Cost per Trip

Current LOS	
Miles per Residential Veh. Trip	0.000031
Miles per Nonresidential Veh. Trip	0.000031
Average Cost per Mile	$76,603
Cost per	
Residential Vehicle Trip	$2.37
Nonresidential Vehicle Trip	$2.37

Transportation Impact Fees

The capital cost per trip is shown at the bottom of the below figure. For the planned street improvements, the cost for the average trip length is calculated by multiplying the average trip length multiplied by the trip length adjustment factor and the capital cost per vehicle mile of travel. For example, the capital cost for planned street improvements demanded by a residential development is 0.31 miles x 1.22 x $115.79, or $43.65 per trip. This is calculation repeated for commercial and other nonresidential land uses. The cost for bicycle and pedestrian improvements of $2.37 per trip is then added to this cost.

The total cost per trip for residential development is $46.02. For nonresidential development, the cost per trip for commercial land uses is $26.70 and $29.21 for other nonresidential land uses.

Figure 47: Transportation Impact Fee Variables

Residential (trips per unit w/ commuting adjustment)	Residential	Commercial	Other Nonresidential
Single Family Detached			
0-2 Bedrooms	6.46		
3 Bedrooms	7.89		
4 Bedrooms	10.06		
5+ Bedrooms	13.27		
Single Family Attached			
0-2 Bedrooms	3.25		
3+ Bedrooms	5.21		
Multi-family	5.04		
Nonresidential (trips per square foot or unit of development)			
Commercial / Shop Ctr 50,000 SF or less		0.08656	
Commercial / Shop Ctr 50,001-100,000 SF		0.06791	
Commercial / Shop Ctr 100,001-200,000 SF		0.05328	
Business Park			0.01276
Medical-Dental Office			0.03613
General Office 50,000 SF or less			0.01565
General Office 50,001-100,000 SF			0.01334
General Office 100,001-200,000 SF			0.01137
Hospital			0.01650
Mini-Warehouse			0.00250
Warehousing			0.00356
Manufacturing			0.00382
Light Industrial			0.00697
Lodging (per room)			5.63
Elementary School (per student)			1.29
Secondary School (per student)			1.71
Day Care (per student)			4.48
Nursing Home (bed)			2.37
Trip Adjustment Factors			
Residential	62%		
Commercial / Shop Ctr 50,000 SF or less		19%	
Commercial / Shop Ctr 50,001-100,000 SF		21%	
Commercial / Shop Ctr 100,001-200,000 SF		24%	
All Other Nonresidential			50%
Level Of Service			
Average Trip Length (miles)	0.31	0.31	0.31
Average Trip Length Adjustment	122%	68%	75%
Capital Cost Per VMT	$115.79	$115.79	$115.79
Capital Cost for Avg Length Trip	$43.65	$24.33	$26.84
Bicycle and Pedestrian Improvements	$2.37	$2.37	$2.37
Net Capital Cost	$46.02	$26.70	$29.21

The input variables listed above are used to derive the Transportation Impact Fees shown in the figure below. The impact fees are the product of the trip generation rates multiplied by the trip adjustment

factors multiplied by the net capital cost per trip. For example, the impact fee for a single-family detached unit with 0-2 bedrooms is 6.46 x 0.62 x $46.02 = $185 per unit.

Figure 48: Transportation Impact Fees

	Residential	Commercial	Other Nonresidential
Residential (per unit)			
Single Family Detached			
0-2 Bedrooms	$185		
3 Bedrooms	$225		
4 Bedrooms	$287		
5+ Bedrooms	$379		
Single Family Attached			
0-2 Bedrooms	$93		
3+ Bedrooms	$149		
Multi-family	$144		
Nonresidential (per square foot or unit of development)			
Commercial / Shop Ctr 50,000 SF or less		$0.43	
Commercial / Shop Ctr 50,001-100,000 SF		$0.38	
Commercial / Shop Ctr 100,001-200,000 SF		$0.33	
Business Park			$0.19
Medical-Dental Office			$0.53
General Office 50,000 SF or less			$0.23
General Office 50,001-100,000 SF			$0.19
General Office 100,001-200,000 SF			$0.17
Hospital			$0.24
Mini-Warehouse			$0.04
Warehousing			$0.05
Manufacturing			$0.06
Light Industrial			$0.10
Lodging (per room)			$82
Elementary School (per student)			$19
Secondary School (per student)			$25
Day Care (per student)			$65
Nursing Home (bed)			$35

APPENDIX A – DEVELOPMENT PROJECTIONS

TischlerBise has prepared documentation on current demographic *estimates* and future development *projections* for both residential and nonresidential development that will be used in the impact fee study. The current demographic data estimates (as of July 1, 2010, the start of FY2011) are used in calculating current levels-of-service (LOS) being provided to existing development by the current infrastructure in the City. The development projections are used for calculating the LOS to be provided to future development by planned capital projects or existing infrastructure that was oversized in anticipation of new development. The development projections are also used in forecasting the amount and cost of infrastructure required by new development that will be documented in the cash flow analysis.

A note on rounding: Calculations throughout this report are based on analysis conducted using Excel software. Results are discussed in the report using one-and two-digit places (in most cases), which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore, the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown, not due to rounding in the analysis).

CURRENT ESTIMATES OF RESIDENTIAL DEVELOPMENT

The most recent update of the City's *Comprehensive Plan* estimates there are 7,759 housing units, of which 5,717 are single family, 1,699 are multi-family, and 343 mobile homes.

Figure A-1: Current Estimate of Housing Units by Type

Housing Units	
Single Family	5,717
Multi-family	1,699
Mobile Homes	343
TOTAL	7,759

The City's population is estimated to be 18,376 persons, based on preliminary results from the 2010 Census.

FUTURE PROJECTIONS OF RESIDENTIAL DEVELOPMENT

Based on discussions with City staff and representatives from the Impact Fee Liaison Committee, TischlerBise recommends using projections of actual and known development for the first five years of the twenty year projection period. The conservative growth rates over the next five to ten years reflect the still uncertain rate of economic recovery. The gradual increase over the long-term also reflects the projected effects of the phased construction of the Conoco Phillips Campus.

Figure A-2: Projected Annual Residential Growth Rates

Fiscal Year Beginning July 1,	*Projected Annual Growth Rate Percentage*
2010	Actual Dev.
2011	Known Dev
2012	Known Dev
2013	Known Dev
2014	Known Dev
2015	0.50%
2016	0.50%
2017	0.50%
2018	0.50%
2019	0.50%
2020	1.00%
2021	1.00%
2022	1.00%
2023	1.00%
2024	1.00%
2025	2.00%
2026	2.00%
2027	2.00%
2028	2.00%
2029	2.00%
2030	3.00%

The City's *Comprehensive Plan* projects a total build out population of 23,000 persons. Based on actual, known, and projected housing units over the next twenty years in combination with the persons per household assumptions from the *Comprehensive Plan*, new housing units will add 4,462 persons to the City's population. The total projected population in 2030 is 22,192 persons which represents 96% of the City's build out population.

Figure A-3: Projected New Housing Units and Population

Added During Fiscal Year Starting July 1,		*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*5 Year Increments* *2020*	*2025*	*2030*	*TOTAL*
						Annual Residential Growth Rate =>*	0.50%	0.50%	0.50%	0.50%	0.50%	1.00%	2.00%	3.00%	
						Distribution of New Housing Units=>**	Single Family =		22%	Multi-family =		78%			
		Actual and Known Development													
Housing Units															
Single Family		13	25	25	25	25	9	9	9	9	9	18	38	62	505
Multi-family		0	10	10	10	10	31	31	31	31	31	63	133	220	1,431
TOTAL		13	35	35	35	35	40	40	40	40	40	81	171	282	1,936
Population	*PPH**														
Single Family	2.60	34	65	65	65	65	23	23	23	23	23	46	98	162	1,314
Multi-family	2.20	0	22	22	22	22	68	68	69	69	69	139	293	485	3,148
TOTAL		34	87	87	87	87	91	91	91	92	92	186	390	646	4,462

* Source: Table 3-1, City of Louisville *Comprehensive Plan*.
** City of Louisville *Comprehensive Plan*, additional refinements by City staff and TischlerBise to reflect 2010 Census results and known development over next five years.

Current Estimates of Nonresidential Development

Data from the Boulder County Assessor's Office indicates there is currently 8 million square feet of nonresidential development. The *Comprehensive Plan* estimates there are 16,200 jobs within the City.

Figure A-4: Current Estimates of Nonresidential Development

	*Square Footage**
Retail/Commercial	1,574,615
Office	2,833,880
Public	313,958
Industrial	3,308,304
TOTAL	8,030,756
Jobs**	16,200

* Boulder County Assessor's Office.
** Source: Table 3-1, City of Louisville Comprehensive Plan.

Future Projections of Nonresidential Development

The nonresidential growth percentages listed in the figure below are applied to the current nonresidential estimates in Figure A-4 to project new nonresidential development and jobs.

Figure A-5: Projected Annual Nonresidential Growth Rates

Fiscal Year Beginning July 1,	*Projected Annual Growth Rate Percentage*
2010	0.25%
2011	0.25%
2012	0.25%
2013	0.25%
2014	0.25%
2015	0.50%
2016	0.50%
2017	0.50%
2018	0.50%
2019	0.50%
2020	1.00%
2021	1.00%
2022	1.00%
2023	1.00%
2024	1.00%
2025	2.00%
2026	2.00%
2027	2.00%
2028	2.00%
2029	2.00%
2030	3.00%

Two notable exceptions to the above nonresidential growth rates are the additions of Phases 1 and 2 of the ConocoPhillips Campus project in 2014 and 2019. Phase 1 includes 1.6 million square feet of development including office space, research center, learning center, and lodge, while Phase 2 includes 136,000 square feet of research center space. Using employee density data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, Phase 1 development would accommodate 3,163 employees. Phase 2 development would accommodate 397 jobs. While these employment levels may take several years to be actually realized, using the full employment figures in the impact fee study is consistent with the principle that the City must plan its infrastructure capacity for all potential users.

Figure A-6: Projected Development and Jobs at ConocoPhillips Campus

	*Square Feet**	*ITE Code*	*SF/ Employee***	*Employees*
PHASE 1				
Office Space	472,647	715	313	1,510
Research Center	502,617	760	342	1,470
Learning Center, Lodge*				183
SUBTOTAL PHASE 1				3,163
PHASE 2				
Research Center	135,630	760	342	397

* *Traffic Impact Analysis* , prepared by Felsburg, Holt & Ullevig for ConocoPhillips Campus.
** ITE *Trip Generation Manual* (2008).

Future projections of total nonresidential development and jobs are shown in the figure below. Note that the City will reach its projected build out of jobs in 2025 (an additional 5,100 jobs, 21,300 jobs total).

Figure A-7: Projected New Nonresidential Development and Jobs

											5 Year Increments			
Fiscal Year Starting July 1,	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2025*	*2030*	*Net Increase*
Annual Nonresidential Growth Rate =>	0.25%	0.25%	0.25%	0.25%	0.25%	0.50%	0.50%	0.50%	0.50%	0.50%	1.00%	2.00%	3.00%	
Jobs	41	41	41	41	3,204	98	98	99	99	496	205	0	0	5,100
Nonresidential Square Footage (1,000's)														
Retail/Commercial	3.9	3.9	4.0	4.0	4.0	8.0	8.0	8.1	8.1	8.1	16.3	0.0	0.0	126.4
Office	7.1	7.1	7.1	7.1	1,600.0	22.3	22.4	22.5	22.6	135.6	46.9	0.0	0.0	2,044.3
Industrial	8.3	8.3	8.3	8.3	8.4	16.7	16.8	16.9	17.0	17.1	34.3	0.0	0.0	265.6
TOTAL	19.3	19.3	19.4	19.4	1,612.3	47.0	47.3	47.5	47.7	160.8	97.6	0.0	0.0	2,436.3

Current Estimates and Future Projections of Vehicle Trips Ends

TischlerBise used the 2005-2009 ACS PUMS data for Louisville to derive custom average weekday trip generation rates by type of housing. Nonresidential average weekday vehicle trip ends are from the reference book, *Trip Generation Manual*, published by the Institute of Transportation Engineers in 2008. A "trip end" represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). Trip ends are calculated based on the number of units for residential development and per thousand square feet for nonresidential development.

Trip rates are adjusted to avoid over-estimating the number of actual trips because one vehicle trip is counted in the trip rates of both the origination and destination points. A factor of 62% is used for residential development to account for commuting patterns in the City of Louisville. A simple factor of 50% has been applied to the office, public, and industrial flex categories.

The commercial category has a trip factor of less than 50% due to two characteristics of this land use. First, commercial development attracts vehicles as they pass-by on arterial and collector roads ("pass-by" trips). For example, when someone stops at a convenience store on their way home from work, the convenience store is not their primary destination.

A second adjustment for diverted linked trips is made to the commercial category. Diverted linked trips are trips that are attracted from the traffic volume on roads in the vicinity of commercial development but require a diversion from one road to another road to gain access to the commercial development. These trips add traffic to streets adjacent to the development, but do not add trips to a community's transportation network.

