Laramie County
Transportation Impact Fee Study

Submitted to:
Cheyenne MPO

October 31, 2024

Prepared by:

TischlerBise
FISCAL | ECONOMIC | PLANNING

4701 Sangamore Road
Suite S240
Bethesda, Maryland 20816
800.424.4318
www.tischlerbise.com

[Page Intentionally left blank]

Transportation Impact Fee Study

Laramie County, Wyoming

[Page Intentionally left blank]

EXECUTIVE SUMMARY

The Cheyenne MPO retained TischlerBise, Inc. to calculate the impact fees to be imposed on new development to meet the new demands generated for transportation infrastructure in Laramie County, WY. It is the intent of the Cheyenne MPO and Laramie County to evaluate and establish impact fees for roadway expansion. This report presents the methodologies and calculations used to generate current levels of service and maximum supportable impact fees. It is intended to serve as supporting documentation for the evaluation and establishment of impact fees in Laramie County.

Impact fees are one-time payments used to construct system improvements needed to accommodate new development. An impact fee represents new growth's fair 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 evaluated possible methodologies and documented appropriate demand indicators by type of development for the levels of service and fees. Local demographic data and improvement costs were used to identify specific capital costs attributable to growth. This report includes summary tables indicating the specific factors, referred to as level of service standards, used to derive the impact fees.

The geographic area for the transportation impact fees is the unincorporated county. Laramie County does not intend to collect the impact fees within the cities and growth within the cities are considered to have negligible demand on the road network in unincorporated county. The Transportation Impact Fee study uses an incremental expansion approach to calculate the maximum supportable impact fee and attributes costs to land uses based on vehicle trip rates.

Figure 1. Transportation Impact Fee Methods and Cost Components

Types of Improvement	Service Area	Cost Recovery	Incremental Expansion	Plan-Based	Cost Allocation
Transportation	Unincorporated County	-	Roadway Expansion	-	Vehicle Trips

Transportation Impact Fees by Type of Land Use

As documented in this report, Laramie County has complied with applicable legal precedents. The Transportation Impact Fee schedule is proportionate and reasonably related to the cost of capital improvements needed to accommodate new development. Specific costs have been identified using

local data and current dollars. With input from County staff, TischlerBise determined demand indicators for transportation capacity and calculated proportionate share factors to allocate costs by type of development. The Transportation Impact Fee methodology also identifies the extent to which new development is entitled to various types of credits to avoid potential double payment of growth-related capital costs.

Figure 2 shows the maximum supportable Transportation Impact Fee schedules. The fees for residential development are to be assessed per housing unit based on type. For nonresidential development, the fees are assessed per square foot of floor area (for illustrative purposes the nonresidential fee is listed per 1,000 square feet of development). Nonresidential development categories are consistent with the terminology and definitions contained in the reference book, Trip Generation 11th Edition, published by the Institute of Transportation Engineers. These definitions are provided in the Appendix A. Land Use Definitions

Figure 2. Maximum Supportable Transportation Impact Fee

Housing Type	Veh. Trip per Unit	Maximum Supportable Fee
Residential (per housing unit)		
Single Family	5.33	**$1,418**
Multifamily	2.13	**$567**

Development Type	Veh. Trip per KSF	Maximum Supportable Fee
Nonresidential (per 1,000 square feet)		
Retail	14.06	**$3,740**
Office	5.42	**$1,442**
Industrial	2.44	**$649**
Institutional	5.39	**$1,434**

GENERAL IMPACT FEE REQUIREMENTS

Impact fees are one-time payments imposed on new development that must be used solely to fund growth-related capital projects, typically called "system improvements." An impact fee represents new growth's proportionate share of capital facility needs. In contrast to project-level improvements, impact fees fund infrastructure that will benefit multiple development projects, or even the entire service area, as long as there is a reasonable relationship between the new development and the need for the growth-related infrastructure. Project-level improvements, typically specified in a development agreement, are usually limited to transportation improvements near a proposed development, such as ingress/egress lanes.

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

There is little federal case law specifically dealing with impact fees, although other rulings on other types of exactions (e.g., land dedication requirements) are relevant. In one of the most important exaction cases, the U. S. Supreme Court found that a government agency imposing exactions on development must demonstrate an "essential nexus" between the exaction and the interest being protected (see Nollan v. California Coastal Commission, 1987). In a more recent case (Dolan v. County of Tigard, OR, 1994), the Court ruled that an exaction also must be "roughly proportional" to the burden created by development.

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

All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the capacity of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Development impact fees may be used to cover the cost of development-related facilities, but only to

the extent that the need for facilities is a consequence of development that is subject to the fees. The Nollan decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle likely applies to impact fees. In this study, the impact of development on infrastructure needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific facilities, based on applicable level-of-service standards.

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

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

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

Impact Fee Methodologies

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

Reduced to its simplest terms, the process of calculating infrastructure costs for new development involves two main steps: (1) determining the cost of development-related capital improvements and (2)

allocating those costs equitably to various types of development. In practice, Transportation Impact Fee calculations can become quite complicated because of many variables involved in defining the relationship between development and the need for facilities within the designated service area. The following sections discuss three basic methods.

