Road Impact Fees

Colorado

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EXECUTIVE SUMMARY

Montezuma County initially imposed road impact fees before the State of Colorado adopted impact fee enabling legislation in 2001. According to the Colorado Impact Fee Act, fee schedules must be legislatively adopted and generally applicable to a broad class of property. The County must quantify the reasonable impacts of proposed development on capital facilities, which must have a useful life of at least five years to be considered a system improvement funded by impact fees.

Impact fees are one-time payments 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 service area.

With input from County staff, TischlerBise updated demand indicators (a.k.a. service units) for transportation improvements and revised proportionate share factors to allocate costs by type of development. Specific costs for growth-related capital improvements have been identified using local data and current dollars (i.e. not inflated over time).

Report Organization

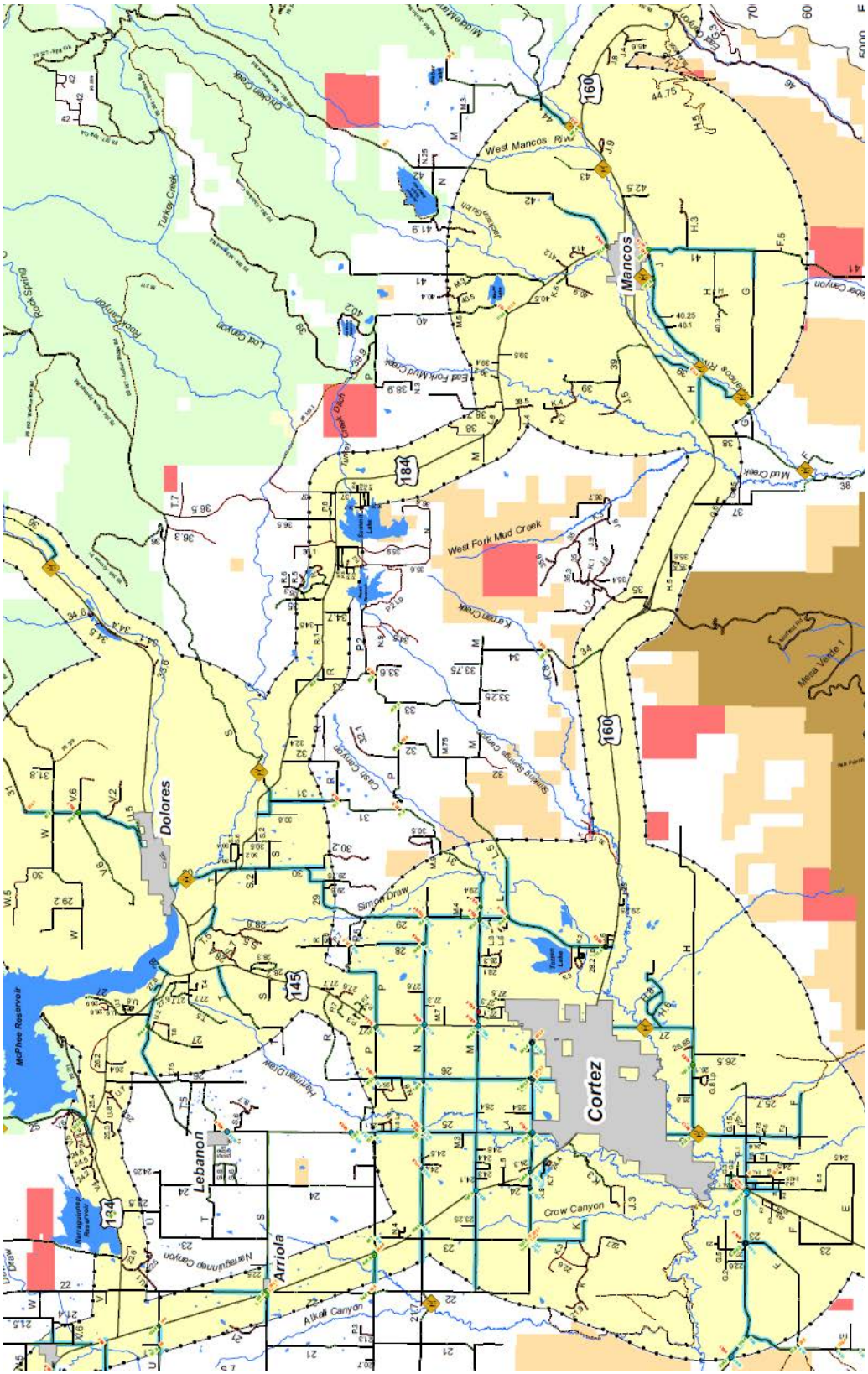
The impact fee report uses a "drill-down" layout that presents general information first, followed by the underlying details. All readers will want to know the bottom-line, which is presented in the Executive Summary. If you want to know more detailed information, the middle section of the report discusses each factor used to derive impact fees for roads. The final section in this document provides supplemental documentation, including demographic details.

Service Area

In Montezuma County, development is generally limited to the central valley that is bounded by federal and Native American lands. Road impact fees will continue to be imposed in the unincorporated area of Montezuma County. The service area for road impact fees excludes the incorporated areas of Cortez, Dolores, and Mancos

Figure 1 is a map of the central area of Montezuma County, zooming in to show the incorporated places and a three-mile buffer zone around each. The map also indicates a half-mile buffer from the centerline of state highways. The buffer areas are highlighted in yellow. Roads within the buffers have the highest traffic volumes and represent the critical road network needing additional capacity due to future development. The existing lane miles of County, chip-seal roads within the buffer were used to calibrate the existing Level-Of-Service (LOS), or infrastructure standard for Montezuma County. A lane mile is a road segment that is one lane wide and one mile long.

Figure 1 – Map of Central Montezuma County



Projected Service Units

Figure 2 lists cumulative development units in the unincorporated area of Montezuma County. Detailed documentation of demographic data is provided in Appendix A. TischlerBise converted population projections into housing units (abbreviated "HU") and job projections into floor area of nonresidential development (expressed in thousands of square feet and abbreviated "KSF"). Residential and nonresidential development increases traffic on County roads, reported below as average weekday vehicle trips. Over the next ten years, total vehicle trips attracted to development located in the unincorporated area is projected to increase by 19%.

In comparison to the annual increase in housing units shown below, the Montezuma County Assessor indicated the unincorporated area increased by an average of 121 housing unit per year from 2003 through 2007. From 2002 through 2008, the County Health Department reported an average annual increase of 112 housing units per year in the unincorporated area, based on septic tank permits.

Figure 2 – Unincorporated Area Growth Indicators

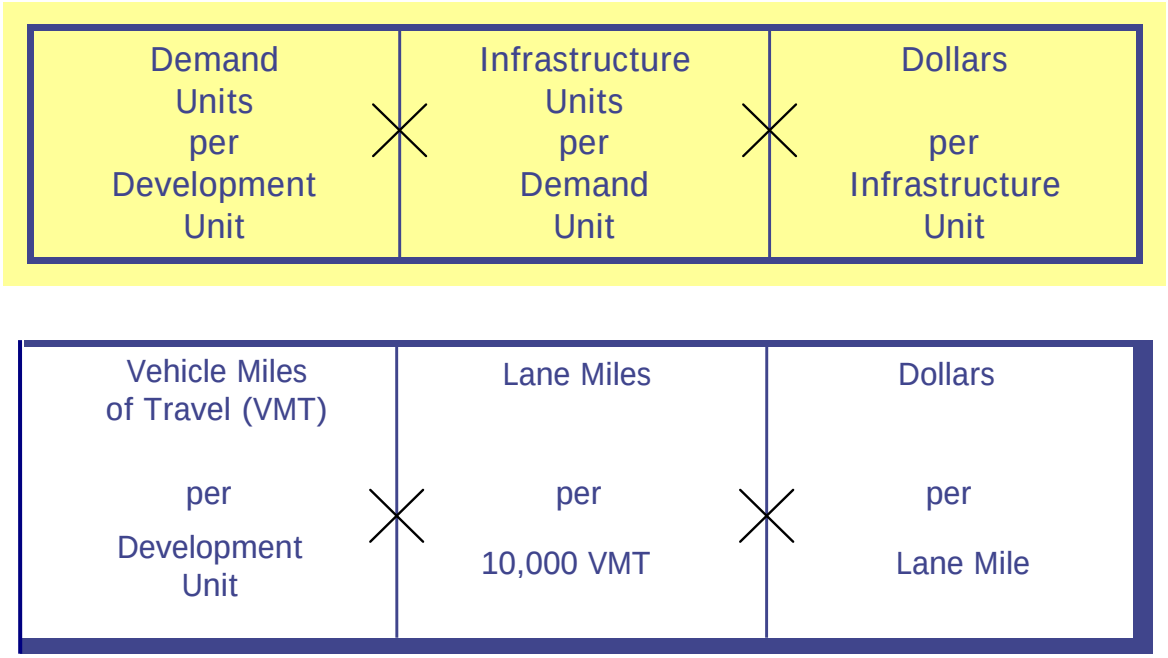
Montezuma County, CO	Year =>	1	2	3	4	5	10	11
	2009	2010	2011	2012	2013	2014	2019	2020
Cumulative Demand Units	**Base Year**							
Unincorp Detached HU	5,965	6,055	6,175	6,297	6,422	6,549	7,225	7,368
Unincorp Attached HU	590	599	611	623	635	648	715	729
Unincorp Goods Production KSF	463	470	472	478	484	490	513	518
Unincorp Retail/Restaurant KSF	396	403	406	408	411	414	426	428
Unincorp Other Services KSF	671	688	705	725	741	758	841	857
Unincorp Total Vehicle Trips	42,839	43,539	44,307	45,119	45,923	46,738	50,997	51,887
Unincorporated Population	14,880	15,100	15,400	15,710	16,020	16,340	18,020	18,380
Unincorporated Jobs	4,040	4,110	4,170	4,240	4,300	4,370	4,720	4,790
Total Unincorp HU incr per year		99	132	135	137	140	154	157