Using a 100,000 square foot shopping center as an example, pass-by trips account for 34% of total trips while diverted link trip account for an additional 24% of total trips. The remaining 42% of primary trips (100%-34%-24% = 42%) is adjusted by 50% to avoid over-estimating the number of actual trips because one vehicle trip is counted in the trip rates of both the origination and destination points. The total commercial trip adjustment factor for a 100,000 square foot shopping center is 21% (42% x 50% = 21%).

Figure A-8 summarizes the commercial trip adjustments for pass-by trips and diverted linked trips.

Figure A-8: Trip Adjustment Factors for Commercial Land Uses

Floor Area in thousands (KSF)	All Commercial Trips (a)	Comm. Pass-by Trips (b)*	Comm. Diverted-Link Trips (c)**	Primary Comm. Trips (d=(a-(b+c))	Origin - Destination Adj. Factor (e)***	Commercial Trip Adj Factor (d x e)
10	100%	52%	24%	24%	50%	12%
25	100%	45%	24%	31%	50%	16%
50	100%	39%	24%	37%	50%	19%
100	100%	34%	24%	42%	50%	21%
200	100%	29%	24%	47%	50%	24%
400	100%	23%	24%	53%	50%	27%
800	100%	18%	24%	58%	50%	29%

* Based on data published by ITE in *Trip Generation Handbook* (2004), the best trendline correlation between pass-by trips and floor area is a logarithmic curve with the equation ((-7.6967*LN(KSF)) + 69.448).
** Based on data published by ITE in *Trip Generation Handbook* (2004).
*** To account for the origin-destination relationship of a trip, an adjustment factor of 50% is applied to the primary trips to account for only the trip destinations, i.e. the trips attracted to a land use.

Using the current estimates of housing units by type and nonresidential square footage by type, TischlerBise applied the trip end estimates and adjustment factors to calculate the average weekday trip ends for residential and nonresidential development. TischlerBise estimates there are 119,575 vehicle trip ends attributable to development in the City of Louisville. Residential development accounts for 34% of the trips (40,257 trips) with nonresidential development accounting for the remaining 66% (79,318 trips).

Figure A-9: Current Estimate of Vehicle Trips Ends from Development in Louisville

Residential Vehicle Trip Ends on an Average Weekday

Residential Units	Assumptions	
Single Family	5,717	
Multi-family	1,699	
Mobile Homes	343	
Average Weekday Vehicle Trip Ends per Unit	Trip Rate	Trip Factor
Single Family*	9.50	62%
Multi-family*	5.20	62%
Mobile Homes**	4.99	62%
Residential Vehicle Trip Ends of an Average Weekday		
Single Family	33,711	
Multi-family	5,484	
Mobile Homes	1,062	
Total Residential Trip Ends	**40,257**	

Nonresidential Vehicle Trips Ends on an Average Weekday

Nonresidential Gross Floor Area (1,000 sq. ft.)	Assumptions	
Retail/Commercial	1,574.6	
Office	2,833.9	
Public	314.0	
Industrial	3,308.3	
Average Weekday Vehicle Trips Ends per 1,000 Sq. Ft.*	Trip Rate	Trip Factor
Retail/Commercial	86.56	19%
Office	15.65	50%
Public	68.93	50%
Industrial	12.76	50%
Nonresidential Vehicle Trip Ends on an Average Weekday		
Retail/Commercial	25,215	
Office	22,175	
Public	10,821	
Industrial	21,107	
Total Nonresidential Trip Ends	**79,318**	
TOTAL TRIP ENDS	**119,575**	

*Custome trip rates derived by TischlerBise using PUMS data for the City of Louisville.
**Trip rates are from the Institute of Transportation Engineers(ITE) Trip Generation Manual (2008)

Future projections of vehicle trips ends are shown in Figure A-10. Trip generation rates and adjustment factors are applied to projections of housing units from Figure A-3 and nonresidential square footage in Figure A-7. An additional 43,096 vehicle trips ends are projected from new development through 2030.

Figure A-10: Projected New Vehicle Trips Ends from New Development in Louisville

Added During Fiscal Year Starting July 1,		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	5 Year Increments 2020	2025	2030	TOTAL
Vehicle Trips	*Adj. Trip Rates**														
Single Family	5.90	77	147	147	147	147	51	52	52	52	52	105	221	366	2,980
Multi-family	3.23	0	32	32	32	32	100	100	101	101	102	204	429	711	4,619
Mobile Homes	3.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RESIDENTIAL SUBTOTAL		77	180	180	180	180	151	152	152	153	154	309	650	1,077	7,598
Retail/Commercial	16.01	63	63	63	64	64	128	128	129	130	130	262	0	0	2,024
Office	7.83	55	56	56	56	10,100	175	175	176	177	1,061	367	0	0	13,576
Public	34.47	285	286	286	287	288	577	580	583	586	589	1,184	0	0	9,154
Industrial	6.38	123	123	124	124	10,287	300	302	303	305	1,026	622	0	0	15,543
NONRESIDENTIAL SUBTOTAL		527	528	529	531	20,738	1,180	1,185	1,191	1,197	2,806	2,435	0	0	40,298
TOTAL		603	708	709	710	20,918	1,330	1,337	1,344	1,351	2,960	2,744	650	1,077	47,897

* Trip end rates multiplied by trip adjustment factors.

Summary of Current Estimates and Future Projections

Figure A-11 summarizes current estimates and future projections of residential and nonresidential development through 2030.

Figure A-11: Summary of Development Projections 2010-2030

Fiscal Year Starting July 1,	2010	2011	2012	2013	2014	5 Year Increments 2015	2019	2020	2025	2030
Housing Units										
Single Family	5,717	5,730	5,755	5,780	5,805	5,830	5,865	5,874	5,965	6,160
Multi-family	1,699	1,699	1,709	1,719	1,729	1,739	1,863	1,895	2,218	2,910
Mobile Homes	343	343	343	343	343	343	343	343	343	343
TOTAL	7,759	7,772	7,807	7,842	7,877	7,912	8,071	8,112	8,526	9,413
Population	18,376	18,410	18,497	18,584	18,671	18,758	19,123	19,215	20,162	22,192
Jobs	16,200	16,241	16,281	16,322	16,363	19,566	19,960	20,457	21,300	21,300
Nonresidential Square Footage (1,000's)										
Retail/Commercial	1,574.6	1,578.6	1,582.5	1,586.5	1,590.4	1,594.4	1,626.5	1,634.7	1,701.0	1,701.0
Office	2,833.9	2,841.0	2,848.1	2,855.2	2,862.3	4,462.3	4,552.2	4,687.8	4,878.1	4,878.1
Public	314.0	314.0	314.0	314.0	314.0	314.0	314.0	314.0	314.0	314.0
Industrial	3,308.3	3,316.6	3,324.9	3,333.2	3,341.5	3,349.9	3,417.4	3,434.5	3,573.9	3,573.9
TOTAL	8,030.8	8,050.0	8,069.4	8,088.8	8,108.2	9,720.5	9,910.1	10,070.9	10,467.0	10,467.0
Vehicle Trips										
Residential	40,257	40,334	40,514	40,693	40,873	41,053	41,661	41,815	43,393	46,778
Nonresidential	79,318	79,845	80,372	80,902	81,432	102,170	106,924	109,730	119,616	119,616
TOTAL	119,575	120,178	120,886	121,595	122,305	143,223	148,585	151,545	163,009	166,394

APPENDIX B - CASH FLOW ANALYSIS

This cash flow analysis is based on the proposed impact fees, calculations methodologies, and demographic and development projections in Appendix A. The fiscal year beginning July 1, 2011 is the first projection year.

This cash flow analysis is based on several assumptions:

- 100% of all future residential and nonresidential development will pay 100% of the proposed impact fees.
- Future development will occur at the pace and magnitude outlined in the demographic and development projects in Appendix A of the impact fee report.

To the extent these assumptions change, the cash flow analysis will change correspondingly. Also, the cash flow analysis is based on the proposed fees and LOS over a five year time frame. The City updates its impact fees on a regular basis and thus, it is likely the fee amounts, LOS, and methodologies will change over the course of the cash flow analysis.

PARKS AND TRAILS IMPACT FEES CASH FLOW ANALYSIS

The City could collect a total of $462,000 in Parks and Trails Impact Fees over the next five years. Since the incremental expansion methodology was used to calculate all component of this fee, the City will use these revenues to provide the current LOS to new development through the procurement of new infrastructure or capacity expansions to existing facilities and assets. These impact fee revenues may not be used for maintenance and replacement of existing facilities.

Figure B-1: Projected Five Year Cash Flow Analysis for Parks and Trails Impact Fees

PARKS AND TRAILS

Impact Fee Revenues ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Single Family	$68	$68	$68	$68	$24	$298	$60
Multi-family	$23	$23	$23	$23	$71	$164	$33
TOTAL	$92	$92	$92	$92	$95	$462	$92

Capital Expenditures ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Park Improvements	$73	$73	$73	$73	$76	$366	$73
Trails	$19	$19	$19	$19	$20	$96	$19
TOTAL	$92	$92	$92	$92	$95	$462	$92

Annual Surplus/(Deficit)	$0	$0	$0	$0	$0
Cumulative Surplus/(Deficit)	$0	$0	$0	$0	$0

RECREATION IMPACT FEES CASH FLOW ANALYSIS

The City could collect a total of $285,000 in Recreation Impact Fees over the next five years; an average of $57,000 per year. Since the incremental expansion methodology was used to calculate this fee, the City will use these revenues to provide the current LOS to new development through the procurement of new infrastructure or capacity expansions to existing facilities and assets. These impact fee revenues may not be used for maintenance and replacement of existing facilities. The deficits shown at the bottom of the figure are the result of credits calculated against the impact fees for future debt service payments used to fund recreation projects.

Figure B-2: Projected Five Year Cash Flow Analysis for Recreation Impact Fees

RECREATION

Impact Fee Revenues ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Single Family	$49	$49	$49	$49	$17	$214	$43
Multi-family	$10	$10	$10	$10	$31	$71	$14
TOTAL	$59	$59	$59	$59	$48	$285	$57

Capital Expenditures ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Recreation Facilities	$65	$65	$65	$65	$52	$311	$62
TOTAL	$65	$65	$65	$65	$52	$311	$62

Annual Surplus/(Deficit)	($5)	($5)	($5)	($5)	($4)
Cumulative Surplus/(Deficit)	($5)	($11)	($16)	($22)	($26)

LIBRARY IMPACT FEES CASH FLOW ANALYSIS

The City could collect a total of $84,000 in Library Impact Fees over the next five years; an average of $17,000 per year. Since the buy-in methodology was used to calculate this fee, the City can use these revenues to repay itself for previous infrastructure investments or retire debt associated with constructing the facilities. The deficits shown at the bottom of the figure are the result of credits calculated against the impact fees for future debt service payments used to fund library projects.

Figure B-3: Projected Five Year Cash Flow Analysis for Library Impact Fees

LIBRARY

Impact Fee Revenues ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Single Family	$14	$14	$14	$14	$5	$60	$12
Multi-family	$3	$3	$3	$3	$11	$25	$5
TOTAL	$17	$17	$17	$17	$16	$84	$17

Capital Expenditures ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Library Facility Buy-in	$25	$25	$25	$25	$20	$119	$24
Library Materials	$6	$6	$6	$6	$5	$29	$6
TOTAL	$31	$31	$31	$31	$25	$147	$29

Annual Surplus/(Deficit)	($13)	($13)	($13)	($13)	($9)
Cumulative Surplus/(Deficit)	($13)	($27)	($40)	($54)	($63)

MUNICIPAL FACILITIES IMPACT FEES CASH FLOW ANALYSIS

The City could collect a total of $733,000 in Municipal Facilities Impact Fees over the next five years; an average of $147,000 per year. Since the buy-in methodology was used to calculate the City Hall and Police Headquarters components, the City can use these revenues to repay itself for previous infrastructure investments or retire any debt associated with constructing the facilities. The deficits shown at the bottom of the figure are the result of the planned City Shops project being the result of both new and existing development. The deficits represent the portion of the project associated with existing development that will have to be funded with non-impact fee revenues.

Figure B-4: Projected Five Year Cash Flow Analysis for Municipal Facilities Impact Fees

MUNICIPAL FACILITIES

Impact Fee Revenues ($1,000's)

Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Ave. Annual*
Residential	$20	$20	$20	$20	$17	$98	$20
Nonresidential	$6	$6	$6	$601	$16	$635	$127
TOTAL	$27	$27	$27	$621	$32	$733	$147

Capital Expenditures ($1,000's)

Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Ave. Annual*
City Hall Buy-in - Residential	$8	$8	$8	$8	$6	$38	$8
City Hall Buy-in - Nonresidential	$2	$2	$2	$234	$6	$247	$49
Planned City Shops Project - Residential	$0	$0	$0	$0	$639	$639	$128
Planned City Shops Project - Nonresidential	$0	$0	$0	$0	$236	$236	$47
Police Headquarters Buy-in - Residential	$10	$10	$10	$10	$8	$48	$10
Police Headquarters Buy-in - Nonresidential	$3	$3	$3	$297	$8	$314	$63
TOTAL	$23	$23	$24	$549	$903	$1,523	$305

Annual Surplus/(Deficit)	$3	$3	$3	$72	($871)
Cumulative Surplus/(Deficit)	$3	$6	$9	$81	($790)

TRANSPORTATION IMPACT FEES CASH FLOW ANALYSIS

The City could collect a total of $726,000 in Transportation Impact Fees over the next five years; an average of $145,000 per year. The deficits shown at the bottom of the figure are the result of the planned street improvement project being the result of both new and existing development. The deficits represent the portion of the project associated with existing development that will have to be funded with non-impact fee revenues. Since the incremental expansion methodology was used to calculate the bicycle and pedestrian improvements component, these revenues can only be used to expand capacity of the City's bicycle and pedestrian network and not for maintenance or replacement of existing improvements.

