Capital Facilities Standards, Capital Needs Assessment, and Capital Intensity Factors

Town of Leesburg, Virginia

Submitted to:

Town of Leesburg, Virginia

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CAPITAL FACILITIES STANDARDS, CAPITAL NEEDS ASSESSMENT, and CAPITAL INTENSITY FACTORS

Town of Leesburg, Virginia

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EXECUTIVE SUMMARY

Background

TischlerBise is part of the Berkley Group Team retained by the Town of Leesburg to develop Capital Facility Standards (CFS), Capital Needs Assessment (CNA), and Capital Intensity Factors (CIF) for use in proffer negotiations. TischlerBise evaluated a range of capital impacts from growth to determine the applicability and legality of cash proffer mitigation. The public capital improvement categories included in the analysis are (1) Parks and Recreation, (2) Police, and (3) Transportation. Other categories explored were: General Government (excluded due to limitations on statutory authority); Fire/EMS (excluded due to capital funding relationship with Loudoun County); and Stormwater (excluded due to mitigation needed primarily because of existing deficiencies rather than growth). Capital impacts within the utility system are addressed through the Enterprise Fund's utility rates and fees. School capital impacts are addressed by Loudoun County.

This report provides supporting documentation for the following:

- **Capital Facility Standards (CFS):** CFS establish levels of service for capital facilities and establish triggers to determine when new facilities are needed due to growth. CFS are expressed in infrastructure terms (e.g., park acres per capita).
- **Capital Needs Assessment (CNA):** CFS are used to derive a Capital Needs Assessment (CNA). The CNA is a ten-year projection for the infrastructure categories included in the analysis. Demand from residential development only is included.
- **Capital Intensity Factor (CIF):** CFS are converted into costs in the Town's Capital Intensity Factor (CIF), which may be used to determine a cash proffer. Costs included are outlined in this report. As is required for the capital intensity factor, only capital costs for capacity are included in the formula. Operating costs are not included nor are revenue considerations, which is standard for cash proffers, unless the revenues are dedicated/earmarked for capacity capital improvements.

Overview of Capital Impacts and Cash Proffers

Capital impact amounts calculated herein represent a one-time monetary commitment to offset the impact on public facilities for the categories included in the study. Capital impact contributions may take the form of a cash proffer contribution. Further detail on specific cash proffer requirements is included in Appendix C.

Funds collected from capital impact contributions are used to construct capital improvements to maintain levels of service for new development. Funds can only be used for **capital** improvements that provide **additional capacity**, not operations or maintenance. Capital impact amounts represent new growth's fair share of capital facility needs and are calculated using level of service standards. However, since capital impact contributions do not apply to "by-right" development, only a portion of the impacts from new growth can be mitigated with a capital impact contribution/cash proffer program. Capital impact contributions are a small part of an overall funding strategy and should not be regarded as a total solution for infrastructure financing needs. Therefore, other strategies and revenue sources are needed to offset the impact to infrastructure from growth.

TischlerBise evaluated possible methodologies and documented appropriate demand indicators by type of development for each type of capital impact for the Town of Leesburg. The formula used to calculate each capital impact amount is diagrammed in a flow chart at the beginning of each chapter. Specific capital costs have been identified using local data and current dollars (2024). Because capital impacts reflect a point in time, the calculations and study should be updated periodically (typically 3 to 5 years). Costs reflect the direct impact of new development on the need for new facilities and infrastructure and do not reflect secondary or indirect impacts.

Capital impacts are calculated to conform to three key elements: need, benefit, and proportionality:

- First, to justify a capital impact for public facilities, it must be demonstrated that new development/rezonings will create a need, or an identifiable portion of a need, for capital improvements in excess of existing public facility capacity at the time of the rezoning or proffer condition amendment.

- Second, development paying a capital impact contribution must derive a direct and material benefit from the payment of the capital impact contribution (i.e., in the form of public facilities constructed within a reasonable timeframe).

- Third, the capital impact amount to be paid by a particular type of development (land use) should not exceed its proportional share of the capital cost for system improvements. The use of household sizes (persons per housing unit) ensures this requirement is met.