Impact Fee Methodologies

The basic steps in a conceptual impact fee formula are illustrated below (see Figure 3). The first step (see the left box) is to determine an appropriate demand indicator, for a particular type of infrastructure. The demand indicator measures the number of service units for each unit of development. For example, an appropriate indicator of the demand for road capacity is the number of average weekday vehicle trips attracted to a development unit (e.g. a single family 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 road capacity example, a common infrastructure standard is arterial and/or collector

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

Figure 3 – Conceptual Impact Fee Formula



When applied to specific types of infrastructure, the conceptual impact fee formula is customized using three common methods that focus on different timeframes. The first method is the cost recovery method. To the extent that new growth and development is served by previously constructed improvements, jurisdictions may seek reimbursement for the previously incurred public facility costs. This method is used for facilities that have adequate capacity to accommodate new development, at least for the next three to five years. The rationale for the cost recovery approach is that new development is paying for its share of the useful life or remaining capacity an existing facility that was constructed in anticipation of additional development. The second basic approach used to calculate impact fees is the incremental expansion cost method. This method documents the current LOS for a public facility in both quantitative and qualitative measures. The jurisdiction uses impact fee revenue to incrementally expand infrastructure as needed to accommodate new development. A third approach is the plan-based method. This method is best suited for public facilities that have commonly accepted engineering or planning standards, and a specific capital improvements plan

approved by the elected officials. In Montezuma County, road impact fees are derived using the incremental expansion cost method.

Current and Proposed Road Impact Fees

Figure 4 provides a comparison of current and proposed road impact fees for new development in the unincorporated area of Montezuma County. Current amounts are shown with dark shading and white numbers. Proposed fees are shown with yellow shading and black numbers. The other counties shown in the table are all in Colorado. The top row indicates the national average for road impact fees.

To comply with the Colorado Impact Fee Act, TischlerBise recommends three changes to the implementation of road impact fees in Montezuma County. First, fees must be collected from all development activity, not just residential subdivisions. Second, nonresidential development should pay road impact fees prior to receiving a High Impact Permit. Third, all residential development must pay the road impact fee prior to receiving a septic tank permit. TischlerBise recommends that fees for detached housing be imposed by size of unit, measured by the number of bedrooms. This approach provides a more progressive, yet proportionate, fee schedule that alleviates affordable housing concerns. To be consistent with the fee amount reported for other jurisdictions, the proposed 2009 fee for Montezuma County, in the table below, is the amount for a three bedroom house.

Figure 4 – Road Impact Fee Comparison

	Single Family	*Multifamily*	*Retail*	*Office*	*Industrial*
National Average	$3,077	$2,095	$5,327	$3,381	$2,067
(1) CO average (see list below)	$2,686	$1,933	$4,597	$2,447	$1,447
Adams County	$1,599	$983	$2,131	$1,178	$776
Eagle County	$1,600	$1,109	$4,923	$1,887	$1,166
Jefferson County	$2,591	$2,155	$5,630	$3,790	$1,630
Larimer County	$2,913	$2,044	$5,870	$2,408	$1,392
Mesa County	$1,589	$1,100	$2,448	$1,665	$1,155
Pitkin County proposed	$6,520	$4,760	$10,150	$3,770	$2,390
Weld County	$1,987	$1,377	$1,024	$2,430	$1,618
(2) Montezuma County current	$2,400 per residential lot	not applicable	not applicable	not applicable	not applicable
Montezuma County proposed 2009	$2,810	$1,940	$5,140	$1,910	$1,210

Source: Data for all locations except Pitkin County and Montezuma County are from National Impact Fee Survey by Duncan Associations (2008). Single Family assumes 3-bedroom (2,000 square feet). Nonresidential fees per thousand square feet assume a building with 100,000 square feet of floor area.

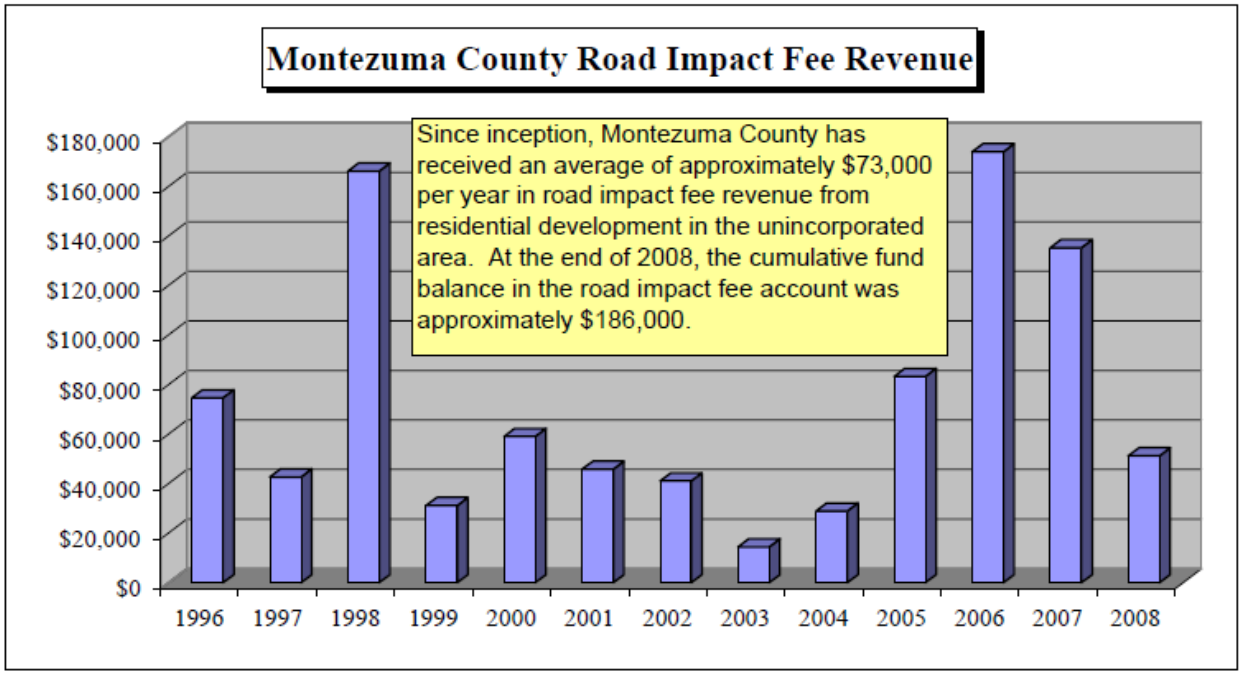
(1) TischlerBise derived the average for the counties listed, excluding Montezuma County.

(2) Montezuma County also collects $500 per mile to the nearest US Highway.

Past and Future Road Impact Fee Revenue

Figure 5 indicates actual impact fee collections by Montezuma County since 1996. Although there is significant variation by year, on average the County has received $73,000 annually. At the end of 2008, there was approximately $186,000 in the road impact fee fund. If County Commissioners approve the maximum supportable fee schedule, and development is consistent with the projections documented in Appendix A, Montezuma County should realize a significant increase in road impact revenue to a projected average of $425,000 per year, over the next ten years.