Figure B-5: Projected Five Year Cash Flow Analysis for Transportation Impact Fees

TRANSPORTATION

Impact Fee Revenues ($1,000's)							*Ave.*
Fiscal Year Starting July 1,	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Single Family	$7	$7	$7	$7	$2	$29	$6
Multi-family	$1	$1	$1	$1	$5	$11	$2
Commercial	$2	$2	$2	$2	$3	$10	$2
Office	$10	$10	$10	$303	$22	$355	$71
Industrial	$4	$4	$4	$300	$9	$320	$64
TOTAL	$24	$24	$24	$614	$41	$726	$145

Capital Expenditures ($1,000's)							*Ave.*
Fiscal Year =>	*2011*	*2012*	*2013*	*2014*	*2015*	*TOTAL*	*Annual*
Planned Street Improvements (ave. annual)	$2,064	$2,064	$2,064	$2,064	$2,064	$10,320	$2,064
Bicycle and Pedestrian Improvements	$2	$2	$2	$50	$3	$58	$12
TOTAL	$2,066	$2,066	$2,066	$2,114	$2,067	$10,378	$2,076

Annual Surplus/(Deficit)	($2,042)	($2,042)	($2,042)	($1,500)	($2,026)
Cumulative Surplus/(Deficit)	($2,042)	($4,084)	($6,126)	($7,626)	($9,652)

ORDINANCE NO. 1602
SERIES 2011

AN ORDINANCE AMENDING CERTAIN PROVISIONS OF CHAPTER 3.18 OF THE LOUISVILLE MUNICIPAL CODE AND ADOPTING AN UPDATED SCHEDULE OF DEVELOPMENT IMPACT FEES FOR MUNICIPAL CAPITAL FACILITIES, TRANSPORTATION CAPITAL FACILITIES, LIBRARY CAPITAL FACILITIES, PARKS AND TRAILS CAPITAL FACILITIES AND RECREATION CAPITAL FACILITIES.

WHEREAS, the City Council of the City of Louisville, Colorado finds that:

A. By Ordinance No. 1506, Series 2006, the City Council repealed and re-enacted Chapter 3.18 of the Louisville Municipal Code (Code) regarding the establishment of development Impact Fees;

B. Pursuant to an impact fee study conducted at the time of the adoption of Ordinance No. 1506, Series 2006, the City by said Ordinance established development Impact Fees for Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities;

C. Section 3.18.100 of the Code provides that the Impact Fees described in Chapter 3.18 shall be reviewed at least once every five years to, among other things, ensure that the demand and cost assumptions underlying the Impact Fees are still valid, and that the resulting Impact Fees do not exceed the actual costs of constructing Capital Facilities that are of the type for which the fees are paid and that are required to serve new impact-generating development;

D. New development in the City is placing and is projected to place an increased demand upon the City's Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities;

E. The protection of the health, safety, and general welfare of the citizens of the City requires that these Capital Facilities be expanded to accommodate and serve this continuing growth within the City from new development;

F. The tax and other revenues generated from new development does not generate sufficient funds to provide the necessary City Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, or Recreation Capital Facilities to accommodate and serve new development;

G. The adoption of an equitable Impact Fee system consistent with the requirements of applicable law is one of the preferred methods of the City for regulating land

development to ensure new development pays a proportionate and fair share of the costs of the needed Capital Facilities, allowing the City to make the necessary Capital Facility expenditures to serve new development;

H. As part of its five-year review under Section 3.18.100 of the Code, and in order to implement an equitable impact fee system, the City has prepared an impact fee study entitled *City of Louisville, Colorado Impact Fees* dated August 25, 2011 (hereinafter "*Impact Fee Study*"). Based on reasonable methodologies and analyses for determining the impacts of new development on the City's Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities, the *Impact Fee Study* quantifies the reasonable impacts of new development on these Capital Facilities, and establishes an Impact Fee no greater than is necessary to defray the projected impacts on these Capital Facilities directly related to proposed new development;

I. The City hereby establishes as City standards the assumptions and Level of Service (LOS) standards referenced in the *Impact Fee Study* as part of its current plans for future expansions to the City's Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities, and the Impact Fee system codified in Chapter 3.18 of the Code;

J. The Impact Fees imposed on new development pursuant to this Ordinance and Chapter 3.18 of the Code are based on the *Impact Fee Study* and assumptions and LOS standards referenced in the *Impact Fee Study*. The Impact Fees are no greater than necessary to defray the projected impacts directly related to proposed new development;

K. This Ordinance and Chapter 3.18 of the Code create a system under which Impact Fees shall not be used to remedy any existing deficiency in Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, or Recreation Capital Facilities;

L. This Ordinance and Chapter 3.18 of the Code create a system under which Impact Fees paid by new development will be used to finance or defray all or a portion of the costs incurred by the City to construct City Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities to serve new development in ways that benefit the development that paid each Fee within a reasonable period of time after the Fee is paid; and

WHEREAS, the City Council by this Ordinance desires to adopt an updated schedule of development Impact Fees consistent with the findings of the *Impact Fee Study* and amend certain other provisions of the Chapter 3.18 of the Code in connection with the City's five-year review of the Impact Fee system;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:

Section 1. Subsection N of Section 3.18.030 of the Louisville Municipal Code is hereby repealed and re-enacted to read in full as follows:

3.18.030 Definitions.

For the purposes of this Chapter, the following terms shall have the following meanings:

N. *Impact Fee Study*. The study entitled *City of Louisville, Colorado Impact Fees*, prepared by TischlerBise dated August 25, 2011.

Section 2. Subsection Y of Section 3.18.030 of the Louisville Municipal Code is hereby amended to read as follows (worded deleted are ~~stricken through~~; words added are underlined):

Y. Transportation Capital Facilities.

The preliminary engineering, engineering design studies, land surveys, alignment studies, engineering, permitting and construction of all necessary features for any road on the City's Road System, undertaken to accommodate additional traffic (through the provision of additional capacity) resulting from new Impact-Generating Development in the City. Transportation Capital Facilities include but are not limited to: (a) construction of new through lanes; (b) construction of new bridges; (c) construction of new drainage facilities in conjunction with new road construction; (d) purchase and installation of traffic signals, including new and upgraded signalization; (e) construction of curbs, gutters, sidewalks, medians and shoulders in conjunction with new road construction; (f) relocating utilities to accommodate new road construction; (g) the construction and reconstruction of intersections; (h) the widening of existing roads; (i) bus turnouts; (j) acceleration and deceleration lanes; (k) interchanges; ~~and~~ (l) traffic control devices ; and (m) bicycle and pedestrian improvements that the City determines are not site-related improvements. Transportation Capital Facilities also include all rights-of-way necessary for the expansion or construction of a road on the City's Road System. For the purposes of this Chapter, Site-Related Improvements shall not constitute Transportation Capital Facilities.

Section 3. Subsection C.1 of Section 3.18.140 of the Louisville Municipal Code is hereby amended to read as follows (worded deleted are ~~stricken through~~; words added are underlined):

C. Calculation of Amount of Impact Fees.

1. *General.* Except for those electing to pay Impact Fees pursuant to Section 3.18.040.C.2, Independent Fee Calculation Study, the Impact Fees applicable to the Impact-Generating Development shall be as determined by the Fee Schedule set forth in Appendix A: Impact Fee Schedule, which is hereby adopted and incorporated herein. The Impact Fee Schedule adopted in Appendix A is based on the *Impact Fee Study*. It applies to the broad class of land uses within the City, differentiates between types of land uses, and is intended to defray the projected impacts caused by proposed new development on City Municipal Capital Facilities, Library Capital Facilities, Transportation Capital Facilities, Parks and Trails Capital Facilities, and Recreation Capital Facilities. The determination of the land use category(ies) in the Impact Fee Schedule that is applicable to Impact-Generating Development shall be made by the City Planning Director or designee with reference to the *Impact Fee Study* and the methodologies therein; the then-current edition of the ITE Trip Generation Manual, ~~7th Edition, 2003,~~ published by the Institute of Traffic Engineers; the City zoning code; the then-current land use approvals for the Development; the intent of this Chapter as set forth in Section 3.18.020, and any additional criteria set forth in administrative rules adopted pursuant to this Chapter.

Section 4. Appendix A of Chapter 3.18 of the Louisville Municipal Code, entitled *Appendix A: Impact Fee Schedule,* is hereby repealed and replaced in its entirety with that certain *Appendix A: Impact Fee Schedule* that is attached hereto and made a part hereof, which attached *Schedule* is hereby adopted, approved and made Appendix A to said Chapter 3.18.

Section 5. Appendix B of Chapter 3.18 of the Louisville Municipal Code, entitled *Appendix B: City's Arterial Road System,* is hereby repealed and replaced in its entirety with that certain *Appendix B: City's Road System* that is attached hereto and made a part hereof, which attached *Schedule* is hereby adopted, approved and made Appendix B to said Chapter 3.18.

Section 6. If any portion of this Ordinance is held to be invalid for any reason, such decisions shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each part hereof irrespective of the fact that any one part be declared invalid.

Section 7. The repeal or modification of any provision of the Municipal Code of the City of Louisville by this Ordinance shall not release, extinguish, alter, modify, or change in whole or in part any penalty, forfeiture, or liability, either civil or criminal, which shall have been incurred under such provision, and each provision shall be treated and held as still remaining in force for the purpose of sustaining any and all proper actions, suits, proceedings, and prosecutions for the enforcement of the penalty, forfeiture, or liability, as well as for the purpose of sustaining any

judgment, decree, or order which can or may be rendered, entered, or made in such actions, suits, proceedings, or prosecutions.

Section 8. All other ordinances or portions thereof inconsistent or conflicting with this Ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

Section 9. This ordinance shall take effect January 2, 2012.

INTRODUCED, READ, PASSED ON FIRST READING, AND ORDERED PUBLISHED this 4th day of October, 2011.

Charles L. Sisk, Mayor

CITY OF LOUISVILLE SEAL COLORADO

ATTEST:

Nancy Varra, City Clerk

APPROVED AS TO FORM:

Light, Kelly & Dawes, P.C.
City Attorney

PASSED AND ADOPTED ON SECOND AND FINAL READING, this 18th day of October, 2011.

Charles L. Sisk, Mayor

CITY OF LOUISVILLE SEAL COLORADO

ATTEST:

Nancy Varra, City Clerk

APPENDIX A: IMPACT FEE SCHEDULE						
Use Category	*Parks & Trails*	*Recreational Facilities*	*Library*	*Municipal Facilities*	*Transportation*	*Total*
Residential (per unit)						
Single Family Detached						
0-2 Bedrooms	$1,822	$1,203	$325	$413	$185	$3,947
3 Bedrooms	$2,664	$1,759	$475	$604	$225	$5,728
4 Bedrooms	$3,464	$2,288	$617	$786	$287	$7,443
5+ Bedrooms	$4,233	$2,796	$754	$960	$379	$9,121
Single Family Attached						
0-2 Bedrooms	$1,653	$1,092	$295	$375	$93	$3,507
3+ Bedrooms	$2,580	$1,704	$460	$585	$149	$5,477
Multi-family	$1,516	$1,001	$270	$344	$144	$3,276
Nonresidential (per square foot or unit of development)						
Commercial/Shop Ctr 50,000 SF or less	N/A	N/A	N/A	$0.27	$0.43	$0.70
Commercial/Shop Ctr 50,001-100,000 SF	N/A	N/A	N/A	$0.24	$0.38	$0.62
Commercial/Shop Ctr 100,001-200,000 SF	N/A	N/A	N/A	$0.21	$0.33	$0.55
Business Park	N/A	N/A	N/A	$0.30	$0.19	$0.49
Medical-Dental Office	N/A	N/A	N/A	$0.39	$0.53	$0.91
General Office 50,000 SF or less	N/A	N/A	N/A	$0.37	$0.23	$0.60
General Office 50,001-100,000 SF	N/A	N/A	N/A	$0.35	$0.19	$0.55
General Office 100,001-200,000 SF	N/A	N/A	N/A	$0.33	$0.17	$0.50
Hospital	N/A	N/A	N/A	$0.30	$0.24	$0.54
Mini-Warehouse	N/A	N/A	N/A	$0.004	$0.04	$0.0404
Warehousing	N/A	N/A	N/A	$0.09	$0.05	$0.14
Manufacturing	N/A	N/A	N/A	$0.17	$0.06	$0.23
Light Industrial	N/A	N/A	N/A	$0.22	$0.10	$0.32
Lodging (per room)	N/A	N/A	N/A	$42	$82	$124
Elementary School (per student)	N/A	N/A	N/A	$8	$19	$27
Secondary School (per student)	N/A	N/A	N/A	$8	$25	$33
Day Care (per student)	N/A	N/A	N/A	$15	$65	$81
Nursing Home (bed)	N/A	N/A	N/A	$35	$35	$69