For each type of capital impact, the report includes a summary table indicating the specific factors used to derive the amounts. Parks and Recreation are calculated from residential demand only; Police and Transportation are based on demand from both residential and nonresidential development.

The value of each capital impact amount outlined in this report reflects the estimated actual impact (cost) to the Town from new residential development, and as such, each represents the maximum CIF for each public facility category by type of land use. The capital impact amounts specified in this report can be used to guide a Town cash proffer contribution policy.

Summary of Capital Impact Calculations

The capital impact amounts calculated for the Town of Leesburg represent the highest amount feasible for each type of applicable land use, or *maximum* amounts, which represents new growth's fair share of the cost for the respective capital facilities.

A summary of components and methodologies in the analysis for each infrastructure category is provided below in Figure 1. Methodologies include:

- **Plan-based**: The plan-based method allocates costs for a specified set of improvements to a specified amount of development. Improvements are identified in capital improvement plans and growth projections are derived from market assumptions and a land use plan.
- **Incremental Expansion**: The incremental expansion method documents current levels of service for each type of public facility, based on a specific standard (such as park acres per 1,000 persons). By its definition, current levels of service assume that there is no excess capacity or existing deficiencies. Current levels of service applied to new development ensures that development is only paying its proportionate share for new infrastructure.

Figure 1. Summary of Town of Leesburg Capital Impact Methodologies

Capital Facility Category	Service Area	Recommended Calculation Methodology	Infrastructure Components	Cost Allocation
Parks and Recreation	Townwide	Plan-Based (Park Land) Incremental (All Others)	• Park Land • Park Improvements • Trails • Recreation Facilities	Population (Residential)
Public Safety: Police	Townwide	Plan-Based	• Police Stations • Police Mobile Command Unit	Population (Residential) and Nonres. Trips (Nonresidential)
Public Safety: Fire	Townwide	*Coordinate with County*		
Transportation	Townwide	Plan-Based	• Arterial and Collector Improvements • Town Shop	Vehicle Miles of Travel (Residential and Nonresidential)
Schools	County	*Coordinate with County*		

For **Parks and Recreation** capital impacts, components include park land (acquisition), park improvements, trails, and recreation facilities. Parks and Recreation capital impacts only apply to residential development and are provided by type of unit (i.e., single family detached, townhome (single family attached), multifamily attached, and multifamily stacked).

Police capital impacts include police stations and acquisition of a police mobile command unit. Police capital impacts apply to both residential and nonresidential development.

Transportation capital impacts include arterial and collector capacity improvements and Public Works Town Shop capacity. Transportation capital impacts apply to both residential and nonresidential development.

Maximum Capital Intensity Factor Amounts

Figure 2 provides a summary of the maximum Capital Intensity Factor (CIF) amounts by type of land use for the Town of Leesburg. The amounts represent new growth's fair share of the cost for capital facilities included in the analysis. Please see applicable chapters for detail on factors, values, and calculations used to calculate the CIF amounts shown in Figure 2. The capital impacts for residential development are per housing unit. (See Appendix A for housing type definitions.)

Figure 2. Summary of Capital Intensity Factors by Land Use

	Parks and Recreation	Police	Transportation
Demand Unit	Person	Person	VMT
CIF per Demand Unit	**$3,044**	**$326**	**$142**

Housing Unit Type	Household Size	VMT	Parks and Recreation	Police	Transportation	Total Town CIF
Single Family Detached Suburban	3.84	17.65	$11,688	$1,251	$2,506	**$15,445**
Townhome (Single Family Attached)	3.12	13.48	$9,497	$1,017	$1,914	**$12,428**
Multi-family Attached	2.06	12.62	$6,270	$671	$1,792	**$8,733**
Multi-family Stacked	2.41	12.62	$7,336	$785	$1,792	**$9,913**

INTRODUCTION TO CAPITAL IMPACTS

The development of Capital Facility Standards (CFS), a Capital Needs Assessment (CNA), and Capital Intensity Factors (CIF) for the Town of Leesburg identifies and quantifies the Town's capital impact from growth and can be used to potentially negotiate and collect cash proffer contributions from rezonings. The capital facility categories evaluated for the Town of Leesburg are Parks and Recreation, Police, and Transportation.