COST RECOVERY (PAST IMPROVEMENTS)

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

INCREMENTAL EXPANSION (CONCURRENT IMPROVEMENTS)

The incremental expansion method documents current level-of-service (LOS) standards for each type of public facility, using both quantitative and qualitative measures. New development is only paying its proportionate share for growth-related infrastructure needed to maintain current standards. Revenue will be used to expand or provide additional facilities, as needed to keep pace with new development.

PLAN-BASED (FUTURE IMPROVEMENTS)

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

CREDITS

Regardless of the methodology, a consideration of "credits" is integral to the development of a legally defensible impact fee methodology. There are two types of "credits" with specific characteristics, both of which should be addressed in development impact fee studies and ordinances. The first is a revenue credit due to possible double payment situations, which could occur when other revenues may contribute to the capital costs of infrastructure covered by the impact fee. This type of credit is integrated into the impact fee calculation, thus reducing the fee amount. The second is a site-specific credit or developer reimbursement for dedication of land or construction of system improvements. This type of credit is addressed in the administration and implementation of the impact fee program.

TRANSPORTATION IMPACT FEE

Laramie County Transportation Impact Fees are calculated using an incremental approach for roadway capacity improvements. The current level of service is determined with the existing arterial centerline miles and demand on the road network.

SERVICE AREA

The geographic area for the transportation impact fees is the unincorporated county. Laramie County does not intend to collect the impact fees within the cities and growth within the cities are considered to have negligible demand on the road network in unincorporated county.

SERVICE UNITS

To ensure the transportation impact fees are proportionate, the residential fees are based on vehicle trips rates per housing unit and the nonresidential fees are based on vehicles trip rates per 1,000 square feet of floor area.

Trip Generation Rates

The 2024 Transportation Impact Fee is based on average weekday vehicle trip ends (AWVTE). For residential development, trip rates are customized using demographic data for Laramie County, as documented in Appendix B. For nonresidential development, trip generation rates are from the reference book *Trip Generation* published by the Institute of Transportation Engineers (ITE 11th Edition, 2021).

A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate transportation fees, trip generation rates require an adjustment factor to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor is 50 percent for industrial, institutional, and office development. As discussed further below, the Transportation Impact Fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

For retail development, the trip adjustment factor is less than 50 percent because such development attract vehicles as they pass by on arterial roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, ITE indicates that 25 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 75 percent of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 75 percent multiplied by 50 percent, or approximately 38 percent of the trip ends.

Figure 3 lists the summary of AWVTE and trip adjustment factors and the resulting daily vehicle trip rates. Further detail of these factors can be found in the Appendix B.

Figure 3. Vehicle Trip Rates by Land Use

Land Use	ITE Codes	Daily Vehicle Trip Ends	Trip Adj. Factor	Daily Vehicle Trips
Residential (per housing unit)				
Single Family	210	10.05	53%	**5.33**
Multifamily	220	4.01	53%	**2.13**
Nonresidential (per 1,000 square feet)				
Retail	820	37.01	38%	**14.06**
Office	710	10.84	50%	**5.42**
Industrial	110	4.87	50%	**2.44**
Institutional	610	10.77	50%	**5.39**

Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021); National Household Travel Survey, 2009

Current Transportation Level of Service

The first step in determining the current level of service is to calculate the current demand. The base year (2024) vehicle trips are found by combining the vehicle trip rates and base year housing units and nonresidential floor area. Shown in Figure 4 there is an estimated total of 100,400 vehicle trips, the majority from residential development.

Figure 4. Current Base Year Vehicle Trips

Unincorporated Laramie County, WY	Base Year 2024
Residential Trips	
Single Family	79,402
Multifamily	980
Subtotal	80,382
Nonresidential Trips	
Retail	8,651
Office	1,844
Industrial	7,056
Institutional	2,467
Subtotal	20,018
Vehicle Trips	
Grand Total	100,400

Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

There are currently 25.25 arterial centerline miles in unincorporated areas that are maintained by Laramie County. The road network is compared to the total vehicle trips to find a current level of service of 2.515 centerline miles per 10,000 vehicle trips (25.25 centerline miles / 100,400 vehicle trips = 2.515 miles per 10,000 vehicle trips).

Figure 5. Current Transportation Level of Service

Level of Service Analysis	
Arterial Centerline Miles	25.25
Unincorporated Vehicle Trips	100,400
Centerline Mile per 10,000 Veh. Trips	**2.515**

Capital Cost per Vehicle Trip

In Figure 6 the current level of service is multiplied by the current construction cost to find the capital cost per vehicle trip. Based on a recent bid for reconstruction of County Road 142, the current cost for roadway construction is $1,059,000 per mile. As a result, there is a capital cost per vehicle trip of $266 (2.515 miles per 10,000 vehicle trips x $1,059,000 per mile = $266 per vehicle trip).