TischlerBise
FISCAL | ECONOMIC | PLANNING

Proposal for Development Impact Fee Study

City of Louisville, Colorado

August 5, 2016

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Cover Letter

August 5, 2016

Ms. Heather Balser, Deputy City Manager
City of Louisville
749 Main Street
Louisville, CO 80027

RE: Development Impact Fee Proposal

Dear Heather,

TischlerBise is pleased to submit the enclosed proposal to provide an update to the City's Development Impact Fee Study. We feel that TischlerBise is ideally suited to undertake this project based on our extensive national and Colorado impact fee experience. There are several points we would like to note that make our qualifications unique:

1. **Depth of Experience.** TischlerBise is the nation's leading impact fee and infrastructure financing consulting firm. Our qualified professionals bring an unparalleled depth of experience to this assignment. **We have managed over 900 impact fee studies across the country – more than any other firm.** We are innovators in the field, pioneering approaches for credits, impact fees by size of housing unit, and distance-related/tiered impact fees. More importantly, a TischlerBise impact fee methodology has never been challenged in a court of law.
2. **Technical Knowledge of Land Use Planning and Local Government Finance.** The City requires consulting expertise in the areas of land use planning and growth management in the State of Colorado, as well as in local government finance. **Many communities overlook the fact that impact fees are a land use regulation.** The TischlerBise team will apply years of impact fee experience within the context of overall City financial needs, land use, and economic development policies. This will lead to a work product that is both defensible and that promotes equity. Principal-level staff—Carson Bise, Dwayne Guthrie, and Malcolm Munkittrick—will be assigned to this project.
3. **Colorado Experience.** TischlerBise has conducted numerous impact fee studies in the State of Colorado, including the previous City of Louisville Development Impact Fee Study, as well as current or recently completed impact fee work for the cities of Evans, Fort Collins, Garfield County, Larimer County, Louisville, Longmont, and Thornton.
4. **Community Outreach.** An important component of a successful impact fee program is community support. Carson Bise, Dwayne Guthrie, and Julie Herlands all have substantial

experience developing and managing public outreach and community relations programs associated with impact fees and infrastructure finance.

5. **Responsiveness.** As a small firm, we have the flexibility and responsiveness to meet all deadlines of the City's project.

6. **Staff Time Commitment.** To ensure an efficient project process, we anticipate that the City's Project Manager(s) will coordinate responses to requests for information, coordinate review of work products, and help resolve policy issues. If there are delays on the part of the City, we will contact the City's Project Manager(s) immediately to get the project schedule back on track. We will keep the City's Project Manager(s) informed of data or feedback we need to keep the project on schedule. In terms of time needed from City staff, it is important to note that we typically do not request information that doesn't already exist. A good rule of thumb is that the time needed for meetings and compiling of data by individual departments is about 10-16 hours for the entire study. This includes review of work products. The Project Manager(s) are likely to devote more time than that.

As the President of TischlerBise, I have the authority to negotiate and contractually bind the firm. We look forward to the possibility of working with the City of Louisville and are committed to providing cost-effective, high-quality support for this assignment.

Sincerely,

L. Carson Bise II, AICP, President
TischlerBise
301.320.6900 x12
carson@tischlerbise.com

References **and Experience**

TischlerBise, Inc., was founded in 1977 as Tischler, Montasser & Associates. The firm became Tischler & Associates, Inc., in 1980 and TischlerBise, Inc., in 2005. The firm is a Subchapter (S) corporation, is incorporated in Washington, D.C., and maintains offices in Bethesda, Maryland and Bradenton, Florida. The firm's legal address is:

Principal Office

L. Carson Bise, AICP, President
4701 Sangamore Rd, Suite 240
Bethesda, MD 20816
301.320.6900 x12 (w) | 301.320.4860 (f)
carson@tischlerbise.com

Florida Office

Dwayne Guthrie, AICP, Principal
606 3rd Avenue #304
Bradenton, FL 34205

TischlerBise is a fiscal, economic, and planning consulting firm specializing in fiscal/economic impact analysis, impact fees, market feasibility, infrastructure financing studies and related revenue strategies. Our firm has been providing consulting services to public agencies for over thirty years. In this time, we have prepared over **700 fiscal/economic impact evaluations and over 900 impact fee/infrastructure financing studies** – more than any other firm. Through our detailed approach, proven methodology, and comprehensive product, we have established TischlerBise as the leading national expert on revenue enhancement and cost of growth strategies. The graphic depicts our vast fiscal/economic impact experience with clients nationwide.

Colorado Experience

An important factor to consider related to this work effort is our relevant experience working in the State of Colorado, in addition to our multiple consulting engagements with the City of Louisville, which makes us intimately familiar with local government revenue structures and the planning and growth management issues facing the City of Louisville. The following table summarizes TischlerBise's vast impact fee experience in the State of Colorado.

CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government
Arapahoe County		◆									
Boulder		◆				◆	◆	◆	◆	◆	◆
Castle Rock		◆			◆	◆	◆	◆	◆		◆
Colorado Springs		◆									
Eaton			◆	◆		◆		◆	◆		◆
Erie		◆				◆		◆	◆		◆
Evans		◆									

CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government
Fort Collins		◆									
Greeley		◆	◆				◆	◆			
Johnstown		◆				◆	◆	◆	◆	◆	◆
Larimer County		◆									
Longmont		◆					◆				◆
Louisville	◆	◆				◆		◆	◆	◆	◆
Mead		◆				◆		◆			◆
Montezuma County		◆									
Pitkin County		◆									
Pueblo		◆									
Steamboat Springs		◆				◆	◆	◆	◆		◆
Thornton		◆				◆	◆	◆	◆		◆
Vail		◆									

TischlerBise National Experience

TischlerBise is the national leader in advancing the "state of the practice." For example, TischlerBise pioneered impact fees by housing size and/or bedroom count, tiered transportation fee schedules, techniques for mitigating high fees for nonresidential development, and integrating transportation impact fees as part of an overall funding strategy. While every community is unique, this national experience provides invaluable perspective for our clients. A summary of our national transportation impact fee experience, many of which include transit and multimodal improvements, is shown below.

STATE	CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Solid Waste	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government	Schools
AZ	Apache County	◆												
AZ	Apache Junction		◆					◆	◆	◆		◆	◆	
AZ	Avondale		◆	◆	◆			◆	◆	◆		◆	◆	
AZ	Buckeye		◆	◆	◆			◆		◆		◆	◆	
AZ	Bullhead City		◆					◆		◆			◆	
AZ	Camp Verde	◆						◆		◆		◆	◆	

STATE	CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Solid Waste	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government	Schools
AZ	Carefree	◆	◆		◆						◆		◆	
AZ	Casa Grande		◆	◆				◆	◆	◆		◆	◆	
AZ	Cave Creek		◆	◆	◆					◆	◆		◆	
AZ	Coolidge		◆	◆			◆	◆	◆	◆			◆	
AZ	Dewey-Humboldt		◆					◆	◆	◆		◆	◆	
AZ	El Mirage			◆	◆			◆	◆	◆			◆	
AZ	Eloy			◆	◆			◆		◆		◆	◆	
AZ	Flagstaff	◆	◆					◆	◆	◆		◆	◆	
AZ	Gilbert		◆		◆			◆	◆			◆		
AZ	Glendale			◆	◆	◆		◆	◆	◆		◆	◆	
AZ	Goodyear		◆	◆	◆			◆	◆	◆		◆		
AZ	Holbrook			◆	◆		◆							
AZ	Lake Havasu City		◆											
AZ	Maricopa	◆	◆					◆	◆	◆	◆	◆	◆	
AZ	Navajo County	◆	◆						◆					
AZ	Peoria	◆	◆					◆	◆	◆	◆	◆	◆	
AZ	Phoenix		◆				◆	◆	◆	◆	◆	◆		
AZ	Pinal County	◆	◆					◆		◆				
AZ	Pinetop-Lakeside		◆					◆		◆	◆		◆	
AZ	Prescott	◆												
AZ	Queen Creek		◆	◆	◆			◆	◆		◆	◆	◆	
AZ	Safford			◆	◆									
AZ	San Luis		◆	◆	◆	◆		◆	◆	◆				
AZ	Scottsdale			◆	◆									
AZ	Sedona		◆			◆		◆		◆			◆	
AZ	Show Low	◆	◆	◆	◆			◆		◆		◆		
AZ	Sierra Vista		◆					◆	◆	◆	◆	◆		
AZ	Somerton		◆	◆	◆	◆		◆	◆	◆				
AZ	Springerville	◆		◆	◆									
AZ	Surprise		◆	◆	◆			◆	◆	◆		◆	◆	
AZ	Taylor	◆	◆					◆	◆	◆			◆	
AZ	Tolleson	◆	◆	◆	◆	◆		◆	◆				◆	
AZ	Tucson		◆											
AZ	Wellton		◆	◆	◆	◆		◆	◆	◆				
AZ	Yuma		◆	◆		◆		◆	◆	◆	◆		◆	
CA	Avenal		◆	◆		◆	◆	◆	◆	◆		◆		

STATE	CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Solid Waste	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government	Schools
CA	Banning		◆					◆	◆	◆			◆	
CA	Butte County		◆					◆	◆			◆	◆	
CA	Chino Hills		◆	◆		◆				◆				
CA	Clovis			◆										
CA	Corcoran			◆	◆			◆		◆			◆	
CA	El Centro							◆	◆	◆		◆	◆	
CA	Grass Valley		◆	◆	◆	◆		◆	◆	◆			◆	
CA	Half Moon Bay		◆	◆				◆		◆	◆			
CA	Hemet		◆			◆		◆	◆	◆	◆	◆	◆	
CA	Imperial County	◆												
CA	Mammoth Lakes		◆			◆		◆		◆	◆		◆	
CA	Maywood	◆												
CA	National City							◆	◆	◆		◆		
CA	Rancho Cucamonga									◆				
CA	Suisun City		◆							◆			◆	
CA	Temecula		◆	◆	◆			◆		◆	◆	◆	◆	
CA	Tulare		◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	
CA	Visalia									◆		◆	◆	
FL	Manatee County		◆					◆	◆	◆	◆		◆	◆
FL	Manatee County Schools													◆
FL	Miami	◆						◆	◆	◆	◆		◆	◆
FL	Naples	◆												
FL	North Miami	◆		◆	◆			◆	◆	◆	◆	◆	◆	
FL	Parkland							◆		◆				
FL	Pasco Co.School Board													◆
FL	Port St. Lucie									◆			◆	
FL	Punta Gorda		◆					◆	◆	◆		◆	◆	
FL	South Miami		◆							◆				
FL	Seminole Co. Schools													◆
FL	Stuart		◆					◆	◆	◆			◆	
FL	West Miami			◆				◆		◆			◆	
GA	Effingham County		◆	◆	◆			◆		◆		◆		
GA	Gordon County	◆							◆	◆		◆		
GA	Henry County		◆											
GA	Roswell		◆						◆	◆		◆		
ID	Hailey		◆	◆	◆			◆	◆	◆	◆	◆	◆	

STATE	CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Solid Waste	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government	Schools
ID	Hayden		◆					◆		◆				
ID	Post Falls	◆	◆					◆		◆				
ID	Sandpoint		◆						◆	◆	◆			
ID	Shoshone Co. Fire Dept								◆					
ID	Victor		◆					◆	◆	◆				
LA	Covington			◆	◆									
MD	Carroll County					◆			◆	◆		◆	◆	◆
MD	Charles County		◆							◆				◆
MD	Cecil County		◆					◆	◆				◆	
MD	Dorchester County	◆						◆						◆
MD	Easton	◆	◆					◆	◆	◆			◆	
MD	Frederick		◆											
MD	Frederick County		◆					◆	◆	◆		◆	◆	◆
MD	Hagerstown		◆					◆		◆			◆	
MD	Hampstead				◆			◆		◆				
MT	Belgrade	◆	◆	◆	◆				◆	◆				
MT	Bozeman		◆	◆	◆				◆					
MT	Flathead County		◆						◆					
MT	Florence School District													◆
MT	Gallatin County	◆	◆						◆					
MT	Gallatin Co. Fire Districts								◆					
NC	Orange County									◆	◆			◆
NC	Pasquotank													◆
ND	Minot											◆	◆	
NM	Las Cruces			◆	◆									
NV	North Las Vegas	◆							◆					
NV	Nye County		◆			◆		◆	◆	◆				
NV	Washoe County		◆											
OH	Delaware							◆	◆	◆			◆	
OH	Lebanon		◆							◆				
OH	Pickerington	◆	◆					◆		◆			◆	
OH	Sunbury							◆					◆	
RI	East Greenwich								◆	◆	◆		◆	◆
RI	Middletown			◆				◆	◆	◆			◆	◆
UT	Mapleton			◆	◆	◆			◆	◆	◆			
UT	North Logan	◆	◆	◆	◆					◆	◆			

STATE	CLIENT	Feasibility Analysis	Roads/Transportation	Sewer	Water	Stormwater	Solid Waste	Law Enforcement	Fire/EMS	Parks and Recreation	Trails/Open Space	Libraries	General Government	Schools
UT	Pleasant Grove	◆	◆	◆	◆			◆	◆	◆				
UT	Sandy City		◆			◆		◆	◆		◆			
UT	Spanish Fork	◆		◆	◆	◆				◆				
UT	West Jordan		◆	◆	◆	◆		◆	◆	◆				
VA	Stafford County		◆											
VA	Suffolk			◆	◆									
WV	Jefferson County							◆	◆	◆			◆	◆
WY	Casper	◆	◆						◆	◆				
WY	Cheyenne		◆					◆	◆	◆			◆	◆

Project References

The following project descriptions demonstrate our team's recent and vast experience with assignments similar to the scope of services required by the City of Louisville.