The term **cash proffer** is used to reflect facility and cost impacts from new development. Cash proffers are one-time voluntary monetary commitments made at the time of a rezoning to offset the impact on certain public facilities from new development where capacity is needed. They are a land use regulation, specifically a form of conditional zoning, where the commitment that is negotiated as part of the proffer agreement runs with the land. Funds collected from cash proffers are used to construct capital improvements to mitigate impacts on infrastructure with the goal of maintaining levels of service. Funds can only be used for **capital** improvements that provide **additional capacity**, not for operations, maintenance, or replacement of existing facilities.

Cash proffer contributions cannot be used to correct existing deficiencies. In addition, since cash proffers do not apply to "by-right" development but only apply during the rezoning process, only a portion of impacts from new growth can be mitigated through cash proffers. Cash proffers are a small part of an overall funding strategy and should not be regarded as a total solution for infrastructure financing needs.

Requirements

Capital facility standards and resulting CIF/cash proffer amounts are calculated to meet three key elements: ***need, benefit, and proportionality***.[1]

- First, to justify a cash proffer for public facilities, it must be demonstrated that new development/rezonings will create a **need** for capital improvements.
- Second, new development/rezonings must derive a **benefit** from the payment of the cash proffers.
- Third, the cash proffer to be paid by a particular type of development (land use) should not exceed its **proportional** share of the capital cost for system improvements.

To meet these requirements, TischlerBise conducted an analysis of current "Level of Service" (LOS) standards for the infrastructure categories in this study resulting in a CFS. The CNA identifies the need

[1] See Va. Code §15.2-2303.4(C) for further detail.

for the improvements and the benefit to the payer of the planned facility improvements. The CIF reflects the actual cost to the Town where capacity is needed in respective public facilities and that is generated from new residential development reflecting the proportionate share of capital costs.

A proffer is an offer by a landowner during the rezoning process to mitigate the impacts of the rezoning. It is a form of *conditional zoning*, which applies conditions, or requirements, in addition to existing requirements and regulations. A proffer can include cash payments to mitigate the impacts of a rezoning, called *cash proffers,* which are allowed under Virginia Code §15.2-2303 and §15.2-2298. The Town of Leesburg meets the requirement under 15.2-2303 (a town in a county (Loudoun County) contiguous to a county with an urban county executive form of government (Fairfax County)).[2]

While the voluntary nature of cash proffers distinguishes them logistically from *impact fees,* case law and standards of practice guiding development of impact fee programs can inform the development of other one-time capital impact calculations like cash proffers.[3]

Cash proffers are subject to statutory restrictions including the timing of payment to the locality, and when the locality must spend the funds. For rezonings that propose a new residential development or new residential use, cash proffers relate to the impact of the development on public facilities, and the capital impact analysis identifies appropriate service areas for each infrastructure category to ensure this requirement is met. Given these requirements, quantifying the anticipated impact of proposed development provides vital information for analysis of the reasonableness of any cash proffer (see Appendix C).

Methodologies

Any one of several methods may be used to establish capital intensity factors and, ultimately, a reasonable cash proffer contribution. The choice of a particular method depends primarily on the service characteristics and planning requirements for the facility type being addressed. Each method has advantages and disadvantages, and to some extent can be interchangeable, because each allocates facility costs in proportion to the needs created by development.

Reduced to its simplest terms, the process of calculating capital intensity factors/recommended cash proffer amounts involves two main steps: (1) determining the cost of development-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, the calculation of cash proffers can be complex because of the many variables involved in

[2] Va. Code §15.2-2303 (A).

[3] Impact fee authority varies across the United States, but impact fees have been utilized by local governments in various forms for at least fifty years. Other than Road Impact Fees, localities in the Commonwealth of Virginia are not authorized to implement impact fees (see Va. Code §15.2-2317 et seq. for authority and guidance).

defining the relationship between development and the need for facilities. Two basic methods for calculating capital intensity factors are discussed below.