Figure 6. Capital Cost per Vehicle Trip

Level of Service Analysis

Arterial Centerline Miles	25.25
Unincorporated Vehicle Trips	100,400
Centerline Mile per 10,000 Veh. Trips	**2.515**

Cost Analysis

Centerline Mile per 10,000 Veh. Trips	2.515
Construction Cost per Arterial Mile [1]	$1,059,000
Capital Cost per Vehicle Trip	**$266**

Source: CR 142 reconstruction project

10-Year Growth-Related Need for Roadway Expansion

Over the next ten years, the unincorporated areas of Laramie County are projected to increase by 29,087 vehicle trips. In Figure 7, the growth-related need for roadway expansions is found by applying the current level of service to the projected growth (29,087 vehicle trips x 2.515 miles per 10,000 vehicle trips = 7.31 miles). Based on current construction costs, the 10-year growth-related need is $7.7 million.

Figure 7. Projected Vehicle Trips in Unincorporated Laramie County

Infrastructure	Level of Service		Demand Unit	Cost/Unit
Arterial Centerline	2.515	miles	per 10,000 trips	$1,059,000

Growth-Related Need for Arterial Centerline			
Year		Unincorporated Vehicle Trips	Arterial Centerline Miles
Base	2024	100,400	25.25
Year 1	2025	103,309	25.98
Year 2	2026	106,216	26.71
Year 3	2027	109,125	27.44
Year 4	2028	112,035	28.17
Year 5	2029	114,947	28.90
Year 6	2030	117,851	29.63
Year 7	2031	120,761	30.37
Year 8	2032	123,671	31.10
Year 9	2033	126,577	31.83
Year 10	2034	129,487	32.56
Ten-Year Increase		29,087	**7.31**
		Projected Expenditure	**$7,741,290**

Growth-Related Expenditures for Arterial Centerline	**$7,741,290**

Revenue Credit Evaluation

A credit for other revenues is only necessary if there is potential double payment for system improvements. In Laramie County, sales tax revenue is being used for maintenance of existing facilities, correcting existing deficiencies, and for capital projects that are not Transportation Impact Fee system improvements. As shown later in Figure 9, Transportation Impact Fee revenue over the next ten years mitigates the growth-related share of the roadway capacity needs. Thus, there is no potential double payment from other revenues to fund the growth cost of roadway capacity projects.

Input Variables for Transportation Impact Fee

A summary of inputs for the roadway capacity component of the Transportation Impact Fee program are detailed in Figure 8. The residential fees are based on vehicle trips rates per housing unit and the nonresidential fees are based on vehicles trip rates per 1,000 square feet of floor area. For example, the single family fee is $1,418 per unit (5.33 vehicle trips x $266 per vehicle trip = $1,418 per unit).

The fees represent the highest supportable amount for each type of applicable land use and represents new growth's fair share of the cost for capital facilities. The County may adopt fees that are less than the amounts shown. However, a reduction in Transportation Impact Fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure 8. Maximum Supportable Transportation Impact Fee

Fee Component	Cost per Veh. Trip
Roadway Capacity	$266
Gross Total	**$266**
Net Total	**$266**

Housing Type	Veh. Trip per Unit	Maximum Supportable Fee
Residential (per housing unit)		
Single Family	5.33	**$1,418**
Multifamily	2.13	**$567**

Development Type	Veh. Trip per KSF	Maximum Supportable Fee
Nonresidential (per 1,000 square feet)		
Retail	14.06	**$3,740**
Office	5.42	**$1,442**
Industrial	2.44	**$649**
Institutional	5.39	**$1,434**

Revenue Projection from Maximum Supportable Fee Amounts

This section summarizes the potential cash flow to Laramie County if the Transportation Impact Fee is implemented at the maximum supportable amounts. The cash flow projections are based on the assumptions detailed in this chapter and the development projections discussed in Appendix B – Land Use Assumptions.

At the top of Figure 9, the cost of growth over the next ten years is listed. The summary provides an indication of the Transportation Impact Fee revenue generated by new development. Shown at the bottom of the figure, the maximum supportable Transportation Impact Fee is estimated to generate $7.7 million in revenue while there is a growth-related cost of $7.7 million, offsetting about 100 percent of the growth-related costs. The remaining gap is the result of rounding in the analysis.

Figure 9. Projected Revenue from Maximum Supportable Transportation Impact Fee

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
Roadway Capacity	$7,741,290	$7,741,290
Total Expenditures	**$7,741,290**	**$7,741,290**

Projected Development Impact Fee Revenue

Year		Single Family $1,418 per unit	Multifamily $567 per unit	Retail $3,740 per KSF	Office $1,442 per KSF	Industrial $649 per KSF	Institutional $1,434 per KSF
		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	14,907	461	615	340	2,898	458
1	2025	15,409	472	623	344	2,923	460
2	2026	15,910	484	632	349	2,948	462
3	2027	16,412	495	640	353	2,972	464
4	2028	16,914	506	649	357	2,997	466
5	2029	17,416	518	657	361	3,022	469
6	2030	17,917	529	665	366	3,047	471
7	2031	18,419	540	674	370	3,072	473
8	2032	18,921	551	682	374	3,097	475
9	2033	19,422	563	690	378	3,122	477
10	2034	19,924	574	699	383	3,147	479
Ten-Year Increase		5,017	113	84	42	249	21
Projected Revenue		$7,114,106	$64,071	$312,640	$61,136	$161,747	$29,744

Projected Revenue	**$7,714,000**
Total Expenditures	**$7,741,000**
Non-Impact Fee Funding	**$27,000**

IMPLEMENTATION AND ADMINISTRATION

Development impact fees should be periodically evaluated and updated to reflect recent data. One approach is to adjust for inflation using Engineering News Record (ENR) Construction Cost Index. If cost estimates or demand indicators change significantly, the County should redo the fee calculations.