City of Boulder, Colorado – *Impact Fee Study*
Project Contact: Susan Richstone, Senior Planner
Address: 1739 Broadway, Boulder, CO 80302
Phone: (303) 441-3271
E-mail: richstones@bouldercolorado.gov
Date of Performance: 1996 and 2008 and 2016
TischlerBise Staff: Carson Bise, Julie Herlands, Dwayne Guthrie

TischlerBise is preparing a multimodal transportation impact fee study that emphasizes a transition within City of Boulder's transportation system to one of moving people rather than strictly vehicles. TischlerBise prepared the impact fees using progressive housing multipliers (i.e. the fee increases with the size of the dwelling unit). The primary reason for this approach was to promote housing affordability. TischlerBise worked with a citizen/developer Liaison Committee throughout the study process.

TischlerBise is also preparing updates to our 1996 and 2008 impact fee studies for the City of Boulder. Impact fee categories include fire/rescue, parks, trails, police, general government and libraries. In addition,

City of Longmont, Colorado – *Impact Fee Study*

Project Contact: Joni Marsh, Planning and Development Services Director
Phone: (303) 774-4398
E-mail: joni.marsh@ci.longmont.co.us
Date of Performance: 2015/2016
TischlerBise Staff: Carson Bise

TischlerBise was retained to review and update the City of Longmont's impact fee program. Three fee categories were included—Recreation, Public Buildings, and Transportation. This assignment included updating capital improvement plans and calculating impact fees for each fee category. The Recreation fee evaluated both a plan-based approach and consumption based approach in order to gauge the magnitude of City General Fund exposure/commitment. The Transportation fee includes both capacity and multimodal improvements. **A unique aspect of the transportation impact fee was the two-tiered structure to encourage redevelopment in the downtown core.** Urban areas like downtown Longmont 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.

Consistent with the literature review, a recent analysis of mixed-use developments in six regions of the United States **found an average 29% reduction in trip generation as a function of "D" variables, including: density, diversity, design, destination accessibility, distance to transit, demographics, and development scale.** Because mixed-use development located in downtown Longmont will put less strain on the external street network, trip generation rates should be less than standalone suburban development.

Town of Vail, Colorado – *Multi-Modal Transportation Impact Fee Study*

Project Contact: Tom Kassmel, P.E., Town Engineer
Phone: (970) 479-2158
E-mail: tkassmel@vailgov.com
Date of Performance: 2009 and 2016
TischlerBise Staff: Carson Bise and Dwayne Guthrie

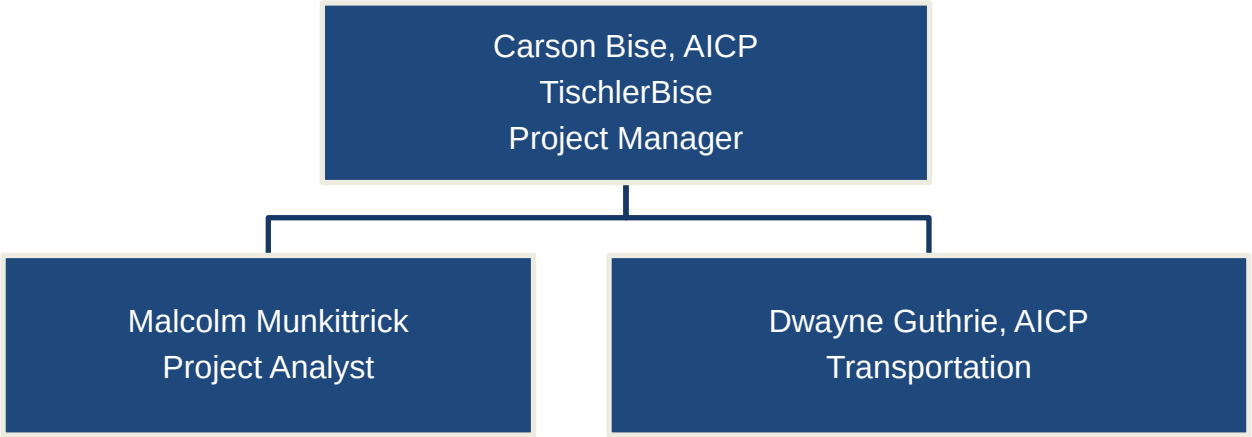
TischlerBise recently completed an assignment for the Town of Vail, Colorado to prepare a transportation impact fee that includes unique multi-modal improvements. Natural containment of the urbanized area by the surrounding mountains has helped Vail become an attractive resort community with a walkable urban core area. In recognition of this development pattern, proposed impact fees are lower in the core area. Fee amounts are based on planned improvements such as a shared parking structure with integrated transit centers and complete-street concepts (i.e., pedestrian, bike, and bus facilities).

Project **Organization**

Consulting Team Roles and Responsibilities

This is a joint proposal with Clarion Associates. TischlerBise and Clarion Associate have completed more than 40 engagements together and believe this experience and the options we offer for all things related to calculating Transit and Housing Linkage Fees is unmatched. The City requires consulting expertise in the areas of impact fees, land use law, affordable housing and land use economics in the State of Colorado, as well as in local government finance.

Our proposed Project Team of Carson Bise, AICP, Dwayne Guthrie, Ph.D., Craig Richardson, Esq., and David Becher has unsurpassed experience performing projects requiring the same expertise as that needed to serve the City of Louisville. Our Project Team brings over 100 years of impact fee calculation, infrastructure finance, demographic and market analysis, growth management, land use law and implementation experience to the City's assignment. In summary, all four members of our Project Team are considered national thought leaders in the areas of impact fees, exactions, infrastructure finance, impact fee program administration, and implementation. The organizational chart below shows our project team for this assignment.



L. Carson Bise, II, AICP, President

Mr. Bise has 23 years of fiscal, economic and planning experience, and **has conducted fiscal and infrastructure finance evaluations in 37 states.** Mr. Bise is a leading national figure in the calculation of impact fees, having completed over 250 impact fees for the following categories: parks and recreation, open space, police, fire, schools, water, sewer, roads, municipal power, and general government facilities. In his seven years as a planner at the local government level he coordinated Capital Improvement Plans, conducted market analyses and business development strategies, and developed comprehensive plans. Mr. Bise has also written and lectured extensively on fiscal impact analysis and infrastructure financing. His most recent publications are *Next Generation Transportation Impact Fees* and *Fiscal Impact Analysis: Methodologies for Planners* published by the American Planning Association, a chapter on fiscal impact analysis in the book *Planning and Urban Design Standards* also published by the American Planning Association, and the ICMA IQ Report, *Fiscal Impact Analysis: How Today's Decisions Affect Tomorrow's Budgets*. Mr. Bise was also the principal author of the fiscal impact analysis component for the Atlanta Regional Commission's Smart Growth Toolkit and is featured in the recently released AICP CD-ROM Training Package entitled *The Economics of Density*. Mr. Bise is currently on the Board of Directors of the Growth and Infrastructure Finance Consortium and **recently Chaired the American Planning Association's Paying for Growth Task Force. He was also recently named an Affiliate of the National Center for Smart Growth Research & Education.**

SELECTED IMPACT FEE AND INFRASTRUCTURE FUNDING STRATEGY EXPERIENCE

- City of Daphne, Alabama – *Impact Fee Study*
- City of Foley, Alabama – *Impact Fee Study*
- City of Gulf Shores, Alabama – *Impact Fee Study*
- City of Orange Beach, Alabama – *Impact Fee Study*
- City of Apache Junction, Arizona – *Impact Fee Study*
- Town of Camp Verde, Arizona – *Impact Fee Study*
- City of Eloy, Arizona – *Impact Fee Study*
- City of Siloam Springs, Arkansas – *Impact Fee Study*
- City of Avenal, California – *Impact Fee Study*
- City of Banning, California – *Impact Fee Study*
- City of National City, California – *Impact Fee Study*
- City of Temecula, California – *Impact Fee Study*
- City of Tulare, California – *Impact Fee Study*
- City of Boulder, Colorado – *Impact Fee/Excise Tax Study*
- Town of Castle Rock, Colorado – *Impact Fee Study*
- City of Evans, Colorado – *Impact Fee Study*
- City of Greeley, Colorado – *Impact Fee Study*
- City of Longmont, Colorado – *Impact Fee Study*
- City of Louisville, Colorado – *Impact Fee Study*
- City of Steamboat Springs, Colorado – *Impact Fee Study*
- City of Thornton, Colorado – *Impact Fee Study*
- Town of Vail, Colorado – *Impact Fee Study*

- DeSoto County, Florida – *Impact Fee Study*
- Manatee County, Florida – *Impact Fee Study*
- City of North Miami, Florida – *Impact Fee Study*
- Pasco County, Florida – *School Impact Fee Study*
- Polk County, Florida – *Impact Fee Study*
- City of Punta Gorda, Florida – *Impact Fee Study*
- Seminole County, Florida – *School Impact Fee and Infrastructure Financing Study*
- Anne Arundel County, Maryland – *Revenue Strategies*
- Calvert County, Maryland – *Impact Fee Study*
- Caroline County, Maryland – *Schools Excise Tax Study*
- Carroll County, Maryland – *Impact Fee Study*
- Charles County, Maryland – *Impact Fee Study*
- Dorchester County, Maryland – *Impact Fee Study*
- Town of Easton, Maryland – *Impact Fee Study*
- City of Hagerstown, Maryland – *Impact Fee Study*
- Town of Hampstead, Maryland – *Impact Fee Study*
- City of Salisbury, Maryland – *Impact Fee Study*
- Talbot County, Maryland – *Impact Fee Study*
- Washington County, Maryland – *Impact Fee Study*
- Wicomico County, Maryland – *Impact Fee Study*
- Worcester County, Maryland – *Impact Fee Study*
- Broadwater County, Montana – *Impact Fee Feasibility Study*
- Flathead County, Montana – *Impact Fee Feasibility Study and Impact Fee Study*
- Florence-Carlton School District, Montana – *Impact Fee Study*
- Gallatin Canyon/Big Sky, Montana – *Capital Improvement and Funding Plan*
- City of Great Falls, Montana – *Impact Fee Feasibility Study*
- City of Laurel, Montana – *Impact Fee Feasibility Study*
- City of Missoula/Missoula County, Montana – *Impact Fee Study and Capital Facility Plan*
- City of North Las Vegas, Nevada – *Impact Fee Study*
- Nye County/Town of Pahrump, Nevada – *Impact Fee Study*
- City of Las Cruces, New Mexico – *Water and Sewer Impact Fee Study*
- Cabarrus County, North Carolina – *Voluntary Mitigation Payment Studies (Two School Districts)*
- City of Greenville, North Carolina – *Impact Fee Study*
- Abbeville County, South Carolina – *Infrastructure Funding Strategy*
- Beaufort County, South Carolina – *Infrastructure Funding Strategy*
- Clinton City, Utah – *Impact Fee Study*
- Draper City, Utah – *Impact Fee Study*
- Farmington City, Utah – *Impact Fee Study*
- Logan City, Utah – *Impact Fee Study*
- Mapleton City, Utah – *Impact Fee Study*
- City of Spanish Fork, Utah – *Impact Fee Study*
- City of West Jordan, Utah – *Impact Fee Study*
- Goochland County, Virginia – *Cash Proffer Study*

- Henrico County, Virginia – *Impact Fee Study; Cash Proffer Study*
- Prince George County, Virginia – *Cash Proffer Study*
- Prince William County, Virginia – *Impact Fee Study*
- Spotsylvania County, Virginia – *Impact Fee Study*
- Stafford County, Virginia – *Impact Fee Study*
- Sussex County, Virginia – *Cash Proffer Study*

EDUCATION

M.B.A., Economics, Shenandoah University
B.S., Geography/Urban Planning, East Tennessee State University
B.S., Political Science/Urban Studies, East Tennessee State University

PUBLICATIONS

- "Next Generation Transportation Impact Fees," American Planning Association, Planners Advisory Service.
- "Fiscal Impact Analysis: Methodologies for Planners," American Planning Association.
- "Planning and Urban Design Standards," American Planning Association, Contributing Author on Fiscal Impact Analysis.
- "Fiscal Impact Analysis: How Today's Decisions Affect Tomorrow's Budgets," ICMA Press.
- "The Cost/Contribution of Residential Development," Mid-Atlantic Builder.
- "Are Subsidies Worth It?" Economic Development News & Views.
- "Smart Growth and Fiscal Realities," ICMA Getting Smart! Newsletter.
- "The Economics of Density," AICP Training Series, 2005, Training CD-ROM (American Planning Association).