Plan-Based Calculation

The plan-based method allocates costs for a specified set of improvements to a specified amount of development. Improvements are identified by facility plans and growth projections are derived from market assumptions and a land use plan. In this method, the total cost of relevant facilities is divided by total future demand to calculate a cost per unit of demand. Then, the cost per unit of demand is multiplied by the amount of demand per unit of development (e.g., persons per housing unit) in each category to arrive at a cost per specific unit of development (e.g., single family detached unit).

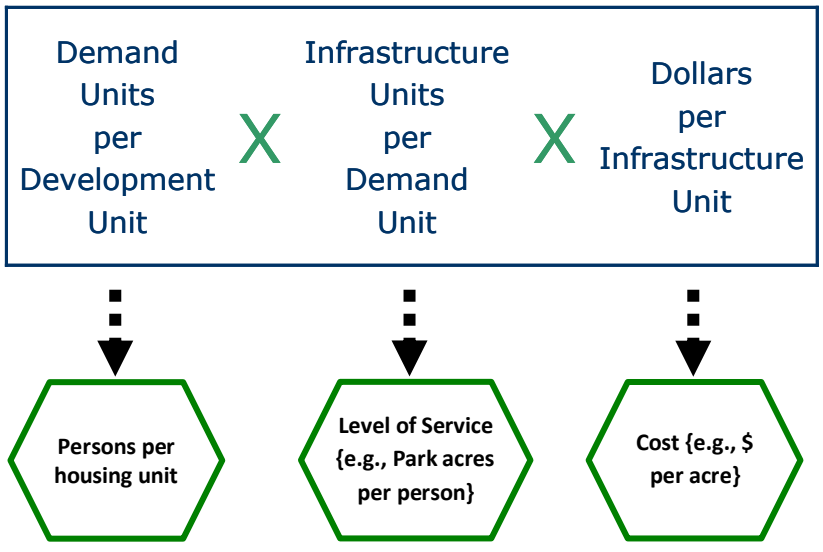
Incremental Expansion Calculation

The incremental expansion method documents current levels of service (LOS) for each type of public facility, based on a specific standard (such as park acres per person). By its definition, current levels of service assume that there are no existing infrastructure deficiencies or surplus capacity. Current levels of service applied to new development ensures that development is only paying its proportionate share for new infrastructure. An incremental expansion approach generates revenue to be expanded in regular increments to accommodate new development.

Generic Cash Proffer Calculation

In contrast to development exactions, which are typically referred to as project-level improvements, cash proffers help fund growth-related infrastructure that will benefit multiple development projects, a geographic subarea, or an entire jurisdiction—in other words, system-level improvements. The basic steps in a generic cash proffer formula are illustrated in Figure 3.

Figure 3. Generic Capital Intensity Factor/Cash Proffer Formula



The first step is to determine an appropriate demand indicator, or service unit, for the particular infrastructure subcategory. The demand/service indicator measures the number of demand or service units for each unit of development. For example, an appropriate indicator of the demand for parks is growth in population. The second step in the generic formula is to determine infrastructure units per demand unit, typically called **level of service (LOS) standards**. In keeping with the parks example, a common LOS standard is park acres per person. The third step in the generic formula is the cost of various infrastructure units. To complete the parks example, this part of the formula would establish the cost per acre for parks improvements.

Offsets

A general requirement common to capital impact methodologies is the evaluation of potential offsets. Two types of offsets are considered, those due to potential double payment situations and others from site-specific contributions.

Potential double payment situations may arise from a one-time cash proffer commitment plus the payment of other revenues that may also fund the same growth-related capital improvements. Because cash proffer commitments are voluntary and are anticipated to cover costs only due to rezonings, other capital costs will be funded through other sources of revenue and therefore this type of offset is unnecessary in the Town of Leesburg's capital intensity factor calculation.

The second type of offset is a site-specific offset for system improvements that have been included in the capital impact calculations. A site-specific offset would be handled during implementation and would reduce a cash proffer commitment due to contributions of improvements or land that mitigate new development's impact on the infrastructure needs covered in the capital impact program. Policies and procedures related to site-specific offsets for system improvements should be addressed in the cash proffer policy. However, the general concept is that applicants may be eligible for site-specific offsets or reimbursements only if they provide system improvements that have been included in the capital impact calculations. Project improvements normally required as part of the development approval process would not be eligible for offsets against capital impacts.