Figure 5 – Road Impact Fee Collections



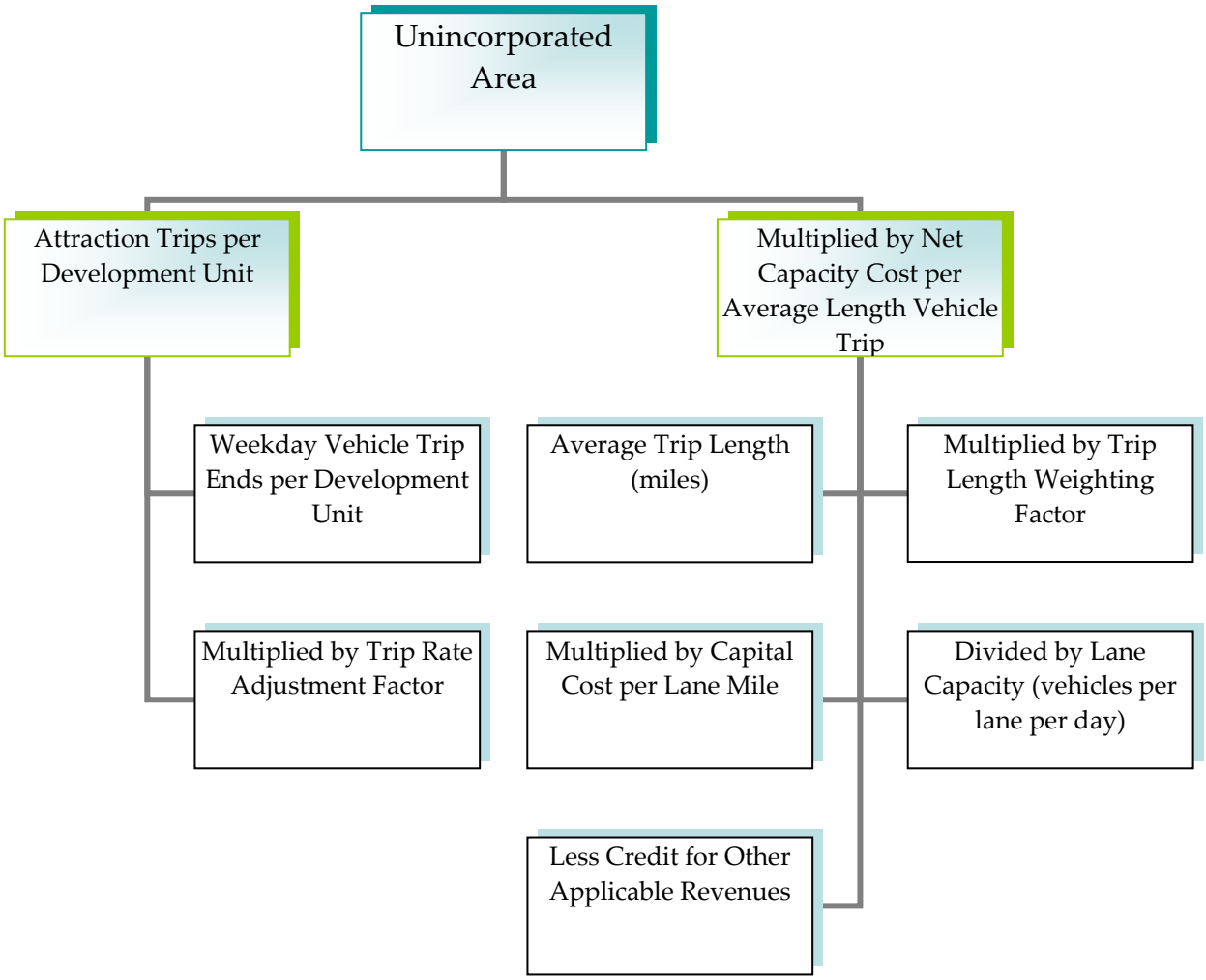
ROAD IMPACT FEES

The following section discusses growth-related capital improvements and the proportionate-share fee calculations. In Montezuma County, project-level improvements, to be paid by a developer, include internal subdivision streets and access management (e.g. acceleration / deceleration lanes). System improvements, to be funded by impact fees, include, but are not limited to, paving gravel roads, widening roads, intersection improvements (i.e., turn lanes, signalization or roundabouts) and increasing the structural depth of roads to adequately handle truck traffic. In Montezuma County, impact fees will typically be used to convert gravel roads to chip-seal pavement.

Road Impact Fee Formula and Input Variables

As shown in Figure 6, the road impact fee is derived from trip generation rates, trip rate adjustment factors and the net capacity cost per average length vehicle trip. The cost per average length vehicle trip is a function of the average trip length, trip length weighting factor, costs per lane mile and lane capacity.

Figure 6 – Unincorporated Montezuma County Road Impact Fee Formula



Trip Generation

Montezuma County road impact fees are based on average weekday Vehicle Trip Ends (VTE). 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). 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 to the infrastructure demand for particular types of development.

Trip Generation by Size of Housing

TischlerBise used Census 2000 data for Montezuma County to derive custom trip generation rates by type of housing, as shown in Figure 7. The jurisdiction-specific trip generation rates per housing unit are lower than the national averages for both detached and attached housing, mainly due to the fact that 12% of the houses in Montezuma County are not occupied by year-round residents.

Figure 7 - Residential Trip Generation Rates by Type of Housing

Montezuma County, CO

	Vehicles Available (1)	*Households (2)* Detached Units	Attached Units	Total	*Vehicles per Household by Tenure*
Owner-occupied	14,560	6,748	132	6,880	2.12
Renter-occupied	3,263	1,612	709	2,321	1.41
TOTAL	17,823			9,201	1.94
Housing Units (6) =>		9,506	991	10,497	

	Persons (3)	*Trip Ends (4)*	*Vehicles by Type of Housing*	*Trip Ends (5)*	*Average Trip Ends*	*Trip Ends per Housing Unit*
Detached Units	21,682	56,127	16,547	95,660	75,894	**7.98**
Attached Units	1,709	5,866	1,276	5,321	5,594	**5.64**
TOTAL	23,391	61,993	17,823	100,982	81,487	7.76

(1) Vehicles available by tenure from Table H46, SF3, Census 2000.
(2) Households by tenure and units in structure from table H32, SF3, Census 2000.
(3) Persons by units in structure from table H33, SF3, Census 2000.
(4) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2008). For 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 39 and the equation result multiplied by 39. For attached 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 detached housing (ITE 210), the fitted curve equation is EXP(0.99*LN(vehicles)+1.81). To approximate average vehicles available in the ITE studies, vehicles available were divided by 65 and the equation result multiplied by 65. For attached housing (ITE 220), the fitted curve equation is (3.94*vehicles)+293.58.
(6) Housing units from H30, SF3, Census 2000.

Custom tabulations of demographic data by bedroom range may be determined from individual survey responses provided by the U.S. Census Bureau in files known as Public Use Microdata Samples (PUMS). Because PUMS data are only available for areas of roughly 100,000 persons, Montezuma County is grouped together with Delta, Montrose, San Miguel, Dolores, San Juan, La Plata, and Archuleta County (i.e. Public Use Microdata Area 00600). As shown in Figure 8, TischlerBise derived trip generation rates for detached housing, by bedroom range, based on the number of persons and vehicles available.

Figure 8 – Average Weekday Vehicle Trip Ends by Bedroom Range

Montezuma County, Colorado

	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
Detached 0-2 Bdrms	1,118	3,312	1,111	6,518	4,915	711	6.25	1.68
Detached 3 Bdrms	2,762	7,543	2,573	14,969	11,256	1,246	8.17	2.37
Detached 4 Bdrms	1,005	3,006	845	4,971	3,988	365	9.89	2.95
Detached 5+ Bdrms	274	921	235	1,400	1,161	96	10.94	3.06
Detached Subtotal	5,159	14,782	4,764	27,859	21,320	2,418	**7.98**	**2.28**
Attached Subtotal	443		302			346	**5.64**	**1.72**
GRAND TOTAL	5,602		5,066			2,764		

(1) American Community Survey, Public Use Microdata Sample for Colorado PUMA 00600 (unweighted data for 2005-2007).
(2) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2008). For detached housing (ITE 210), the fitted curve equation is EXP(0.91*LN(persons)+1.52). To approximate average population in the ITE studies, persons were divided by 9 and the equation result multiplied by 9.
(3) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2008). For detached housing (ITE 210), the fitted curve equation is EXP(0.99*LN(vehicles)+1.81). To approximate average vehicles available in the ITE studies, vehicles available were divided by 19 and the equation result multiplied by 19.
(4) Recommended multipliers are scaled to make the average value by type and size of detached housing for PUMA 00600 match the average value derived from Summary File 3 data for Montezuma County.

Adjustments for Commuting Patterns and Pass-By Trips

Residential development has a larger trip adjustment factor of 61% to account for commuters leaving the unincorporated area of Montezuma County for work. According to the 2001 National Household Travel Survey (see Table 29 in the Federal Highway Administration publication dated 12/04) home-based weekday work trips are typically 31% of production trips (i.e., all out-bound trips, which are 50% of all trip ends). Also, the U.S. Census Bureau's 2006 origin-destination database, available online using the web application named "On The Map 3", indicates that 73% of workers living in the unincorporated area travel to work in another jurisdiction (incorporated places or other counties). In combination, these factors (0.31 x 0.50 x 0.73 = 0.11) support the additional 11% allocation of trips to residential development.

Data contained in Trip Generation Handbook (ITE 2004) indicate an inverse relationship between commercial building size and pass-by trips, as explained further in Appendix B. For commercial developments, the trip adjustment factor is less than 50% because retail development and some services (e.g. day care centers) attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not their primary destination. For the average shopping center, with 328,000 square feet of floor area, ITE

data indicates that on average 25% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 75% of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 75% multiplied by 50%, or approximately 38% of the trip ends.

Trip Length Weighting Factor by Type of Land Use

The road impact fee methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As documented in Table 6 of the 2001 National Household Travel Survey (published 12/04 by the Federal Highway Administration), vehicle trips from residential development are approximately 122% of the average trip length. The residential trip length adjustment factor includes data on home-based work trips, social and recreational purposes. Conversely, shopping trips attracted to 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.

Lane Capacity

The need for additional lane miles due to new development requires a highway capacity standard, which was obtained from the transportation consulting firm of Felsburg Holt & Ullevig (FHU). For a two lane arterial in a rural area functioning at LOS "C" the recommended average daily capacity, based on 12-feet lanes and 4-feet shoulders, is 6,600 vehicles per average day, or 3,300 vehicles per lane per day.