Fees should be spent within six years of when they are collected, with the expenditures limited to growth-related system improvements or debt service on growth-related infrastructure as specified in the impact fee study. General practice is aggregate first in, first our accounting (rather than project-specific tracking) with impact fees and accrued interest maintained in a separate fund that is not comingled with other revenues. TischlerBise recommends preparation of an annual report indicating impact fee collections, expenditures, and fund balances by type of infrastructure.

Credits and Reimbursements

A general requirement that is common to impact fee methodologies is the evaluation of credits. A revenue credit may be necessary to avoid potential double payment situations arising from one-time impact fees plus on-going payment of other revenues that may also fund growth-related capital improvements. The determination of revenue credits is dependent upon the impact fee methodology used in the cost analysis and local government policies.

Policies and procedures related to site-specific credits should be addressed in the resolution or 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 included in the fee calculations, it will be necessary to either reimburse the developer or provide a credit against the fees due from that particular development. The latter option is more difficult to administer because it creates unique fees for specific geographic areas.

Based on national experience, TischlerBise typically recommends reimbursement agreements with developers that construct system improvements. The reimbursement agreement should be limited to a payback period of no more than ten years and the County should not pay interest on the outstanding balance. The developer must provide sufficient documentation of the actual cost incurred for the system improvement. The County should only agree to pay the lesser of the actual construction cost or the estimated cost used in the impact fee analysis. If the County pays more than the cost used in the fee analysis, there will be insufficient fee revenue for other capital improvements. Reimbursement agreements should only obligate the County to reimburse developers annually according to actual fee collections from the applicable Benefit District.

Citywide Service Area

The Transportation Impact Fee service area is defined as the entire unincorporated area within Laramie County. The infrastructure funded through the Transportation Impact Fee is countywide benefiting and can be attributed to demand throughout the unincorporated areas.

APPENDIX A. LAND USE DEFINITIONS

Residential Development

As discussed below, residential development categories are based on data from the U.S. Census Bureau, American Community Survey. Laramie County will collect impact fees from all new residential units. One-time impact fees are determined by the number of residential units.

Single Family Units:

1. Single family detached is a one-unit structure detached from any other house, that is, with open space on all four sides. Such structures are considered detached even if they have an adjoining shed or garage. A one-family house that contains a business is considered detached as long as the building has open space on all four sides.
2. Single family attached (townhouse) is a one-unit structure that has one or more walls extending from ground to roof separating it from adjoining structures. In row houses (sometimes called townhouses), double houses, or houses attached to nonresidential structures, each house is a separate, attached structure if the dividing or common wall goes from ground to roof.
3. Mobile home includes both occupied and vacant mobile homes, to which no permanent rooms have been added. Mobile homes used only for business purposes or for extra sleeping space and mobile homes for sale on a dealer's lot, at the factory, or in storage are not counted in the housing inventory.

Multifamily Units:

1. 2+ units (duplexes and apartments) are units in structures containing two or more housing units, further categorized as units in structures with "2, 3 or 4, 5 to 9, 10 to 19, 20 to 49, and 50 or more apartments."
2. Boat, RV, Van, etc. includes any living quarters occupied as a housing unit that does not fit the other categories (e.g., houseboats, railroad cars, campers, and vans). Recreational vehicles, boats, vans, railroad cars, and the like are included only if they are occupied as a current place of residence.

Nonresidential Development Categories

Nonresidential development categories used throughout this study are based on land use classifications from the book Trip Generation (ITE, 2021). A summary description of each development category is provided below.

Retail: Establishments primarily selling merchandise, eating/drinking places, and entertainment uses. By way of example, Retail includes shopping centers, supermarkets, pharmacies, restaurants, bars, nightclubs, automobile dealerships, and movie theaters.

Office: Establishments providing management, administrative, professional, or business services. By way of example, Office includes business offices, office parks, and corporate headquarters.

Industrial: Establishments primarily engaged in the production and transportation of goods. By way of example, Industrial includes manufacturing plants, trucking companies, warehousing facilities, utility substations, power generation facilities, and telecommunications buildings.

Institutional: Public and quasi-public buildings providing educational, social assistance, or religious services. By way of example, Institutional includes schools, universities, churches, daycare facilities, hospitals, health care facilities, and government buildings.

APPENDIX B – LAND USE ASSUMPTIONS

Population and Housing Characteristics

Impact fees often use per capita standards and persons per housing unit or persons per household to derive proportionate share fee amounts. Housing types have varying household sizes and, consequently, a varying demand on County infrastructure and services. Thus, it is important to differentiate between housing types.

When persons per housing unit (PPHU) is used in the development impact fee calculations, infrastructure standards are derived using year-round population. In contrast, when persons per household (PPHH) is used in the development impact fee calculations, the fee methodology assumes all housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. Thus, TischlerBise recommends that fees for residential development in Laramie County be imposed according to persons per housing units.