Alignment with Loudoun County

Loudoun County has Capital Facility Standards (CFS) and Capital Intensity Factors (CIF) for a range of capital infrastructure categories.

Schools

Loudoun County Public Schools serve the Town of Leesburg. Loudoun County adopts a Capital Intensity Factor for Schools along with related policies to receive cash proffers from rezonings in the county.

The Town adopted a proffer policy resolution reflecting the latest county school capital intensity factor by type of housing unit, documented in "Rezoning Application Procedures Manual," Appendix L.[4] The resolution also established authority for the Town to establish accounting procedures to transfer school cash proffer funds collected by the Town to the County.

Because the School System is a countywide facility—serving Leesburg residential land uses, this approach is appropriate, and TischlerBise recommends continuation of this practice with an updated resolution reflecting the latest County school CIF and the language "as amended from time to time" to account for future revisions to the CIF amount.

Fire and Rescue

Fire and emergency medical services in Leesburg are provided by combined volunteer and career personnel and stations coordinated through the Loudoun County Combined Fire & Rescue System. Current Town practice is to accept fire and rescue contributions for use at fire and rescue stations serving Leesburg. Contributions have been proffered from both residential and nonresidential development. Current use of Town fire cash proffer funds has typically been for capital needs at volunteer stations.

The updated Loudoun County CIF for the Leesburg Planning Subarea includes fire and rescue capital needs serving the Town of Leesburg.[5] If the County Board of Supervisors adopts the Leesburg Planning Subarea CIF that includes fire and rescue, the Town should consider adopting a proffer policy resolution for the county fire and rescue CIF as amended from time to time similar to the policy for schools.

Parks and Recreation

This study calculates a Town capital intensity factor for Town parks and recreation facilities. The Town may consider accepting County cash proffers for countywide facilities not provided by the Town.

[4] It should be noted that the current County Schools CIF was updated and adopted in 2018, reflecting a different amount than provided in Appendix L of the Town Rezoning Manual.

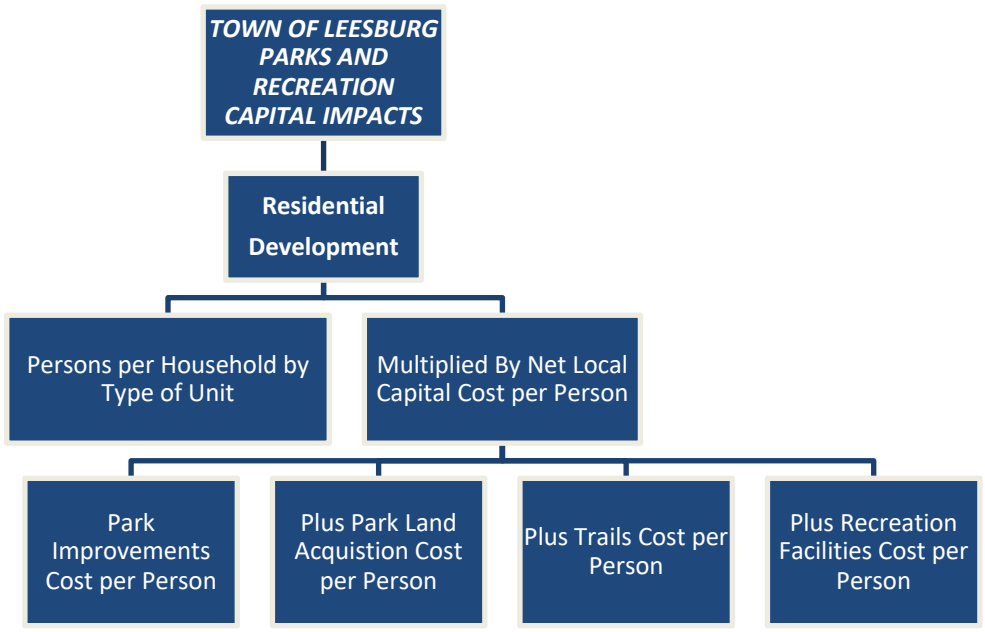
[5] See Loudoun County Capital Planning page for current information.