Estimated Cost of Road Improvements

As shown in Figure 9, the Road and Bridge Superintendent provided a cost estimate of $127,500 per lane mile for converting a gravel road to chip-seal pavement. A lane mile is a rectangular area of pavement, one lane wide and one mile long.

Figure 9 – Chip Seal Cost per Lane Mile

		Centerline Mile		Lane Mile
Subgrade		$ 36,789		$ 18,394
Subbase 3"		$ 79,282		$ 39,641
Base 3/4"		$ 52,129		$ 26,064
Chip Seal		$ 59,450		$ 29,725
			Sub total	$ 113,825
Engineer	10%			$ 11,382
QA/QC	2%			$ 2,276
			Cost / Ln Mi (rounded)	$ 127,500

Average Trip Length

A typical vehicle trip, such as a person leaving their home and traveling to work, generally begins on a local street that connects to a collector street, which connects to an arterial road and eventually to a state or interstate highway. This progression of travel up and down the functional classification chain limits the average trip length question to the following, "What is the average vehicle trip length on impact fee system improvements?" To derive the average trip length on system improvements, road impact fees are conservatively based on a critical network of County roads near incorporated places and state highways. Consistent with the County's adopted land use plan, a three mile buffer was drawn around Cortez, Dolores, and Mancos. In addition, a half-mile buffer was draw around state highways, with the buffer areas containing a total length of 83.95 centerline miles. Because all county roads have two travel lanes, Montezuma County currently has 167.9 lane miles of county roads within the buffer areas shown above in Figure 1.

With approximately 168 lane miles of county roads within the designated buffer area, and a lane capacity standard of 3,300 vehicles per lane, the critical road network has approximately 554,000 vehicle miles of capacity (i.e., 3,300 vehicles per lane applied to the entire 168 miles). To derive the average utilization (i.e., average trip length expressed in miles) of the county roads considered to be system improvements, we divide vehicle miles of capacity by the vehicle trips attracted to development in the unincorporated area of Montezuma County. As explained further below, existing

development in the unincorporated area currently attracts an estimated 42,839 vehicle trips on an average weekday. Dividing 554,000 vehicle miles of capacity by the average weekday vehicle trips yields an unweighted average trip length of approximately 14.9 miles. However, the calibration of average trip length includes the same adjustment factors used in the impact fee calculations (i.e., commercial pass-by adjustment and average trip length adjustment by type of land use). Using a series of spreadsheet iterations, the weighted-average trip length is 12 miles, as shown in Figure 10.

Development Prototypes

The relationship between the amount of development in the unincorporated area and existing critical county road network is documented in the following two tables. Figure 10 summarizes the input variables used to determine the projected need for additional lane miles of system improvements. In the table below VTE means vehicle trip ends, HU means housing units, KSF means square feet of nonresidential development, in thousands, and the Institute of Transportation Engineers is abbreviated ITE.

Figure 10 – Travel Demand Model Inputs

	ITE Code	*Dev Type*	*Weekday VTE*	*Dev Unit*	*Trip Adj*	*Trip Length Wt Factor*
R1	210	Detached Res	7.98	HU	61%	122%
R2	220	Attached Res	5.64	HU	61%	122%
NR1	110	Goods Production	6.97	KSF	50%	75%
NR2	820	Retail/Restaurant	42.94	KSF	38%	68%
NR3	710	Other Services	11.01	KSF	50%	75%
Avg Trip Length (miles)	12.00					
Capacity Per Lane	3,300					
Cost per Lane-Mile	$127,500					

Current Infrastructure Standard for Transportation

A Vehicle Mile of Travel (VMT) is a measurement unit equal to one vehicle traveling one mile. Aggregate VMT for the unincorporated area is the product of vehicle trips multiplied by the average trip length[1]. The infrastructure standard for the road impact fee is based on existing lane miles of county roads within three miles of incorporated places or state highways. As shown in Figure 11, the existing infrastructure standard is 3.03 lane miles per 10,000 VMT. Projected development over the next ten years will require county roads to be expanded by an additional 33.3 lane miles at an estimated cost of approximately $4.25 million.

Figure 11 – Projected Need for Roads

Year->	*Base*	*1*	*2*	*3*	*4*	*5*	*10*	*10-Year*
	2009	*2010*	*2011*	*2012*	*2013*	*2014*	*2019*	*Increase*
Development in Unincorporated Montezuma County								
DETACHED HU	5,965	6,055	6,175	6,297	6,422	6,549	7,225	1,261
ATTACHED HU	590	599	611	623	635	648	715	125
GOODS PRODUCTION KSF	463	470	472	478	484	490	513	49
RETAIL/RESTAURANT KSF	396	403	406	408	411	414	426	30
OTHER SERVICES KSF	671	688	705	725	741	758	841	171
DETACHED RES TRIPS	29,035	29,472	30,057	30,653	31,261	31,881	35,171	
ATTACHED RES TRIPS	2,030	2,060	2,101	2,143	2,185	2,229	2,458	
GOODS PRODUCTION TRIPS	1,614	1,638	1,646	1,667	1,688	1,709	1,786	
RETAIL/RESTAURANT TRIPS	6,469	6,581	6,623	6,665	6,707	6,748	6,951	
OTHER SERVICES TRIPS	3,692	3,789	3,880	3,991	4,081	4,171	4,630	
Total Vehicle Trips	42,839	43,539	44,307	45,119	45,923	46,738	50,997	8,158
Vehicle Miles of Travel	555,323	564,170	574,568	585,441	596,310	607,356	665,366	
LANE MILES	168.3	171.0	174.1	177.4	180.7	184.0	201.6	33.3
ANL LN MI INCREASE		2.7	3.1	3.3	3.3	3.3	3.6	
Anl Lane Mile Cost (millions)		$0.34	$0.40	$0.42	$0.42	$0.42	$0.46	$4.25
Lane Miles per 10,000 VMT	3.03	3.03	3.03	3.03	3.03	3.03	3.03	

[1] Typical VMT calculations for development-specific traffic studies, along with most transportation models of an entire urban area, are derived from traffic counts on particular road segments multiplied by the length of that road segment. For the purpose of impact fees, VMT calculations are based on attraction (inbound) trips to development located in the service area, with the trip lengths calibrated to the road network considered to be system improvements. This refinement eliminates pass-through or external-external trips, and travel on roads that are not system improvements (e.g. interstate highways and local streets).

Credit for Other Revenues

A credit for future gas taxes or other revenue sources is only necessary if there is potential double payment for system improvements. In Montezuma County, gas tax revenue will be used for maintenance of existing facilities, correcting existing deficiencies and for capital projects that are not impact fee system improvements. As shown below in the cash flow analysis, projected impact fee revenue matches the growth-related cost of system improvements (i.e. ~$4.25 million). If County Commissioners make a legislative policy decision to fully fund growth-related system improvements using road impact fees, there is no potential double payment from other revenue sources.

Road Impact Fees in the Unincorporated Area

Input variables used to derive road impact fee are shown in Figure 12 . Attraction trips by type of development are multiplied by the net capital cost per average length vehicle trip to yield the road impact fees. To derive the capital cost per average length trip, multiply the average trip length by the trip length weighting factor (by type of land use), then multiply by the cost per lane mile and divide by the lane capacity. For example, the road impact fee formula for an attached housing unit is 5.64 x 0.61 ((12 x 1.22 x $127,500 / 3300) -0) = $1,940 per housing unit (truncated to tens place).

Figure 12 – Road Impact Fee Inputs

Unincorporated Montezuma County ITE Code	Weekday Vehicle Trip Ends	Trip Rate Adjustment Factors	Trip Length Weighting Factors
Weekday Vehicle Trip Ends			
Residential (per Housing Unit)			
220 Attached (average for all sizes)	5.64	61%	122%
210 Detached 2 or less bedrooms	6.25	61%	122%
210 Detached (average for all sizes)	7.98	61%	122%
210 Detached 3 bedrooms	8.17	61%	122%
210 Detached 4 bedrooms	9.89	61%	122%
210 Detached 5 or more bedrooms	10.94	61%	122%
Nonresidential (per 1,000 Sq Ft of floor area)			
110 Light Industrial	6.97	50%	75%
140 Manufacturing	3.82	50%	75%
150 Warehousing	3.56	50%	75%
151 Mini-Warehouse	2.50	50%	75%
520 School	15.43	33%	75%
610 Hospital	16.50	50%	75%
710 Office	11.01	50%	75%
770 Business Park	12.76	50%	75%
820 Retail / Restaurant	42.94	38%	68%
Nonresidential (per unique demand indicator)			
254 Assisted Living (per bed)	2.66	50%	75%
320 Lodging (per room)	5.63	50%	75%
565 Day Care (per student)	4.48	24%	75%

Infrastructure Standards	
Average Miles per Vehicle Trip	12.0
Cost per Lane Mile	$127,500
Lane Capacity (vehicles per day)	3,300
Revenue Credit (not applicable)	$0

Maximum Supportable Road Impact Fees

The input variables discussed above yield the maximum supportable impact fees shown in Figure 13. All attached housing units pay the same fee amount regardless of size. For detached housing, fees increase with the number of bedrooms. Fees for most types of nonresidential development are listed per square foot of floor area. For example, the fee for a fast-food restaurant with 3,000 square feet of floor area would be $15,420 (3,000 x $5.14). At the bottom of the following table are some nonresidential development types that have unique demand indicators. For example, the impact fee for lodging is based on the number of rooms.