Dwayne Guthrie PhD, AICP, Principal

Dr. Guthrie has 32 years of experience as a professional planner working primarily in the areas of impact fees, demographic analysis, infrastructure funding, fiscal evaluations and transportation planning. His career includes 23 years of work as a planning consultant and eight years of public sector experience. At TischlerBise, Dr. Guthrie is the impact fee team leader with over 380 studies completed for approximately 120 jurisdictions in 25 states/provinces. Dr. Guthrie has also served as an expert witness on the topic of impact fees.

As a planning practitioner, Dr. Guthrie promotes smart growth through revenue strategies and pricing policies. By helping communities implement development impact fees, local governments create a nexus between private sector development and the demand for public facilities. Rather than subsidize growth with general tax revenues, Dr. Guthrie works to ensure designated funding for infrastructure that also helps to minimize externalities like traffic congestion. He has pioneered innovative methods for tabulating census data to support higher fees for larger housing units and reducing fees for infill development located in urban centers.

Dr. Guthrie also recently taught graduate planning courses at local universities including Growth Management at the Alexandria campus of Virginia Tech and Planning Techniques at Catholic University of America. His doctoral dissertation, titled "*Understanding Urban, Metropolitan, and Megaregion Development to Improve Transportation Governance*", documents the expected geographic extent of commuter sheds in 2030 for large metropolitan areas within the continental United States. Commuter sheds provide a viable refinement to current statistical area designations and solve problems due to inconsistent and fragmented MPO boundaries. Nine transportation megaregions are proposed based on specific criteria including global gateways that facilitate movement of people and goods, contiguous commuter sheds with urban centers spaced a suitable distance for high-speed rail service, and end-point commuter sheds projected to add at least one million persons and jobs from 2000 to 2030. The dissertation recommends a new paradigm for transportation governance with scale-dependent decision-making and funding strategies.

SELECTED IMPACT FEE AND INFRASTRUCTURE FUNDING STRATEGY EXPERIENCE

- Baldwin County, Alabama – *Impact Fee Study*
- City of Foley, Alabama – *Impact Fee Study*
- Apache Junction Water Company, Arizona – *Water System Connection Fees*
- City of Avondale, Arizona – *Development Impact Fees*
- City of Casa Grande, Arizona – *Development Impact Fees*
- City of Glendale, Arizona – *Development* Impact Fees
- City of Goodyear, Arizona – *Development Impact Fees*
- City of Goodyear, Arizona – *Water Resources Fee*
- City of Peoria, Arizona – *Development Impact Fees*
- City of Prescott, Arizona – *Feasibility of Development Impact Fees for Roads*
- Town of Queen Creek, Arizona – *Development Impact Fees*
- City of Scottsdale, Arizona – *Development Impact Fees*
- Cityof Show Low, Arizona – *Development Impact Fees*
- City of Surprise, Arizona – *Development Impact Fees*
- City of Tolleson, Arizona – *Development Impact Fees*
- Cityof Bentonville, Arkansas – *Development Impact Fees*
- City of Chino Hills, California – *Development Impact Fees*
- City of Clovis, California – *Sewer Impact Fee*
- City of Temecula, California – *Development Impact Fee*
- City of Tulare, California – *Development Impact Fee*
- Arapahoe County, Colorado – *Rural Road Funding Strategy*
- City of Boulder, Colorado – *Development Excise Taxes*
- Town of Castle Rock, Colorado – *Development Impact Fees and Evaluation of Douglas County School Fees*
- Town of Erie, Colorado – *Development Impact Fees*
- City of Evans, Colorado – *Development Impact Fees*
- Town of Johnstown, Colorado – *Drainage Financing Alternatives, Impact Fees, and Water Rate Study*
- City of Louisville, Colorado – *Impact Fee Study*

- Garfield County, Colorado – *Impact Fee Study*
- Montezuma County, Colorado – *Impact Fee Study*
- Pitkin County, Colorado – *Funding Strategy & Impact Fee*
- City of Pueblo, Colorado – *Impact Fee Study*
- Town of Vail, Colorado – *Impact Fee Study*
- State of Delaware – *Transportation Impact Fee*
- New Castle County, Delaware – *Development Impact Fees, Sewer Policies and Capacity Fees*
- Coral Ridge Properties – *Capital Improvements Element for Parkland, Florida*
- DeSoto County, Florida – *Development Impact Fees*
- DeSoto School District, Florida – *School Impact Fees*
- City of Lake Wales, Florida – *Development Impact Fees*
- Manatee County, Florida – *Development Impact Fees*
- City of Miami, Florida – *Development Impact Fees and Evaluation of Miami-Dade County Impact Fees for Roads and Schools*
- City of Naples, Florida – *Development Impact Fees*
- Pasco County School District, Florida – *School Impact Fees*
- Polk County School District, Florida – *Capital Needs Assessment*
- Cityof Punta Gorda, Florida – *Development Impact Fees*
- City of Sunny Isles Beach, Florida – *Development Impact Fees*
- Douglas County, Georgia – *CIE and Development Impact Fees*
- City of Douglasville, Georgia – *CIE and Development Impact Fees*
- Effingham County, Georgia – *CIE and Development Impact Fees*
- City of Garden City, Georgia – *CIE and Development Impact Fees*
- Gordon County, Georgia – *CIE and Development Impact Fees*
- Henry County, Georgia – *CIE and Transportation Impact Fee*
- Town of Hailey, Idaho – *Annexation Study and Development Impact Fees*
- City of Nampa, Idaho – *Development Impact Fees*
- City of Post Falls, Idaho – *Development Impact Fee*s
- City of Baltimore, Maryland – *Transportation Funding Strategy*
- Carroll County, Maryland – *Development Impact Fees*
- Cecil County, Maryland – *Development Excise Tax*
- Charles County, Maryland – *School Impact Fees*
- Frederick County, Maryland – *Development Impact Fees*
- Town of Hampstead, Maryland – *Development Impact Fees*
- Home Builders Association of Carroll County, Maryland – *Evaluation of Development Impact Fees*
- Queen Anne's County, Maryland – *Development Impact Fees*
- City of Westminster, Maryland – *Capital Improvements Plan*
- Worcester County, Maryland – *Development Impact Fees*
- City of Madison, Mississippi – *Development Impact Fees*
- City of Nixa, Missouri – *Development Impact Fees*
- City of Belgrade, Montana – *Development Impact Fees*
- Florence-Carlton School District, Montana – *School Impact Fees*

- Frenchtown Fire District, Montana – *Development Impact Fees*
- Gallatin County, Montana – *Roads and Fire District Impact Fees*
- City of Great Falls, Montana – *Evaluation of Capacity Fees*
- Town of Manhattan, Montana – *Development Impact Fees*
- City and County of Missoula, Montana – *Development Impact Fees*
- City of Polson, Montana – *Development Impact Fees*
- Douglas County, Nevada – *Road Impact Fees*
- NAOIP & HBA of Albuquerque, New Mexico – *Evaluation of Impact Fees*
- City of Las Cruces, New Mexico – *Development Fees*
- Currituck County, North Carolina – *School Impact Fee*
- City of Jacksonville, North Carolina – *Water and Sewer Facilities Charges*
- Orange County, North Carolina – *School Impact Fee*
- City of Delaware, Ohio – *Development Impact Fees*
- City of Green, Ohio – *Development Impact Fees*
- Home Builders Association of Beavercreek, Ohio – *Review of Transportation Fees*
- Village of Sunbury, Ohio – *Development Impact Fees*
- City of Edmond, Oklahoma – *Water and Sewer Impact Fees*
- City of Cambridge, Ontario – *Development Charges*
- Hydro Electric Commission of Cambridge, Ontario – *Development Charges*
- City of Sarnia-Clearwater, Ontario – *Development Charges*
- Township of Wellesley, Ontario – *Development Charges*
- Aiken County, South Carolina – *Development Impact Fees*
- Anderson County, South Carolina – *Development Impact Fees*
- Georgetown County, South Carolina – *Development Impact Fees*
- City of Sherman, Texas – *Development Impact Fees*
- City of American Fork, Utah – *Development Impact Fees*
- City of Clearfield, Utah – *Development Impact Fees*
- City of Clinton, Utah – *Development Impact Fees*
- City of Draper, Utah – *Development Impact Fees*
- City of Farmington, Utah – *Development Impact Fees*
- City of Hooper, Utah – *Sewer Impact Fee*
- City of Hyde Park, Utah – *Development Impact Fees*
- City of Kaysville, Utah – *Development Impact Fees*
- City of North Logan, Utah – *Development Impact Fees*
- Cityof Pleasant Grove, Utah – *Development Impact Fees*
- Salt Lake County, Utah – *Stormwater and Park Impact Fees*
- South Valley Sewer District, Utah – *Sewer Impact Fees*
- City of Spanish Fork, Utah – *Development Impact Fees*
- City of Springville, Utah – *Park Impact Fees*
- City of Wellsville, Utah – *Development Impact Fees*
- City of West Jordan, Utah – *Development Impact Fees*
- City of Woods Cross, Utah – *Development Impact Fees*
- Graham Companies (Loudoun County, Virginia) – *Evaluation of Dulles Sewer District*

- City of Suffolk, Virginia – *Water and Sewer Availability Charges*
- Jefferson County, West Virginia – *Development Fees*
- City of Eau Claire, Wisconsin – *Public Facilities Needs Assessment*
- City of Kenosha, Wisconsin – *Evaluation of CIP Process*
- City of Casper, Wyoming – *Development Impact Fees*
- Teton County, Wyoming – *Transit Impact Fee*

EDUCATION

Ph.D., Planning, Governance, and Globalization, Virginia Tech
M.A., Urban and Regional Planning, University of Florida
B.A., Education, University of Florida

PUBLICATIONS

- "Next Generation Transportation Impact Fees," American Planning Association, Planners Advisory Service.
- "Introduction to Infrastructure Financing", ICMA IQ Service Report, 1999

Dwayne Guthrie PhD, AICP, Principal

Malcolm Munkittrick is a Fiscal and Economic Analyst at TischlerBise with specialties in finance and economic development planning. Prior to joining TischlerBise, Mr. Munkittrick worked on real estate and economic development projects for clients in the Town of Graham, North Carolina and the City of Durham, North Carolina. During this time, he conducted field surveys to determine the economic health of business districts and wrote market studies, developed financial pro forma and crafted public-private partnership strategies, and analyzed economic development initiatives. Prior to his real estate and economic development experience, Mr. Munkittrick worked for the Orange County, North Carolina Department of Environment, Agriculture, and Parks and Recreation, where he gained experience in environmental assessment. This position provided practical experience with next-generation transportation, storm water, and water service metrics and insight into the daily operations of a public sector planning department. Mr. Munkittrick also possesses professional experience with a firm specializing in historic preservation, where he coauthored a preservation and future use analysis report for a historic structure in Connecticut, and with Wilkes County, North Carolina, where he used GIS and tax assessment data to identify substandard mobile and manufactured homes and advise County leaders on potential policies aimed at improving the County's low-income housing stock. Mr. Munkittrick is a LEED Accredited Professional in Neighborhood Development.

SELECTED IMPACT FEE AND INFRASTRUCTURE FUNDING STRATEGY EXPERIENCE

- City of West Jordan, Utah – *Impact Fee Study*
- School District of Pasco County, Florida – *School Impact Fee Study*
- Village of Islamorada, Florida – *Impact Fee Study*
- Town of Erie, Colorado – *Impact Fee Study*
- City of Bentonville, Arkansas – *Impact Fee Study*
- Big Sky Water and Sewer District, Montana – *Water and Sewer Fee Study*

- City of Suisun City, California – *Impact Fee Study*
- Orange County, NC – *School Impact Fee Study*
- Durango, CO – *Housing Linkage Fee and Multimodal Transportation Fee Study*
- Williamson County, TN – *School Impact Fee Study*

EDUCATION

Master of City and Regional Planning, Land Use and Environmental Planning, UNC-Chapel Hill
Master of Public Administration, City Management, UNC-Chapel Hill
Bachelor of Science in Foreign Service, International History, Georgetown University

Project Approach **and Work Plan**

Project Approach

Impact fees are fairly simple in concept, but complex in delivery. Generally, the jurisdiction imposing the fee must: (1) identify the purpose of the fee, (2) identify the use to which the fee is to be put, (3) show a reasonable relationship between the fee's use and the type of development project, (4) show a reasonable relationship between the facility to be constructed and the type of development, and (5) account for and spend the fees collected only for the purpose(s) used in calculating the fee.

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.

There is, however, a fair degree of latitude granted in constructing the actual fees, as long as the outcome is "proportionate and equitable." Fee construction is both an art and a science, and it is in this convergence that TischlerBise excels in delivering products to clients.