Based on housing characteristics, TischlerBise recommends using two housing unit categories for the Impact Fee study: (1) Single Family and (2) Multifamily. Each housing type has different characteristics which results in a different demand on County facilities and services. Figure 10 shows the US Census American Community Survey 2021 5-Year Estimates data for Laramie County. Single family units have a household size of 2.41 persons and multifamily units have a household size of 1.38 persons. Additionally, there were 1,162 residents in institutional housing (i.e., military and university).

The estimates in Figure 10 are for household size calculations. Base year population and housing units are estimated with another, more recent data source.

Figure 10. Laramie County Persons per Housing Unit

Housing Type	Persons	House-holds	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single Family	88,054	34,594	2.55	36,568	**2.41**	83%	5%
Multifamily	10,016	6,203	1.61	7,269	**1.38**	17%	15%
Subtotal	98,070	40,797	2.40	43,837	2.24		7%
Group Quarters	1,162						
TOTAL	99,232						

Source: U.S. Census Bureau, 2021 5-Year Estimate American Community Survey
Note: Single family includes detached and attached (i.e. townhouse) and mobile homes

Base Year Population and Housing Units

Countywide base year, 2024, population and housing estimates are provided Figure 11. Based on the US Census there were 100,512 residents countywide. The growth since the Census is used to calculate the base year estimates. Available through the Cheyenne MPO TAZ model and building permit history outside of the planning area, there has been an increase in 5,871 residents since the Census. Also, there is a 1,162 group quarter population. As a result, there is an estimated 107,545 residents in Laramie County. Additionally, there is an estimates 39,419 single family units and 8,074 multifamily units

Figure 11. Laramie County Base Year Population and Housing Units

Laramie County, WY	Base Year 2024
Population [1]	107,545
Housing Units [2]	
Single Family	39,419
Multifamily	8,074
Total	47,493

[1] Population is based on 2020 Census plus growth since 2020. Includes group quarter populations.
[2] Housing estimate determined based on population and PPHU factors

The US Census, Cheyenne MPO TAZ model, and building permit data approach is used to calculate the unincorporated base year population and housing units. As a result, there is an estimated 35,346 residents in unincorporated Laramie County. Additionally, there is an estimates 15,368 single family units and 461 multifamily units

Figure 12. Unincorporated Laramie County Base Year Population and Housing Units

Unincorporated Laramie County, WY	Base Year 2024
Population [1]	35,346
Housing Units [2]	
Single Family	14,907
Multifamily	461
Total	15,368

[1] Population is based on 2020 Census plus growth since 2020
[2] Housing estimate determined based on population and PPHU factors

Population and Housing Unit Projections

Housing development in the Cheyenne MPO Planning Area is based on the MPO's TAZ model and housing growth outside of the Planning Area is based on the five-year housing building permit annual average. As a result, there is an estimated 8,769 housing units projected over the next ten years. Population projections are based on the housing development and PPHU factors, resulting in 20,023 new residents, an 18.6 percent increase from the base year.

Figure 13. Laramie County Residential Development Projections

Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Population [1]	107,545	109,547	111,548	113,550	115,555	117,556	119,558	121,563	123,564	125,566	127,568	20,023
Percent Increase		*1.9%*	*1.8%*	*1.8%*	*1.8%*	*1.7%*	*1.7%*	*1.7%*	*1.6%*	*1.6%*	*1.6%*	*18.6%*
Housing Units [2]												
Single Family	39,419	40,188	40,957	41,726	42,496	43,265	44,034	44,804	45,573	46,342	47,111	7,692
Multifamily	8,074	8,182	8,289	8,397	8,505	8,612	8,720	8,828	8,935	9,043	9,151	1,077
Total	47,493	48,370	49,246	50,123	51,001	51,877	52,754	53,632	54,508	55,385	56,262	8,769

[1] Population projections are based on housing development and PPHU factors
[2] Source: Cheyenne MPO TAZ model and building permit history

The unincorporated projections in Figure 14 are based on the TAZ model and building permit trend excluding the City of Cheyenne and the town in Laramie County. As a result, there is an estimates 5,130 housing units projected and 11,820 new residents, a 33.4 percent increase.

Figure 14. Unincorporated Laramie County Residential Development Projections

Unincorporated Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Population [1]	35,346	36,528	37,710	38,892	40,074	41,258	42,438	43,620	44,802	45,984	47,166	11,820
Percent Increase		*3.3%*	*3.2%*	*3.1%*	*3.0%*	*3.0%*	*2.9%*	*2.8%*	*2.7%*	*2.6%*	*2.6%*	*33.4%*
Housing Units [2]												
Single Family	14,907	15,409	15,910	16,412	16,914	17,416	17,917	18,419	18,921	19,422	19,924	5,017
Multifamily	461	472	484	495	506	518	529	540	551	563	574	113
Total	15,368	15,881	16,394	16,907	17,420	17,934	18,446	18,959	19,472	19,985	20,498	5,130

[1] Population projections are based on housing development and PPHU factors
[2] Source: Cheyenne MPO TAZ model and building permit history

Current Employment and Nonresidential Floor Area

Base year employment is based on the TAZ model and the US Census OnTheMap data. Countywide there is an estimated 48,026 jobs. The biggest share is in institutional industries like education, healthcare, and government. Retail and industrial industries have over 10,000 employees as well. Floor area by industry is calculated with employment estimates and employee density factors from the Institute of Transportation Engineers (Figure 17). As a result, there is an estimate 21.3 million square feet of floor area countywide.