Figure 13 – Proposed Fees in the Unincorporated Area

		Maximum Supportable Road Impact Fee
Residential (per housing unit)		
220	Attached (average for all sizes)	$1,940
210	Detached 2 or less bedrooms	$2,150
210	Detached (average for all sizes)	$2,750
210	Detached 3 bedrooms	$2,810
210	Detached 4 bedrooms	$3,410
210	Detached 5 or more bedrooms	$3,770
Nonresidential (per Sq Ft of floor area)		
110	Light Industrial	$1.21
140	Manufacturing	$0.66
150	Warehousing	$0.61
151	Mini-Warehouse	$0.43
520	School	$1.77
610	Hospital	$2.86
710	Office	$1.91
770	Business Park	$2.21
820	Retail / Restaurant	$5.14
Nonresidential (per unique demand indicator)		
254	Assisted Living (per bed)	$462
320	Lodging (per room)	$978
565	Day Care (per student)	$373

Funding Strategy for Unincorporated Area Roads

The cash flow summary shown in Figure 14 provides an indication of the estimated road impact fee revenue and growth-related capital expenditures over the next ten years, due to new development in the unincorporated area of Montezuma County. Projected impact fee revenue matches the projected need for road capacity (i.e. ~$4.25 million).

Revenue projections shown below assume implementation of the maximum supportable road impact fee. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the impact fee revenue and the timing of capital improvements. See Appendix A for discussion of the development projections that drive the cash flow analysis.

Figure 14 – Cash Flow for Road Capacity in the Unincorporated Area

Montezuma County, CO		1	2	3	4	5	10	Cumulative	Average
(Current $ in thousands)		2010	2011	2012	2013	2014	2019	Total	Annual
REVENUES									
15 Unincorp Road Fee - Detached		$247	$330	$337	$344	$350	$386	$3,466	$347
16 Unincorp Road Fee - Attached		$17	$23	$24	$24	$24	$27	$242	$24
17 Unincorp Road Fee - Goods Product		$8	$3	$7	$7	$7	$3	$60	$6
18 Unincorp Road Fee - Retail/Restaura		$35	$13	$13	$13	$13	$13	$152	$15
19 Unincorp Road Fee - Other Services		$34	$32	$39	$31	$31	$30	$326	$33
Unincorporated Area Road Fees		$341	$401	$420	$419	$426	$458	$4,246	$425
CAPITAL COSTS									
Growth-Related Roads CIP		$344	$395	$421	$421	$421	$459	$4,246	$425
NET CAPITAL FACILITIES CASH FLOW - Unincorporated Area Roads									
Annual Surplus (or Deficit)	Init Bal	($3)	$6	($1)	($1)	$5	($1)	($0)	($0)
Cumulative Surplus (or Deficit)	$186	$183	$189	$188	$186	$192	$186		

APPENDIX A – DEMOGRAPHIC DATA

In this Appendix, TischlerBise documents the demographic data and development projections used in the road impact fee study. Although long-range projections are necessary for planning capital improvements, a shorter time frame of three to five years is critical for the impact fees analysis. Infrastructure standards are calibrated using 2009 data and the first projection year for the cash flow model will be 2010. The Montezuma County fiscal year begins January 1st.

Population and Housing Characteristics

As shown in Figure A1, Montezuma County had 10,497 housing units in 2000. The weighted average, household size in 2000 for all housing types was 2.54 persons per household. According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. TischlerBise recommends the use of two residential categories in the impact fee calculations. Differentiating impact fees by type of housing helps make the fees proportionate to the demand for public facilities. The housing mix in 2000 (i.e. 91% detached units vs. 9% attached housing) was assumed to remain constant.

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

Figure A1 – Persons per Housing Unit

Units in Structure	*Renter & Owner* Persons	Hsehlds	PPH	*Housing Units*	*Persons Per Hsg Unit*	*Vacancy Rate*
1-Detached	14,577	5,828	2.50	6,667	2.19	12.6%
Mobile Homes	7,105	2,532	2.81	2,839	2.50	10.8%
1-Attached	294	111	2.65	124	2.37	10.5%
Two (Duplex)	385	172	2.24	185	2.08	7.0%
3 or 4	482	247	1.95	277	1.74	10.8%
5 or more	459	256	1.79	288	1.59	11.1%
Boat, RV, other	89	55	1.62	117	0.76	53.0%
Total SF3 Sample Data	23,391	9,201	2.54	10,497		
100-Percent Count	23,392	9,201	2.54	10,497	2.23	
			Vacant/Seasonal HU	1,296		

Countywide Summary by Type of Housing	*Persons*	*House-holds*	*Persons per Household*	*Housing Units*	*Persons Per Hsg Unit*	*Housing Mix*
Detached (SFD & MH)	21,682	8,360	2.59	9,506	**2.28**	91%
Attached (all other)	1,709	841	2.03	991	**1.72**	9%
Subtotal	23,391	9,201	2.54	10,497	2.23	
Sample Difference	1	0		0		*Vacancy Rate*
Group Quarters	438					
TOTAL	23,830	9,201		10,497	**2.27**	12.3%

Source: 2000 U.S. Census Bureau.

Recent Residential Construction

Figure A2 indicates the Colorado State Demographer's 2007 population estimate of 25,561 residents in Montezuma County. Since the 2000 census, Montezuma County has increased by an average of 124 housing units per year. The chart at the bottom of Figure A2 indicates the estimated number of housing units added by decade in Montezuma County. The first decade of the 21st century will probably have less residential development than the previous decade when approximately 2,500 units were constructed in Montezuma County.

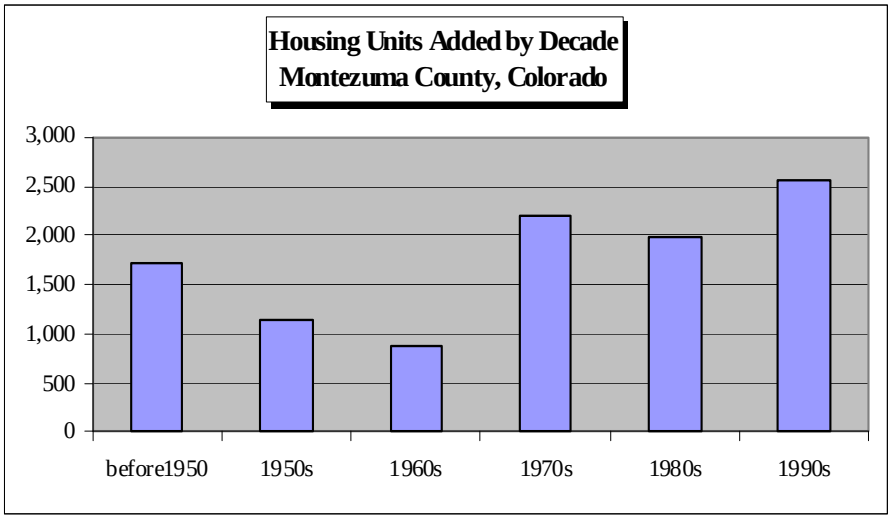
Figure A2 – Montezuma County Housing Units and Population in 2007

Montezuma County, Colorado

Estimated Year-Round Population in 2007*	25,561
Total Housing Units in 2000	10,497
New Housing Units 2000-2007	*871*
Total Units in 2007**	11,368

From 2000 to 2007, Montezuma County added an average of 124 housing units per year.

* *CO State Demography Office.*
** *Montezuma County Assessor*



Source: Table H34, SF3 Census 2000, U.S. Census Bureau.

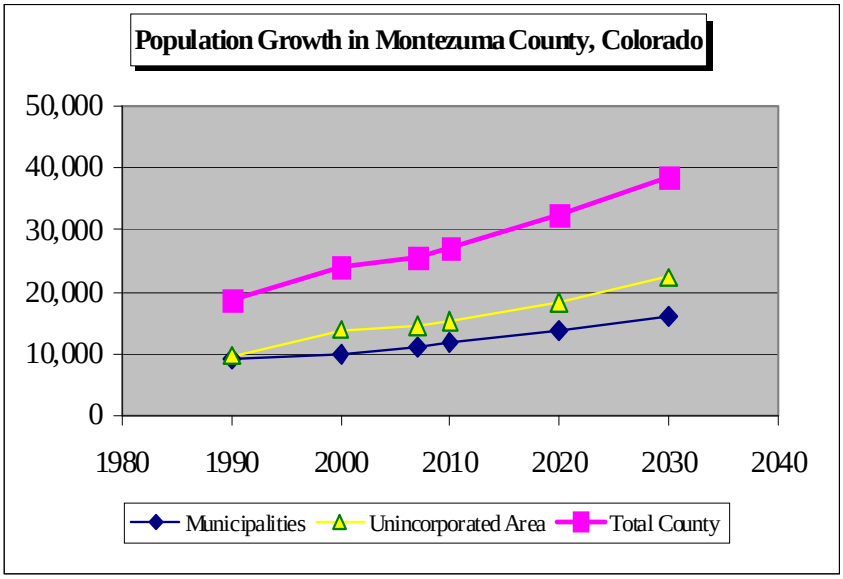
Population by Service Area

U.S. Census Bureau data on Montezuma County population in 1990 and 2000 are shown in Figure A3, along with 2007 population estimates from the Colorado State Demography Office. Population share has decreased slightly over time in the municipalities and this trend is expected to continue until 2030. The 2030 countywide population projection is from the State Demography Office (11/08).