Any one of several legitimate methods may be used to calculate impact fees for the City. Each method has advantages and disadvantages given a particular situation, and to some extent they are interchangeable because they all allocate facility costs in proportion to the needs created by development. In practice, the calculation of impact fees can become quite complicated because of the many variables involved in defining the relationship between development and the need for capital facilities. The following paragraphs discuss the three basic methods for calculating impact fees and how those methods can be applied.

Plan-Based 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 CIP. In this method, the total cost of relevant facilities is divided by total demand 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 Fee Calculation - The rationale for the cost recovery 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, facility cost is divided by the ultimate number of demand units the facility will serve. An oversized arterial roadway is an example.

Incremental Fee Calculation - The incremental expansion method documents the current level-of-service (LOS) for each type of public facility in both quantitative and qualitative measures, based on an existing service standard such as square feet per capita or park acres per capita. 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 and/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. An

incremental expansion cost method is best suited for public facilities that will be expanded in regular increments with LOS standards based on current conditions in the community.

Evaluation of Alternatives. Designing the optimum impact fee approach and methodology is what sets TischlerBise apart from our competitors. Unlike most consultants, we routinely consider each of the three methodologies—cost recovery, incremental expansion, and the planned approach—for each component within a fee category. The selection of a particular methodology for each component of the impact fee category will be dependent on which is most beneficial for Louisville. In a number of cases, we will prepare the impact fee using several methodologies and will discuss the various trade-offs with the City. There are likely to be policy and revenue tradeoffs. We recognize that "one size does ***not*** fit all" and create the optimum format that best achieves our clients' goals.

Lending a Sense of Market Reality to the Development Projections. Projecting future residential and nonresidential development is more difficult now than in the past due to the recent economic downturn. This is compounded by shifting trends in the housing market as a result of changing demographics and lifestyle choices. Changes in the retail sector combined with existing surpluses of retail space in many communities are also a concern. **TischlerBise's extensive national experience conducting market analysis and real estate feasibility studies is invaluable in determining the appropriate development projections used in the impact fee calculations.** These projections include both the amount of development and the geographic location. Depending on the methodology employed, overly optimistic development projections can increase the City's financial exposure if impact fee revenue is less than expected.

Public Outreach. The importance of public outreach when considering impact fees and infrastructure funding options should not be overlooked. Based upon our experience with impact fees and infrastructure funding efforts across the country, we anticipate that this study may attract controversy. Therefore, it is important to build a coalition of support early in the process to educate and inform the public and other key stakeholders about the purpose of the study, and to explain how it will benefit both key constituents (developers) and the general public. It is critical to develop a communications strategy that will offset and correct any misinformation that might proliferate and to provide clear and compelling logic for public adoption of an updated impact fee program. Our seasoned project team has actively participated in legislative body meetings and citizen committees to educate and lead stakeholders regarding the technical process of impact fee calculations as well as the pros and cons of impact fees.

In addition to the above elements, the believe the transportation fee requires new thinking regarding traditional transportation impact fee and funding programs. TischlerBise is pioneering the following innovative approaches toward transportation/mobility fees:

As shown in the table below from **a recent American Planning Association publication entitled "Next Generation Impact Fees," written by Carson Bise and Dwayne Guthrie,** traditional transportation impact fees were designed with a suburban worldview and designed to increase capacity for vehicle travel. Traditional 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 the 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. TischlerBise will evaluate the feasibility of including not only needed road capacity and intersection improvements, but also bike lanes, sidewalks, trails, transit, and other multi-modal improvements. The goals and policies of the recently adopted Downtown Framework Plan, Downtown Parking and Pedestrian Action Plan and Highway 42 Revitalization Plan encapsulate these shifting trends and the importance of **moving people, not cars, and finding ways to pay for those improvements.**

Traditional Impact Fees	***Next Generation Impact 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 ten 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

Source: TischlerBise, Inc.

Benefit/Service Areas. As mentioned above, traditional transportation/transit 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. 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.

On average, higher density, mixed-use residential development has fewer persons and vehicles available per unit relative to suburban residential development, thus lowering vehicular trip generation rates. Higher density, mixed use settings also provide options for walking, biking, and transit travel, thus lowering the vehicular mode share. Finally, mixed land uses (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 compelling that next-generation transportation and mobility fees must differentiate between urban, suburban, and rural scales.

The picture below, from our regional transportation impact fee prepared for the Regional Transportation Commission of Washoe County, Nevada (serving Reno, Sparks, and Washoe County), summarizes the rationale and results for establishing an urban service area. The data sources and analysis from this study are transferable to the City of Louisville and can be used to evaluate transportation impact fees and benefit areas for Louisville.

Urban Service Area Rationale and Results

- On average, urban residential has fewer vehicles available and persons per unit, thus lowering vehicular trip generation rates
- Urban settings provide options for walking, biking, and transit travel, thus lowering the vehicular mode share
- Mixed land use, more compact development, and better jobs-housing balance reduces average trip length

For the demographic analysis, urban service area includes 2010 census tracts 1.01, 1.02, 2.01, 2.02, 7, 9, 18.01, 18.02, 19.01, 19.02, and 30.

Service Area	Urban	Suburban
Vehicles Available per Housing Unit	1.05	1.70
Persons per Housing Unit	1.98	2.32
Single Units	40%	76%
2+ Units per Structure	60%	24%
Average Weekday Vehicle Trip Ends per Single Unit	7.02	8.44
Average Weekday Vehicle Trip Ends per 2+ Unit	4.51	5.70
Autos to Work	74%	90%
Walk/Bike/Bus to Work	26%	10%
Average Vehicle Trip Miles	3.93	5.40

Source: TischlerBise, Inc.

Work Scope

TASK 1: PROJECT INITIATION / DATA ACQUISITION

During this task, we will meet with City staff to establish lines of communication, review and discuss project goals and expectations related to the project, review (and revise if necessary) the project schedule, request data and documentation related to new proposed development, and discuss City staff's role in the project. The objectives of this initial discussion are outlined below:

- Obtain and review current demographics and other land use information for the City of Louisville
- Review and refine work plan and schedule
- Discuss current and previous work efforts related to this topic
- Assess additional information needs and required staff support
- Identify and collect data and documents relevant to the analysis
- Identify any major relevant policy issues

Meetings:

One (1) on-site visit to meet with City project management team/City staff as appropriate.

Deliverables:

1) Revisions to project schedule, if necessary. 2) Data request memorandum.

TASK 2: PREPARE LAND USE ASSUMPTIONS AND DEVELOPMENT PROJECTIONS

The purpose of this task is to review and understand the current demographics of the City as they relate to growth and development and determine the likely development future for the City in terms on new population, housing units, employment, and nonresidential building area over the next 10-20 years. Information from the City, the recently prepared TischlerBise market assessment, as well as the Denver Regional Council of Governments will serve as the basis for preparing projections of residential and nonresidential development for consideration by staff and the stakeholder group. TischlerBise will prepare a plan that includes projections of changes in land uses, densities, intensities, and population for a specific service area. A map of the area(s) to which the land use assumptions apply will also be included in this task.

Meetings:

Discussions with the Community Planning and Building Safety Department will be held as part of Task 1, as well as conference calls as needed.

Deliverables:

TischlerBise will prepare a draft technical memorandum discussing the recommended land use factors and projections. After review and sign-off by the City, a final memorandum will be issued, which will become part of the final Development Impact Fee Report.

TASK 3: DETERMINE CAPITAL FACILITY NEEDS AND SERVICE LEVELS

This Task as well as Tasks 4-6 may vary somewhat depending on the methodology applied to a particular impact fee category. The impact fee study for each facility type would be presented in separate chapters in the impact fee tax report.

Identify Facilities/Costs Eligible for Impact Fee Funding. As an essential part of the nexus analysis, TischlerBise will evaluate the impact of development on the need for additional facilities, by type, and identify costs eligible for impact fee funding. Elements of the analysis include:

- Review facility plans, fixed asset inventories, and other documents establishing the relationship between development and facility needs by type.
- Identify planned facilities, vehicles, equipment, and other capital components eligible for impact fee funding.
- Prepare forecast of relevant capital facility needs.
- Adjust costs as needed to reflect other funding sources.

As part of calculating the fee, Louisville may include the construction contract price; the cost of acquiring land, improvements, materials, and fixtures; the cost for planning, surveying, and engineering fees for services provided for and directly related to the construction system improvement; and debt service charges, if Louisville might use impact fees as a revenue stream to pay the principal and interest on bonds, notes or other obligations issued to finance the cost of system improvements. All of these components will be considered in developing an equitable allocation of costs.

Identify Appropriate Level of Service (LOS) Standards. We will review needs analyses and LOS for each facility type. Activities related to this Task include:

- Apply defined service standards to data on future development to identify the impacts of development on facility and other capital needs. This will include discussions with staff of the existing versus adopted LOS, as appropriate.
- Ascertain and evaluate the actual demand factors (measures of impact) that generate the need for each type of facility to be addressed in the study.
- Identify actual existing service levels for each facility type. This is typically expressed in the number of demand units served.
- Define service standards to be used in the impact fee analysis.
- Determine appropriate geographic service areas for each fee category.

Meetings:

Two (2) meetings with City staff to discuss capital facility needs and levels-of-service.

Deliverables:

Memoranda as appropriate. Results integrated into Draft/Final Development Impact Fee Report.

TASK 4: EVALUATE DIFFERENT ALLOCATION METHODOLOGIES

The purpose of this Task is to determine the methodology most appropriate for each impact fee category. As noted previously, the three basic methodologies that can be applied in the calculation of impact fees are the plan-based, incremental expansion, and cost-recovery approaches. Selection of the particular methodology for each component of the impact fee category will depend on which is most beneficial for Louisville. In a number of cases, we will prepare the impact fees for a particular infrastructure category using several methodologies and will discuss the trade-offs with Louisville. This allows the utilization of a combination of methodologies within one fee category. For instance, a plan-based approach may be appropriate for a new building while an incremental approach may be appropriate for support vehicles and equipment. By testing all possible methodologies, Louisville is assured that the maximum supportable impact fee will be developed. Policy discussions will then be held at the staff level regarding the trade-offs associated with each allocation method prior to proceeding to the next Task as well as trade-offs regarding implementation as impact fees.

Meetings:

One (1) meeting with Louisville staff and City Council to discuss issues related to allocation methodologies

Deliverables:

Memoranda as appropriate. See Task 7.

TASK 5: DETERMINE NEED FOR "CREDITS" TO BE APPLIED AGAINST CAPITAL COSTS

A consideration of "credits" is integral to the development of a legally valid impact fee methodology. There is considerable confusion among those who are not immersed in impact fee law about the definition of a credit and why it may be required.

There are two types of “credits” that are included in the calculation of impact fees, each with specific, distinct characteristics. The first is a credit due to possible double payment situations. This could occur when a property owner will make future contributions toward the capital costs of a public facility covered by an impact fee. The second is a credit toward the payment of an impact fee for the required dedication of public sites and improvements provided by the developer and for which the impact fee is imposed. Both types of credits will be considered and addressed in the impact fee study.

Deliverables:

Memoranda as appropriate. See Task 7.

TASK 6: CONDUCT FUNDING AND CASH FLOW ANALYSIS

In order to prepare a meaningful capital funding strategy, it is important to not only understand the gross revenues, but also the capital facility costs and any deficits. In this case some consideration should be given to anticipated funding sources. This calculation will allow Louisville to better understand the various revenue sources possible and the amount that would be needed if the impact fees were discounted.

The initial cash flow analysis will indicate whether additional funds might be needed or if the funding strategy might need to be changed to have new growth pay its fair share of new capital facilities. This could also affect the total credits calculated in the previous Task. Therefore, it is likely that a number of iterations will be conducted in order to refine the cash flow analysis reflecting the capital improvement needs.

Deliverables:

See Task 7.

TASK 7: PREPARE IMPACT FEE REPORT, PUBLIC PRESENTATIONS

TischlerBise will prepare a draft report for the City’s review. The report will summarize the need for all relevant categories of impact fees in Louisville and the relevant methodologies employed in the calculation. It will also document all assumptions and cost factors. The report will include at a minimum the following information:

- Executive summary
- A detailed description of the methodologies used during the study
- A detailed description of all LOS standards and cost factors used and accompanying rationale
- A detailed schedule of all proposed fees listed by land use type and activity
- Other information which adequately explains and justifies the resulting recommended fee schedule
- Cash flow analysis
- Implementation and administration procedures

Following Louisville’s review of the draft report, we will make mutually agreed upon changes to the development impact fee report and issues a final version.

TischlerBise’s report(s) will have flow diagrams clearly indicating the methodology and approach, a series of tables for each activity showing all of the data assumptions and figures, and a narrative explaining all of

the data assumptions, sources and the methodologies. The report will be a stand-alone document clearly understood by all interested parties. Because of the firm's extensive experience in calculating impact fees and preparing such reports, we have developed a very succinct written product that leaves a well-understood paper trail.

Meetings:

One (1) meeting/ presentation to present the Development Impact Fee Study with the City Council.

Deliverables:

Draft and final reports and presentation materials for meetings.