Figure 15. Laramie County Base Year Employment and Nonresidential Floor Area

Employment Industries	Base Year Jobs [1]	Sq. Ft. per Job [2]	Base Year Floor Area (Sq. Ft.)
Retail	10,891	471	5,129,661
Office	7,216	307	2,215,312
Industrial	12,159	637	7,745,283
Institutional	17,760	350	6,216,000
Total	48,026		21,306,256

[1] Source: TischlerBise analysis of US Census OnTheMap data and Cheyenne MPO TAZ data
[2] Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

In unincorporated Laramie County there is an estimated 8,272 jobs and 4.3 million square feet of floor area.

Figure 16. Unincorporated Laramie County Base Year Employment and Nonresidential Floor Area

Employment Industries	Base Year Jobs [1]	Sq. Ft. per Job [2]	Base Year Floor Area (Sq. Ft.)
Retail	1,306	471	615,126
Office	1,108	307	340,156
Industrial	4,549	637	2,897,713
Institutional	1,309	350	458,150
Total	8,272		4,311,145

[1] Source: TischlerBise analysis of US Census OnTheMap data and Cheyenne MPO TAZ data
[2] Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

Figure 17. Institute of Transportation Engineers (ITE) Employment Density Factors

Employment Industry	ITE Code	Land Use	Demand Unit	Emp per Dmd Unit	Sq. Ft. per Emp
Retail	820	Shopping Center	1,000 Sq Ft	2.12	471
Office	710	General Office	1,000 Sq Ft	3.26	307
Industrial	110	Light Industrial	1,000 Sq Ft	1.57	637
Institutional	610	Hospital	1,000 Sq Ft	2.86	350

Source: *Trip Generation* , Institute of Transportation Engineers, 11th Edition (2021)

Employment and Nonresidential Floor Area Projections

Job and nonresidential growth projections over the next ten years for Laramie County are shown in Figure 18. Job projections are based on the TAZ model growth rate by industry sector. It is estimated there will be an increase of 4,229 jobs, a 9 percent increase from the base year. The nonresidential floor area projections are calculated by applying the ITE square feet per employee factors to the job growth. In the next ten years, the nonresidential floor area is projected to increase by 1.9 million square feet.

Figure 18. Laramie County Employment and Nonresidential Floor Area Projections

Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Jobs [1]												
Retail	10,891	11,039	11,187	11,335	11,483	11,631	11,779	11,927	12,075	12,223	12,371	1,480
Office	7,216	7,306	7,396	7,486	7,576	7,666	7,756	7,846	7,936	8,025	8,115	899
Industrial	12,159	12,264	12,368	12,473	12,577	12,682	12,786	12,891	12,996	13,100	13,205	1,046
Institutional	17,760	17,840	17,921	18,001	18,082	18,162	18,242	18,323	18,403	18,484	18,564	804
Total Jobs	48,026	48,449	48,872	49,295	49,718	50,141	50,564	50,986	51,409	51,832	52,255	4,229
Nonresidential Floor Area (1,000 square feet) [2]												
Retail	5,130	5,199	5,269	5,339	5,409	5,478	5,548	5,618	5,687	5,757	5,827	697
Office	2,215	2,243	2,271	2,298	2,326	2,353	2,381	2,409	2,436	2,464	2,491	276
Industrial	7,745	7,812	7,879	7,945	8,012	8,078	8,145	8,212	8,278	8,345	8,411	666
Institutional	6,216	6,244	6,272	6,300	6,329	6,357	6,385	6,413	6,441	6,469	6,497	281
Total Floor Area	21,306	21,498	21,690	21,882	22,075	22,267	22,459	22,651	22,843	23,035	23,227	1,921

[1] Source: Cheyenne MPO TAZ employment projections

[2] Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

In unincorporated Laramie County there is a projected increase of 766 jobs and 396,000 square feet of nonresidential development.

Figure 19. Unincorporated Laramie County Employment and Nonresidential Floor Area Projections

Unincorporated Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Jobs [1]												
Retail	1,306	1,324	1,341	1,359	1,377	1,395	1,412	1,430	1,448	1,466	1,483	177
Office	1,108	1,122	1,136	1,149	1,163	1,177	1,191	1,205	1,218	1,232	1,246	138
Industrial	4,549	4,588	4,627	4,666	4,705	4,745	4,784	4,823	4,862	4,901	4,940	391
Institutional	1,309	1,315	1,321	1,327	1,333	1,339	1,345	1,350	1,356	1,362	1,368	59
Total Jobs	8,272	8,349	8,425	8,502	8,578	8,655	8,732	8,808	8,885	8,961	9,038	766
Nonresidential Floor Area (1,000 square feet) [2]												
Retail	615	623	632	640	649	657	665	674	682	690	699	84
Office	340	344	349	353	357	361	366	370	374	378	383	42
Industrial	2,898	2,923	2,948	2,972	2,997	3,022	3,047	3,072	3,097	3,122	3,147	249
Institutional	458	460	462	464	466	469	471	473	475	477	479	21
Total Floor Area	4,311	4,351	4,390	4,430	4,470	4,509	4,549	4,588	4,628	4,668	4,707	396