Figure A3 – Montezuma County Population by Service Area

	1990	*2000*	*2007*	*2010*	*2020*	*2030*
Total County	18,732	23,864	25,561	26,969	32,246	38,556
Municipalities	8,992	9,953	11,131	11,869	13,866	16,196
Unincorporated Area	9,740	13,911	14,430	15,100	18,380	22,360
Share in Municipalities	48.0%	41.7%	43.5%	44.0%	43.0%	42.0%
Share in Unincorporated	52.0%	58.3%	56.5%	56.0%	57.0%	58.0%

Source: U.S. Census Bureau data for 1990 and 2000.
Colorado State Demography Office estimates for 2007.
Total County projection for 2030 from State Demography Office (11/08).



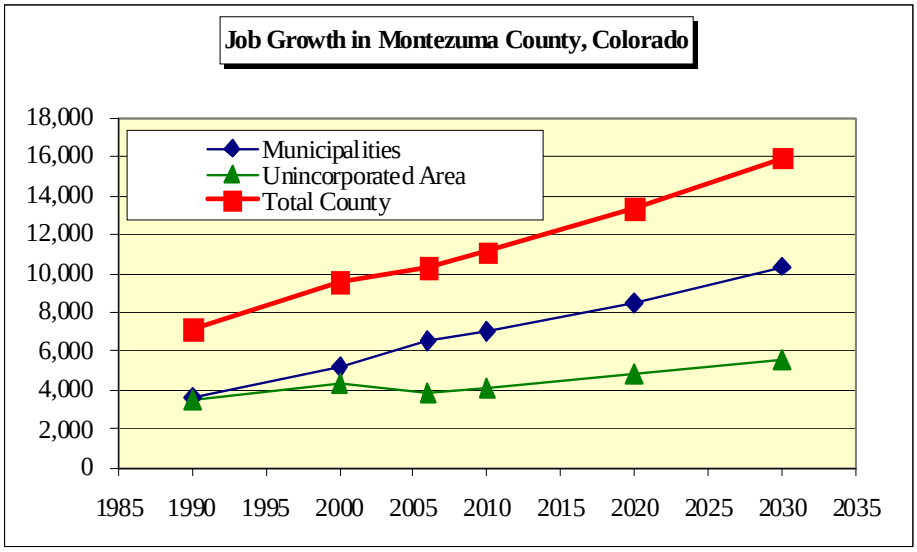
Jobs by Place of Work

In addition to data on residential development, the calculation of impact fees requires data on nonresidential development. TischlerBise uses the term "jobs" to refer to employment by place of work. Similar to the population share evaluation discussed above, countywide jobs are shown in Figure A4 along with the job allocation to the municipalities and unincorporated area. The 2030 countywide job projection is from Woods & Poole Economics (2008). Job data by geographic area in 2006 are from the Longitudinal Employer-Household Dynamics web application provided by U.S. Census Bureau (http://lehdmap3.did.census.gov/themap3/). The impact fee study assumes the municipalities will experience a slight increase in job share in the future.

Figure A4 – Montezuma County Jobs by Service Area

	1990	*2000*	*2006*	*2010*	*2020*	*2030*
Total County	7,114	9,535	10,323	11,099	13,304	15,946
Municipalities	3,648	5,228	6,482	6,989	8,514	10,366
Unincorporated Area	3,466	4,307	3,840	4,110	4,790	5,580
Share in Municipalities	51.3%	54.8%	62.8%	63.0%	64.0%	65.0%
Share in Unincorporated	48.7%	45.2%	37.2%	37.0%	36.0%	35.0%

Source: Total County data from Woods & Poole Economics (2008).
2006 share in municipalities from US Census Bureau, LED Origin-Destination Database retrieved from On The Map 3 web application.



Nonresidential Demand Indicators

To convert job projections to gross floor area of nonresidential development, TischlerBise used average square feet per employee multipliers, as shown in Figure A5. The employee to building area ratios are derived using national data published by the Institute of Transportation Engineers (ITE 2008) and the Urban Land Institute (ULI). In the impact fee study, average weekday vehicle trip ends per demand unit (e.g., one thousand square feet of floor area, beds, students or rooms) will be used to differentiate fees by type of nonresidential development. In the table below, gray shading indicates three nonresidential development prototypes used by TischlerBise to calculate vehicle trips and potential impact fee revenue. The prototype for retail and/or restaurant jobs is a shopping center with 328,000 square feet of floor area (i.e. the average of all the shopping centers in the ITE database). For other services, the prototype is a general office building. The average size of all office buildings in the ITE database is 199,000 square feet. For goods-producing jobs, the prototype is light industrial.

Figure A5 – Employee and Building Area Ratios

ITE Code	*Land Use / Size*	*Demand Unit*	*Wkdy Trip Ends Per Dmd Unit**	*Wkdy Trip Ends Per Employee**	*Emp Per Dmd Unit***	*Sq Ft Per Emp*
Commercial / Retail / Restaurant						
820	**Avg Shopping Center**	**1,000 Sq Ft**	**42.94**	**na**	**2.00**	**500**
857	Discount Club	1,000 Sq Ft	41.80	32.21	1.30	771
General Office						
710	**Average Size**	**1,000 Sq Ft**	**11.01**	**3.32**	**3.32**	**302**
Other Nonresidential						
770	Business Park***	1,000 Sq Ft	12.76	4.04	3.16	317
760	Research & Dev Center	1,000 Sq Ft	8.11	2.77	2.93	342
610	Hospital	1,000 Sq Ft	16.50	5.20	3.17	315
565	Day Care	student	4.48	28.13	0.16	na
550	University/College	student	2.38	9.13	0.26	na
530	High School	student	1.71	19.74	0.09	na
520	Elementary School	student	1.29	15.71	0.08	na
520	Elementary School	1,000 Sq Ft	15.43	15.71	0.98	1,018
320	Lodging	room	5.63	12.81	0.44	na
254	Assisted Living	bed	2.66	3.93	0.68	na
150	Warehousing	1,000 Sq Ft	3.56	3.89	0.92	1,093
140	Manufacturing	1,000 Sq Ft	3.82	2.13	1.79	558
110	**Light Industrial**	**1,000 Sq Ft**	**6.97**	**3.02**	**2.31**	**433**

* Trip Generation, Institute of Transportation Engineers, 2008.

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

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

Figure A6 indicates jobs in Montezuma County, along with the share by nonresidential prototype, in 2006 and projected for 2030. Projected job share increases over time for Other Services such as health care, social assistance, professional, scientific, and technical services.

Figure A6 – Montezuma County Jobs by Industry Type

	2006 Jobs	*2006 Share (1)*	*2030 Jobs*	*2030 Share (1)*
Goods Production	2,768	26.8%	3,726	23.4%
Retail / Restaurant (2)	2,087	20.2%	2,589	16.2%
Other Services	5,468	53.0%	9,632	60.4%
TOTAL	10,323		15,946	

(1) Percentage of jobs from Woods & Poole Economics (2008).
(2) Includes Accommodation & Food Services (2-digit NAICS).

Development Projections

Key countywide demographic data for the impact fee study are shown in Figure A7. Cumulative data are shown in the top section and annual increases at the bottom of the table. Population and job projections between the base year and 2030 were derived using exponential growth curves that yield slower annual increases in the short-term. Population was converted to housing units using a constant persons-per-housing unit ratio derived from year 2000 U.S. Census Bureau data for Montezuma County.

Jobs were converted to square feet of nonresidential floor area, measured in thousands and abbreviated "KSF", using the multipliers shown above. From 2008 to 2030, countywide nonresidential floor area is projected to increase by approximately 80,000 square feet per year in Montezuma County, as shown in the lower-right corner of the table below.

Figure A7 – Detailed Countywide Demographic Data

Montezuma Co., CO	2000	2009	2010	2011	2012	2013	2014	2019	2030
		Base Year							
Cumulative			1	2	3	4	5	10	21
Year-Round Population	23,830	26,491	26,969	27,455	27,950	28,454	28,967	31,675	38,556
Jobs	9,535	10,900	11,099	11,302	11,508	11,719	11,933	13,065	15,946
Housing Units	10,497	11,670	11,881	12,095	12,313	12,535	12,761	13,954	16,985
Jobs to Housing Ratio	0.91	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.94
Persons per Hsg Unit	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
Nonres Sq Ft (x 1,000)									
Goods Producing		1,250	1,270	1,280	1,300	1,320	1,340	1,420	1,610
Retail / Restaurant		1,070	1,090	1,100	1,110	1,120	1,130	1,180	1,290
Other Services		1,810	1,860	1,910	1,970	2,020	2,070	2,330	2,910
Total		4,130	4,220	4,290	4,380	4,460	4,540	4,930	5,810
Avg Sq Ft Per Job		379	380	380	381	381	380	377	364

Annual Increase	09-10	10-11	11-12	12-13	13-14	14-15	19-20	2009 to 2030 Increase
Year-Round Population	478	486	495	504	513	522	571	12,065
Jobs	199	203	207	210	214	218	239	5,046
Housing Units	211	214	218	222	226	230	251	5,315
Goods Producing KSF*	20	10	20	20	20	10	20	360
Retail / Restaurant KSF*	20	10	10	10	10	10	10	220
Other Services KSF*	50	50	60	50	50	50	50	1,100
							Total KSF Increase =>	1,680
							Avg Anl KSF Increase =>	80

* *KSF = square feet of floor area in thousands.*

APPENDIX B – PASS-BY TRIP ADJUSTMENT FACTORS

Abstract

For commercial developments, trip generation rates are only one of the steps needed to determine traffic impacts. Because commercial developments attract vehicles passing by on adjacent streets, pass-by trip percentages reduce trip generation rates to more accurately assess travel demand. The following meta-analysis documents a methodology for deriving pass-by trip percentages based on the floor area of a commercial development. A fitted curve equation is provided using data from traffic studies published in the second edition of Trip Generation Handbook (ITE, 2004). The recommended methodology is suitable for impact fees, which are derived using average characteristics of the transportation system.