TASK 8: PUBLIC OUTREACH

Meetings with various stakeholder groups will allow interested parties, designated by the City, to understand assumptions and raise any questions about the technical data and approach being used in the fee update. The intent is for these discussions to be an opportunity for interested parties to understand the soundness and reasonableness of the technical methodologies, and to a certain extent, the political and/or philosophical use of fees. We recommend a minimum of two meetings—one toward the beginning of the process, where we discuss, process, development projections, and preliminary methodological directions, and one to discuss the draft work product.

Meetings:

Two (2) meetings with stakeholder group.

Deliverables:

Presentation materials for meetings.

Project Schedule

We anticipate a 4-month schedule to complete the study, assuming an October startup date. As noted in the schedule, several meetings are assumed to occur on the same trip.

PROPOSED SCHEDULE- DEVELOPMENT IMPACT FEE STUDY			
Tasks	**Anticipated Dates**	**Meetings***	**Meetings/Deliverables**
Task 1: Project Initiation	October, 2016	1*	Data Request Memorandum and Revised Project Schedule, if necessary.
Task 2: Prepare Land Use Assumptions and Development Projections	October, 2016	1*	Technical Memorandum on Land Use Assumptions/Development Projections
Task 3: Determine Capital Facility Needs and Service Levels	October - November, 2016	2*	Memoranda as Appropriate
Task 4: Evaluate Different Allocation Methodologies	December, 2016	1	Memoranda as Appropriate
Task 5: Determine Need for "Credits" to be Applied Against Capital Costs	December, 2016	0	Memoranda as Appropriate
Task 6: Conduct Funding and Cash Flow Analysis	December, 2016	0	See Task 7
Task 7: Prepare Development Impact Fee Report, Presentation	December, 2016 - January, 2017	1*	Draft and Final Development Impact Fee Report
Task 8: Public Outreach	October - December, 2016	2*	Presentation Materials as Appropriate

*In several cases it is assumed meetings are held with multiple departments over one (1) trip.

Project **Costs**

The following figure provide our fixed fee cost proposal for the Development Impact Fee Study. The total fixed fee costs are $48,630. This fixed fee proposal assumes four (4) onsite visits. As noted under Project Schedule, several Task meetings are assumed to occur under multiple tasks. Additional Council Worksessions/Liaison Committee meetings will be billed at $2800. If conducted as part of a combined trip with another client (in state or otherwise), the price will be $1900.

PROPOSED FEE - DEVELOPMENT IMPACT FEE STUDY					
Project Team Member:	**Bise**	**Guthrie**	**Munkittrick**	**Total**	
Hourly Rate*	**$200**	**$180**	**$165**	**Hours**	**Cost**
Task 1: Project Initiation	8	0	8	16	$2,920
Task 2: Prepare Land Use Assumptions and Development Projections	6	4	28	38	$6,540
Task 3: Determine Capital Facility Needs and Service Levels	8	24	30	62	$10,870
Task 4: Evaluate Different Allocation Methodologies	4	12	16	32	$5,600
Task 5: Determine Need for "Credits" to be Applied Against Capital Costs	0	4	8	12	$2,040
Task 6: Conduct Funding and Cash Flow Analysis	0	2	8	10	$1,680
Task 7: Prepare Development Impact Fee Report, Presentation	8	16	40	64	$11,080
Task 8: Public Outreach	16	0	0	16	$3,200
Expenses:					***$4,700***
Total Cost:	**50**	**62**	**138**	**250**	**$48,630**

* Hourly rates are inclusive of all costs.

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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.

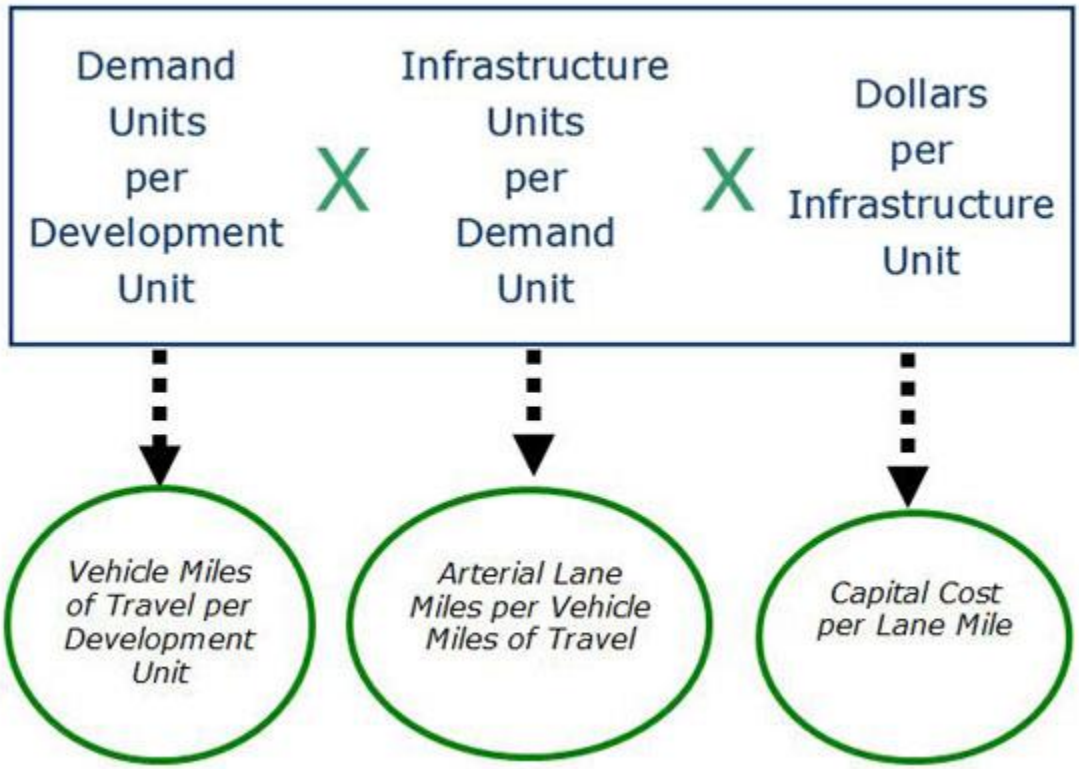


Figure 1. Conceptual Impact Fee Formula. Source: TischlerBise.

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.

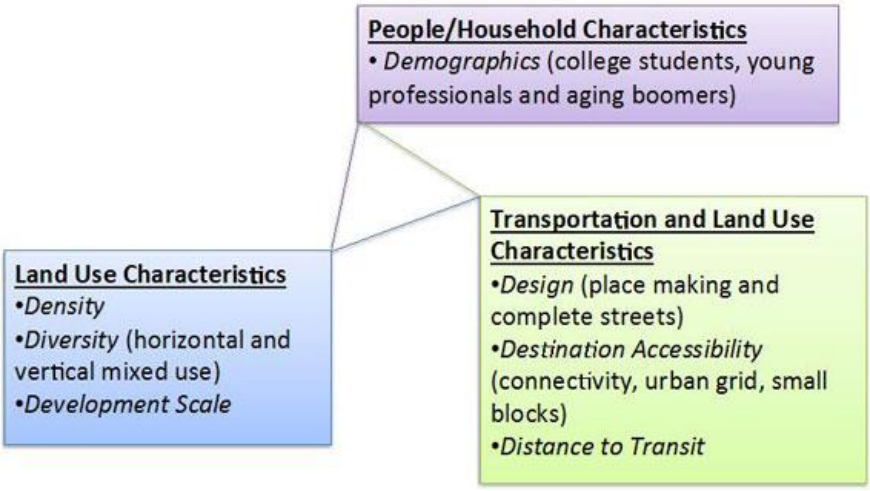


Figure 3. Graphic Summary of "D" Variables. Source: Graphic by TischlerBise

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.

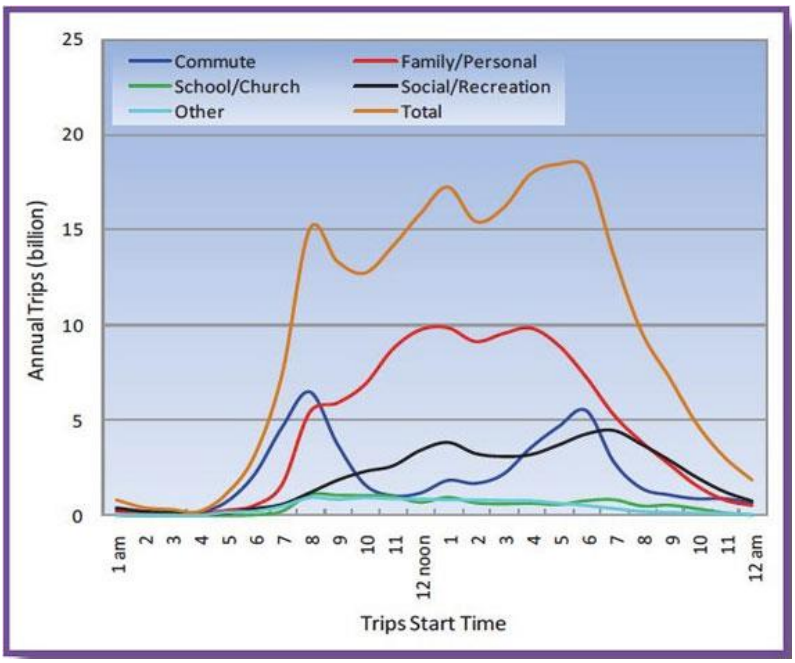


Figure 4. Start Times for Trips by Purpose. Source: *Our Nation's Highways*, U.S. Department of Transportation, 2010

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.

Bedrooms	Persons*(1)*	Trip Ends*(2)*	Vehicles Available*(1)*	Trip Ends*(3)*	Average Trip Ends	Housing Units*(1)*	Recommended Multipliers (4)		Housing Mix
							Trip Ends per Housing Unit	Persons per Housing Unit	
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	1805	499	2,905	2,355	221	9.74	3.14	45%
Total	**1192**	**3388**	**905**	**5,295**	**4,342**	**493**	**8.05**	**2.52**	

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

(1) American Community Survey, Public Use Microdata Sample for GA PUMA 1005 (20121-Year unweighted data).

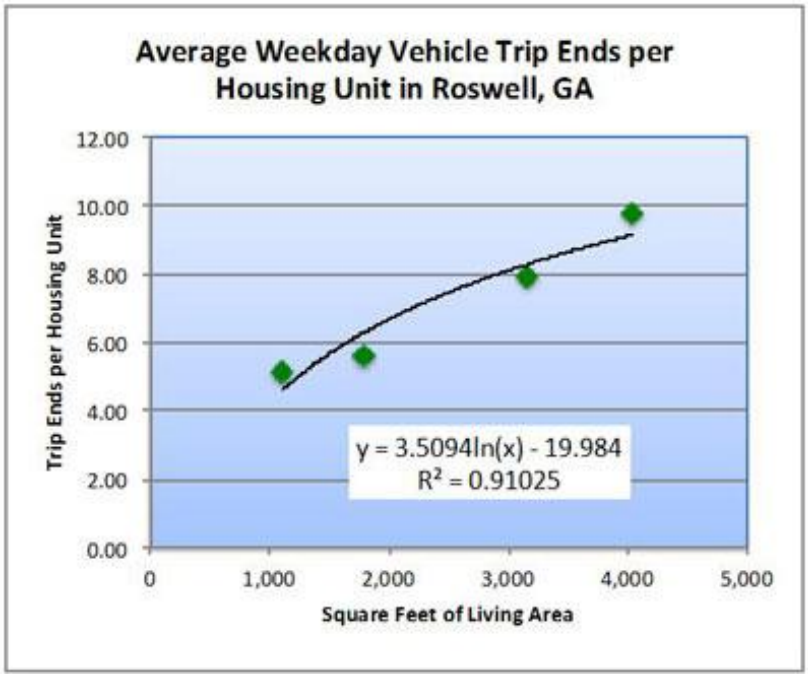
(2) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2012). For single unit housing (ITE 210), the fitted curve equation is EXP(0.91*LN(persons)+1.52). To approximate the average population in the ITE studies, persons were divided by 2 and the equation result multiplied by 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.

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.



Actual Averages per Housing Unit		
Bedrooms	**Square Feet**	**Trip Ends**
0-1	1,106	5.12
2	1,787	5.61
3	3,160	7.89
4+	4,039	9.74

Fitted-Curve Values	
Sq Ft Range	**Trip Ends**
1000 or less	4.26
1001 to 1500	5.68
1501 to 2000	6.69
2001 to 2500	7.47
2501 to 3000	8.11
3001 to 3500	8.65

3501 to 4000	9.12
4001 or more	9.54

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

Average weekday vehicle trip ends per housing unit are derived from 2012 ACS PUMS data for the area that includes Roswell. U.S. Census Bureau is the data source for average square feet of 0-1 and 2 bedroom dwellings. Unit size for 0-1 bedroom is the average of multifamily units constructed in 2013. Unit size for two bedrooms is from 2013 Survey of Construction microdata. Unit size for 3 and 4+ bedrooms is from Roswell building permit records.

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 lists 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 (Florida) 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.
- 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.

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