[1] Source: Cheyenne MPO TAZ employment projections

[2] Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

Vehicle Trip Generation

Residential Vehicle Trips by Housing Type

A customized trip rate is calculated for the single family and multifamily units in Laramie County. In Figure 20, the most recent data from the US Census American Community Survey is inputted into equations provided by the ITE to calculate the trip ends per housing unit factor. A single family unit is estimated to generate 10.05 trip ends and a multifamily unit is estimated to generate 4.01 trip ends on an average weekday.

Figure 20. Customized Residential Trip End Rates by Housing Type

		Households by Structure Type (2)			
Tenure by Units in Structure	Vehicles Available (2)	Single Family	Multifamily	Total	Vehicles per HH by
Owner-occupied	69,908	29,144	320	29,464	2.37
Renter-occupied	16,013	5,450	5,883	11,333	1.41
Total	**85,921**	**34,594**	**6,203**	**40,797**	**2.11**
Housing Units (3) =>		36,568	7,269	43,837	
Persons per Housing Unit =>		2.41	1.38	2.24	

Housing Type	Persons in Households (4)	Trip Ends (5)	Vehicles by Type of Unit	Trip Ends (6)	Average Trip Ends	Local Trip Ends per Unit	National Trip Ends per Unit (7)
Single Family	88,054	235,467	76,849	499,496	367,482	**10.05**	9.43
Multifamily	10,016	22,856	9,072	35,449	29,152	**4.01**	4.54
Total	**98,070**	**258,323**	**85,921**	**534,945**	**396,634**	**9.70**	

** Includes Single Family Detached, Single Family Attached, and Manufactured Homes*

1. Vehicles available by tenure from Table B25046, ACS 2021 5-Year Estimates.
2. Households by tenure and units in structure from Table B25032, ACS 2021 5-Year Estimates.
3. Housing units from Table B25024, ACS 2021 5-Year Estimates.
4. Total population in households from Table B25033, ACS 2021 5-Year Estimates.
5. Vehicle trips ends based on persons using formulas from ITE *Trip Generation* . For single family (ITE 210), the fitted curve equation is EXP(0.89*LN(persons)+1.72) [ITE 2017]. To approximate the average population of the ITE studies, persons were divided by 66 and the equation result multiplied by 66. For multifamily (ITE 221), the fitted curve equation is (2.29*persons)-81.02 [ITE 2017].
6. Vehicle trip ends based on vehicles available using formulas from ITE *Trip Generation* . For single family (ITE 210), the fitted curve equation is EXP(0.99*LN(vehicles)+1.93) [ITE 2017]. To approximate the average number of vehicles in the ITE studies, vehicles available were divided by 118 and the equation result multiplied by 118. For multifamily (ITE 220), the fitted curve equation is (3.94*vehicles)+293.58 [ITE 2012].
7. *Trip Generation* , Institute of Transportation Engineers, 11th Edition (2021).

RESIDENTIAL VEHICLE TRIPS ADJUSTMENT FACTORS

A vehicle trip end is the out-bound or in-bound leg of a vehicle trip. As a result, so to not double count trips, a standard 50 percent adjustment is applied to trip ends to calculate a vehicle trip. For example, the out-bound trip from a person's home to work is attributed to the housing unit and the trip from work back home is attributed to the employer.

However, an additional adjustment is necessary to capture County residents' work bound trips that are outside of the County. The trip adjustment factor includes two components. According to the National Household Travel Survey, home-based work trips are typically 31 percent of out-bound trips (which are 50 percent of all trip ends). Also, utilizing the most recent data from the Census Bureau's web application "OnTheMap", 19 percent of Laramie County workers travel outside the County for work. In combination, these factors account for 3 percent of additional production trips (0.31 x 0.50 x 0.19 = 0.03). Shown in Figure 21, the total adjustment factor for residential housing units includes attraction trips (50 percent of trip ends) plus the journey-to-work commuting adjustment (3 percent of production trips) for a total of 53 percent.

Figure 21. Residential Trip Adjustment Factor for Commuters

Trip Adjustment Factor for Commuters

Employed Laramie County Residents (2021)	45,229
Residents Working in the County (2021)	36,854
Residents Commuting Outside of the County for Work	8,375
Percent Commuting Out of the County	19%
Additional Production Trips	**3%**

Standard Trip Adjustment Factor	**50%**
Residential Trip Adjustment Factor	**53%**

Source: U.S. Census, OnTheMap Application, 2021

NONRESIDENTIAL VEHICLE TRIPS

Vehicle trip generation for nonresidential land uses are calculated by using ITE's average daily trip end rates and adjustment factors found in their recently published 11th edition of Trip Generation. To estimate the trip generation in Laramie County, the weekday trip end per 1,000 square feet factors listed in Figure 22 are used.