Purpose

Transportation impact fees typically rely on trip generation rates published by the Institute of Transportation Engineers (ITE). For shopping centers, trip generation rates are derived from a formula using floor area as the independent variable. The fitted curve is a logarithmic equation that yields declining vehicle trip rates per thousand square feet as shopping center size increases. However, trip generation alone does not provide a complete evaluation of traffic impacts due to pass-by and diverted trips to commercial developments. Because diverted trips still increase vehicle miles of travel, transportation impact fees apply pass-by trip adjustments or derive the "percentage of new trips" associated with new development (Oliver, 1991; Tindale, 1991). This article provides a methodology for deriving pass-by trip percentages from the floor area of commercial development. The analysis of pass-by trip percentages from traffic studies reported in Trip Generation Handbook (ITE, 2004) indicates a similar relationship to the trip generation formula for shopping centers. This Appendix specifies the decline in pass-by trip percentages as commercial floor area increases.

Literature Review

The literature review in this section is discussed in chronological order beginning with the 1991 version of Trip Generation. In Table VII-1, pass-by trip percentages were reported for 67 shopping centers ranging in size from 44,000 to 1,200,000 square feet. These data indicate a decline in pass-by trip percentages as shopping center size increases. During 1991 and 1992, ITE also published four journal articles on the topic of pass-by trips and how these adjustments could be applied in the calculation of impact fees.

In March of 1991, Moussavi and Gorman examined how pass-by trip percentages were influenced by building size and the average daily traffic on adjacent streets. Their findings regarding the relationship between average daily trips on adjacent streets and pass-by percentages are not relevant to general impact fee formulas that estimate average travel characteristics for an entire service area. Although limited to an analysis of only 12 sites, their regression analysis did confirm that floor area is a strong predictor of pass-by trips for discount stores, but not grocery stores. Because traditional grocery stores and the more modern day version known as "discount supermarkets" tend to attract more primary trips than other comparably sized stores, this study excludes these development types.

In April of 1991, William Oliver discussed how to determine average trip length from survey data and then use the results in transportation impact fees. A key concept from this article is the idea that impact fees should only assess for the percentage of new trips attributable to new development, after accounting for internal trip capture, diverted and pass-by trips. The methodologies described by Oliver are useful for individual impact fee assessments of large-scale development, but they do not address more universal adjustments for pass-by trips, which is the focus of this meta-analysis.

In May of 1991, Steven Tindale provided a detailed discussion of various technical issues related to transportation impact fees, including trip capture. The article is similar to Oliver's in advocating original data collection to establish trip rates, lengths and percentage of new trips. However, due to time and budget constraints, most jurisdictions derive impact fees using input variables readily available from regional, state or national sources such as Trip Generation.

In May of 1992, Moussavi and Gorman provide a follow-up "refinement" to their 1991 article. One of the suggested refinements incorporated into the research presented below, was to use logarithmic, rather than linear regression.

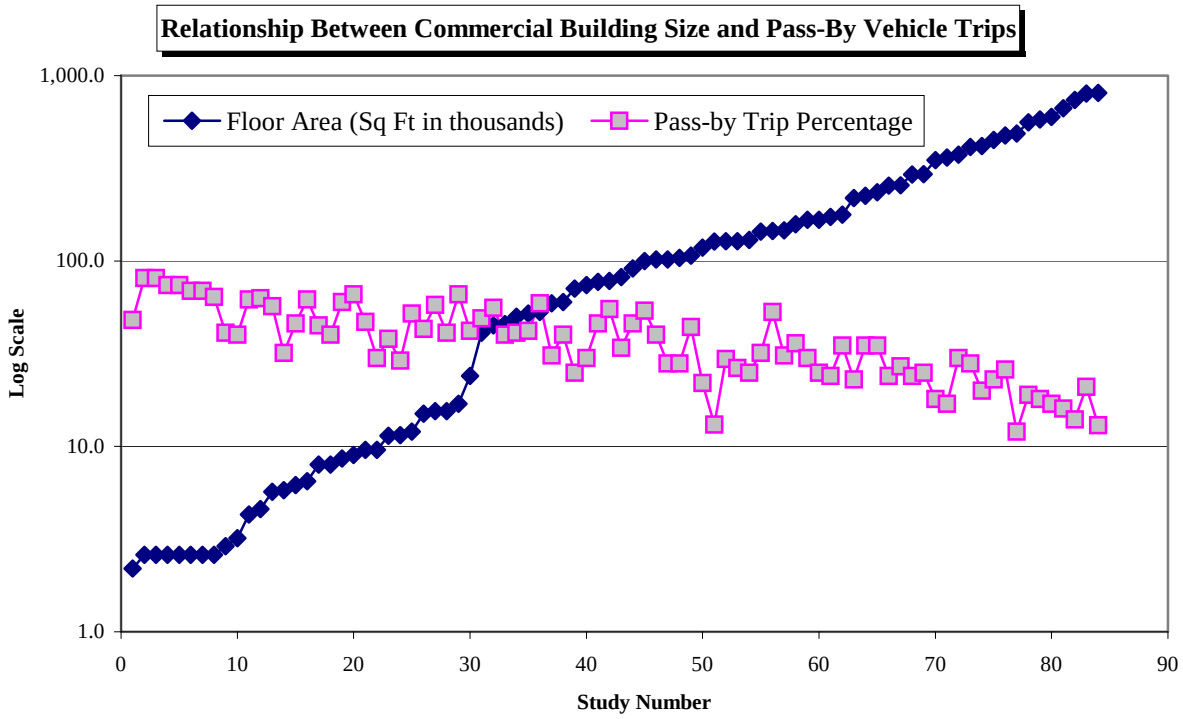
The second edition of Trip Generation Handbook (ITE, 2004), provides a data plot of average pass-by trip percentage based on gross leasable floor area of a shopping center. The fitted curve equation shown in Figure 5.5 of the ITE Handbook indicates a fitted logarithmic curve with an R-squared value of 0.37. The analysis presented below improves the "goodness" of fit, yielding an R-squared value of approximately 0.64.

Analysis

The general relationship between commercial building size and pass-by vehicle trips is illustrated in Figure B1. When commercial floor area, measured in thousands of square feet, is plotted on a log scale and rank-ordered, it is clear that increasing commercial building size decreases the pass-by trip percentage. In other words, small retail

establishments, like a convenience store have higher pass-by trip percentages than large regional shopping malls.

FIGURE B1



To improve the correlation between commercial building size and pass-by trip percentage, this study used the following criteria. First, the number of interviews reported by a traffic study had to have at least 96 interviews, which ensures a maximum error of 10% in the mean at a 95% level of confidence (see Appendix B in Meyer and Miller, 2001). Second, the traffic study had to report a specific floor area of at least 1,000 square feet, rather than a floor area range. Third, traffic surveys included in the database are not older than 1989. The studies prior to 1989 include very large shopping centers of approximately one million square feet, which are rarely constructed in the current real estate market. Fourth, for consistency this analysis only includes PM-peak hour data.

Figure B2 provides a summary of the pass-by trip database, indicating types of development, the number of studies for each type, average floor area (in thousands of square feet) and average pass-by trip percentage. Shopping centers account for almost half of the studies and had the largest floor area, averaging 280,000 square feet. In total, the 84 studies analyzed had an average floor area of 159,000 square feet and an average of 39% pass-by trips.

FIGURE B2

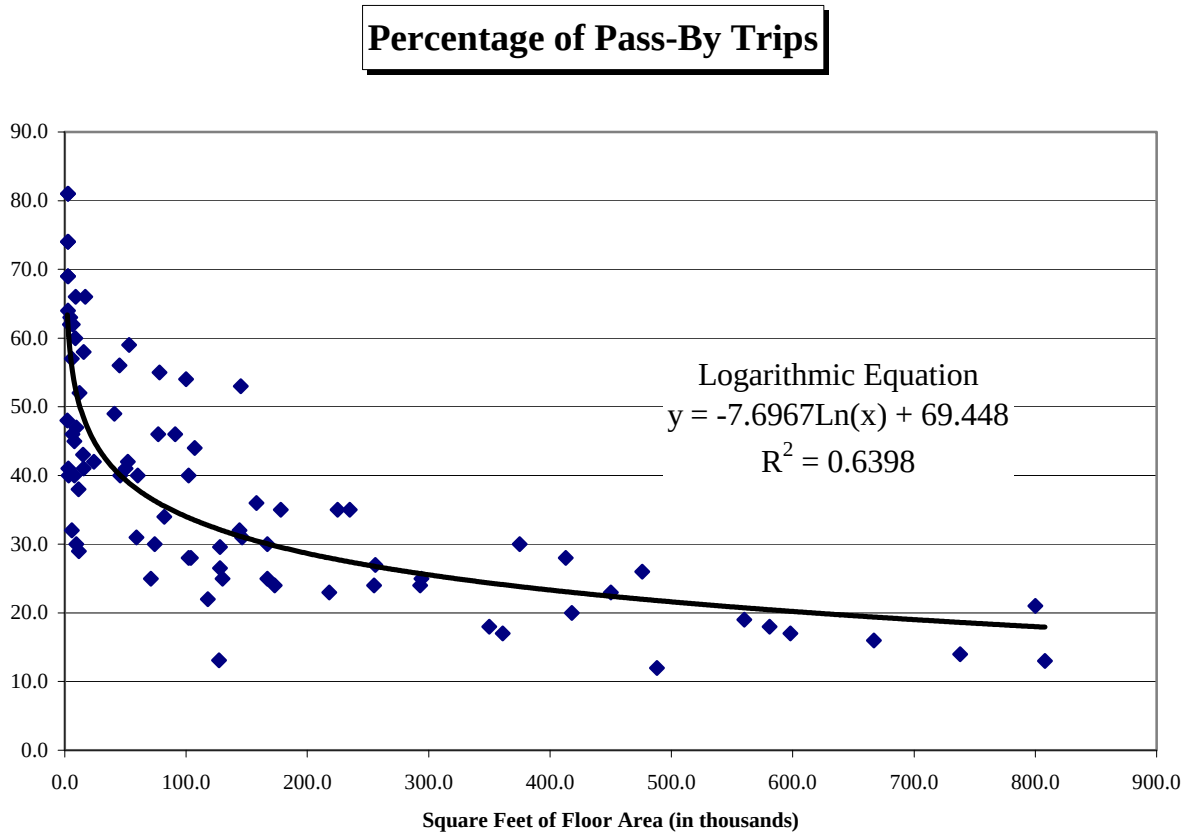
Summary of Pass-By Trips Database

ITE Code	*Description*	*# of Studies*	*AvgSqFt (thousands)*	*AvgPass-By Trip Pct*
813	Free-Standing Discount Superstore	8	151	28
815	Free-Standing Discount Store	3	128	23
820	Shopping Center	40	280	31
843	Automobile Parts Sales	1	15	43
851	Convenience Market	4	3	72
853	Convenience Market w Gas Pumps	4	3	68
862	Home Improvement Superstore	3	99	48
863	Electronics Superstore	1	46	40
880	Pharmacy/Drugstore w/o Window	3	10	47
881	Pharmacy/Drugstore w Drive-Through	3	14	49
890	Furniture Store	2	33	46
931	Quality Restaurant	2	7	54
932	High-Turnover Restaurant	7	8	44
934	Fast-Food with Drive-Through	3	3	48
	TOTAL	84	159	39

Studies in the database meet the following criteria: 1) PM-peak data; 2) Traffic survey in 1989 or afterwards; 3) Floor area at least 1,000 square feet; 4) Sample size of at least 96 interviews, which ensures a maximum error of 10% in the mean at a 95% level of confidence.

Figure B3 indicates a scatter plot of floor area versus percentage of pass-by trips. The best trend-line correlation between pass-by trips and floor area is a logarithmic curve with the equation ((-7.6967*LN(KSF)) + 69.448). The R-squared value for this curve is 0.6398, indicating the floor area accounts for approximately 64% of the variation in pass-by trip percentage.

FIGURE B3



The fitted curve equation allows a specific pass-by trip estimate for any size commercial building. To illustrate the change in trip generation rates and pass-by trips by size of commercial development, Figure B4 provides data for seven building-size thresholds ranging from 10,000 to 800,000 square feet of floor area.

FIGURE B4

Trip Rates and Adjustment Factors by Size Threshold

Floor Area in thousands (KSF)	***Shopping Centers*** (ITE 820 Weekday*)		Commercial Pass-by Trips**	Commercial Trip Adj Factor***
	Trip Ends	Rate/KSF		
10	1,520	152.03	52%	24%
25	2,758	110.32	45%	28%
50	4,328	86.56	39%	31%
100	6,791	67.91	34%	33%
200	10,656	53.28	29%	36%
328	Average Size	42.94	25%	38%

* Trip Generation, ITE, 2008.
** 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).
*** To convert trip ends to vehicle trips, the standard adjustment factor is 50%. Due to pass-by trips, commercial trip adjustment factors are lower, as derived from the following formula (0.50*(1-passby pct)).

To avoid double counting the same vehicle trip at both the origin and destination points, transportation impact fees typically convert trip ends to trips using a standard adjustment factor of 50%. For commercial development, trip adjustment factors are less than 50% because retail development and some services (like banks) attract vehicles as they pass by on arterial and collector roads. As shown above, for a small-size commercial development with 10,000 square feet of floor area, an average of 52% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 48% of attraction trips have the commercial development as their primary destination. Because attraction trips are half of all trips, the commercial trip adjustment factor is 48% multiplied by 50%, or approximately 24% of the trip ends.

Conclusions

The methodology presented above significantly improves the "goodness" of fit between the independent variable of commercial floor area and the dependent variable of pass-by trip percentage. Commercial trip adjustment factors may be derived for any size commercial building using the recommended logarithmic regression, thus avoiding the use of a simple average pass-by trip percentage for an individual ITE land use code. The recommended methodology also avoids the small sample-size problem that currently exists for most of the ITE land use codes that only provide pass-by data for a limited number of traffic studies. The recommended use of pass-by trip adjustment factors by size of commercial development will improve transportation impact fees that are intended to proportionately allocate the cost of growth-related infrastructure to new development.

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APPENDIX C - IMPLEMENTATION AND ADMINISTRATION

TischlerBise recommends that Montezuma County prepare annual reports on impact fee collections, expenditures, and fund balance at the close of the fiscal year. To ensure reasonable benefit to fee payers, Montezuma County will begin construction of system improvements within five years of collection and limit expenditures to growth-related system improvements in Montezuma County's CIP. It is not necessary to track fee collections and expenditures on a project-specific basis. Rather, the common approach is to consider the first funds into the account as first funds out of the account.

Credits and Reimbursements

A general requirement common to impact fees is the evaluation of credits. A revenue credit may be necessary to avoid potential double payment situations arising from one-time impact fees plus the payment of other revenues that may also fund growth-related capital improvements. The determination of credits is dependent upon the methodology used in the cost analysis. There are three basic approaches used to calculate impact fees and each is linked to different credit methodology. If Montezuma County makes a legislative policy decision to fully fund growth-related system improvements using road impact fees, there will be no potential double payment from other revenue sources.

Specific policies and procedures related to site-specific credits or developer reimbursements should be addressed in the ordinance that establishes the impact fees. Project-level improvements (required as part of the development approval process) are not eligible for credits against impact fees. If a developer constructs a system improvement, it will be necessary to either reimburse the developer or provide a credit against the impact fees. The latter option is more difficult to administer because it creates unique charges for specific geographic areas.

Based on TischlerBise's experience, it is 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 ten 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 impact fee analysis. If the jurisdiction pays more than the cost used in the impact fee analysis, there will be insufficient revenue. Reimbursement agreements should only obligate the jurisdiction to reimburse

developers annually from fees collected in the benefiting area. Site specific credits or developer reimbursements for one type of system improvement does not negate payment of fees for other system improvements.

Nonresidential Development Categories

The nonresidential development categories listed in the impact fee schedules will cover a majority of the new construction anticipated within the study area. Nonresidential development categories are based on land use classifications from the book Trip Generation (ITE, 2008). For unique developments, a jurisdiction may allow or require documentation of reasonable demand indicators to facilitate an impact fee determination, consistent with the methodologies and factors documented in this report.

Even though churches are a common type of development, they do not have a specific impact fee category due to a lack of sufficient data. The Institute of Transportation Engineers does not publish trip rates per church employee and the weekday trip generation rate per 1,000 square feet of floor area is not based on enough studies to be statistically valid. For churches and any other atypical development, staff must establish a consistent administrative process to reasonably treat similar developments in a similar way. When presented with a development type that does not match one of the development categories in the published fee schedule, staff should first look in the ITE manual to see if there is land use category with valid trip rates that match the proposed development. The second option is to determine the published category that is most like the proposed development. Churches without daycare or schools are basically an office area (used throughout the week) with a large auditorium and class space (used periodically during the week). Some jurisdictions make a policy decision to impose impact fees on churches based on the fee schedule for warehouses or mini-warehouses. The rationale for this policy is the finding that churches are large buildings that generate little weekday traffic and only have a few full time employees. A third option is to impose impact fees on churches by breaking down the building floor area into its primary use. For example, a church with 25,000 square feet of floor area may have 2,000 square feet of office space used by employees throughout the week. At a minimum, impact fees could be imposed on the office floor area. An additional impact fee amount could be imposed for the remainder of the building based on the rate for a warehouse or mini-warehouse. The key consideration in administrative decisions is to be reasonable and consistent. If an applicant thinks the administrative decision is not reasonable, it is appealed to the elected officials for their consideration.