Figure 22. Institute of Transportation Engineers Nonresidential Factors

Employment Industry	ITE Code	Land Use	Demand Unit	Wkdy Trip Ends Per Dmd Unit	Wkdy Trip Ends Per Employee
Retail	820	Shopping Center	1,000 Sq Ft	37.01	17.42
Office	710	General Office	1,000 Sq Ft	10.84	3.33
Industrial	110	Light Industrial	1,000 Sq Ft	4.87	3.10
Institutional	610	Hospital	1,000 Sq Ft	10.77	3.77

Source: *Trip Generation* , Institute of Transportation Engineers, 11th Edition (2021)

For nonresidential land uses, the standard 50 percent adjustment is applied to office, industrial, and institutional land uses. A lower vehicle trip adjustment factor is used for retail uses because this type of development attracts vehicles as they pass-by on arterial and collector roads. For example, when

someone stops at a convenience store on their way home from work, the convenience store is not their primary destination. In Figure 23, the Institute for Transportation Engineers' land use code, daily vehicle trip end rate, and trip adjustment factor is listed for each land use.

Figure 23. Daily Vehicle Trip Factors

Land Use	ITE Codes	Daily Vehicle Trip Ends	Trip Adj. Factor	Daily Vehicle Trips
Residential (per housing unit)				
Single Family	210	10.05	53%	5.33
Multifamily	220	4.01	53%	2.13
Nonresidential (per 1,000 square feet)				
Retail	820	37.01	38%	14.06
Office	710	10.84	50%	5.42
Industrial	110	4.87	50%	2.44
Institutional	610	10.77	50%	5.39

Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021); National Household Travel Survey, 2009

Vehicle Trip Projections

The base year vehicle trip totals and vehicle trip projections are calculated by combining the vehicle trip end factors, the trip adjustment factors, and the residential and nonresidential assumptions for housing stock and floor area. Countywide, residential land uses account for 227,125 vehicle trips and nonresidential land uses account for 136,482 vehicle trips in the base year shown in Figure 24.

Through 2034, it is projected that countywide daily vehicle trips will increase by 16 percent (57,698 trips) with the majority of the growth being generated by single family (71 percent) and retail (17 percent) development.

Figure 24. Laramie County Vehicle Trip Projections

Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Residential Trips												
Single Family	209,965	214,061	218,157	222,254	226,355	230,451	234,547	238,649	242,745	246,841	250,937	40,971
Multifamily	17,160	17,389	17,617	17,846	18,076	18,303	18,533	18,762	18,990	19,219	19,449	2,289
Subtotal	227,125	231,451	235,774	240,100	244,431	248,754	253,080	257,411	261,734	266,060	270,385	43,260
Nonresidential Trips												
Retail	72,143	73,123	74,103	75,084	76,064	77,044	78,025	79,005	79,986	80,966	81,946	9,804
Office	12,007	12,157	12,306	12,456	12,606	12,755	12,905	13,055	13,204	13,354	13,504	1,497
Industrial	18,860	19,022	19,184	19,346	19,509	19,671	19,833	19,995	20,157	20,320	20,482	1,622
Institutional	33,473	33,625	33,776	33,928	34,079	34,231	34,382	34,534	34,686	34,837	34,989	1,515
Subtotal	136,482	137,926	139,370	140,814	142,258	143,701	145,145	146,589	148,033	149,477	150,920	14,438
Vehicle Trips												
Grand Total	363,607	369,377	375,144	380,914	386,688	392,456	398,225	404,000	409,767	415,536	421,306	57,698

Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

Through 2034, it is projected that unincorporated daily vehicle trips will increase by 29 percent (29,087 trips) with the majority of the growth being generated by single family (92 percent) development.

Figure 25. Unincorporated Laramie County Vehicle Trip Projections

Unincorporated Laramie County, WY	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Residential Trips												
Single Family	79,402	82,076	84,745	87,419	90,092	92,766	95,435	98,109	100,783	103,451	106,125	26,723
Multifamily	980	1,003	1,029	1,052	1,075	1,101	1,124	1,148	1,171	1,197	1,220	240
Subtotal	80,382	83,079	85,773	88,471	91,168	93,867	96,559	99,256	101,954	104,648	107,345	26,963
Nonresidential Trips												
Retail	8,651	8,769	8,886	9,004	9,121	9,239	9,356	9,474	9,592	9,709	9,827	1,176
Office	1,844	1,867	1,890	1,913	1,936	1,959	1,982	2,004	2,027	2,050	2,073	230
Industrial	7,056	7,117	7,177	7,238	7,299	7,359	7,420	7,481	7,541	7,602	7,663	607
Institutional	2,467	2,478	2,489	2,501	2,512	2,523	2,534	2,545	2,556	2,568	2,579	112
Subtotal	20,018	20,230	20,443	20,655	20,867	21,080	21,292	21,505	21,717	21,929	22,142	2,124
Vehicle Trips												
Grand Total	100,400	103,309	106,216	109,125	112,035	114,947	117,851	120,761	123,671	126,577	129,487	29,087

Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)