PARKS AND RECREATION CAPITAL IMPACTS

Methodology

Parks and Recreation Facilities capital impact methodology is based on the need for future parks and recreation capacity due to growth and is calculated using the current average Town of Leesburg household sizes (by type of unit), level of service standards, and local costs. The capital impact amounts are determined using incremental expansion and plan-based methodologies, and costs are allocated 100 percent to residential development. Figure 4 illustrates the methodology used to calculate the capital impact. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the infrastructure components. Parks' capital impact is derived from the product of persons per household (by type of unit) multiplied by the net capital cost per person. The boxes in the next level down indicate detail on the components.

Figure 4. Leesburg Parks and Recreation Capital Impact Methodology Diagram



A *plan-based approach* is used for park land acquisition and an *incremental expansion* methodology is used for parks improvements, trails, and recreation facilities. Establishing CFS at current levels of service (or at a planned lower level of service for park land) indicates that park land, park improvements, trails, and recreation facilities are at capacity serving current residents of the Town of Leesburg. All capital costs are allocated 100 percent to residential development.

Parks & Recreation Capital Facility Standard and Capital Cost Analysis

The following section details the CFS calculations and capital cost per person for each infrastructure category.

Park Improvements

The Town of Leesburg has a current inventory of 324.63 park acres in system-level parks, namely Community, Town, and Urban Parks. Neighborhood Parks serve a more limited area, are typically built by developers, and therefore are excluded. As shown in Figure 5, the CFS, reflecting the Town's current level of service, is 6.35 acres per 1,000 residents (324.63 acres / 51,097 residents x 1,000 = 6.35 acres per 1,000 persons (rounded)).

Figure 5. Park Improvements CFS

Name	Type/Designation	Acres
Edwards Landing Park	Community Park	28.52
Foxridge Park	Community Park	9.10
Robinson Park	Community Park	10.00
Tuscarora Creek Park	Community Park	5.95
Catoctin Park	Town Park	2.98
Freedom Park	Town Park	18.71
Ida Lee Park	Town Park	138.05
Olde Izaak Walton Park	Town Park	20.99
Veteran's Park at Ball's Bluff	Town Park	86.15
Georgetown Park	Urban Park	0.23
Raflo Park	Urban Park	3.65
Mervin Jackson Park	Urban Park	0.15
Town Green	Urban Park	0.15
Total		**324.63**

Source: Town of Leesburg.

Capital Facility Standard (CFS)	
Acres	324.63
Population in 2023	51,097
Acres Per 1,000 Persons	6.35

Current improvement values by park are detailed below in Figure 6. The average value per acre is used to reflect the range of types of improvements likely to be built to expand capacity at system-level parks.

Figure 6. Park Improvements Values

Facility	Description	Acres	Park Improvements Value	Impr. Value per Acre
Edwards Landing Park[1]	Community Park	28.52	$31,830	$1,116
Foxridge Park	Community Park	9.10	$368,839	$40,532
Robinson Park	Community Park	10.00	$165,072	$16,507
Tuscarora Creek Park	Community Park	5.95	$60,000	$10,084
Catoctin Park	Town Park	2.98	$1,500,645	$503,572
Freedom Park[2]	Town Park	18.71	$3,650,136	$195,090
Ida Lee Park[2,3]	Town Park	138.05	$12,520,795	$90,698
Olde Izaak Walton Park[1]	Town Park	20.99	$203,430	$9,692
Veteran's Park at Ball's Bluff[2]	Town Park	86.15	$7,030,000	$81,602
Georgetown Park	Urban Park	0.23	nd	$0
Raflo Park	Urban Park	3.65	$35,697	$9,780
Mervin Jackson Park	Urban Park	0.15	$36,059	$240,393
Town Green	Urban Park	0.15	$94,057	$627,047
Total		**324.63**	**$25,696,560**	**$79,156**

Value per Acre	**$79,156**
Value per Acre (Rounded)	**$79,160**

[1] *Valuation (non-land) from Loudoun County Commissioner of the Revenue, Assessment and Land Parcel Database.*

[2] *Includes current, in progress, and planned improvements (as of FY25).*

[3] *Ida Lee Park valuation in this figure includes the Tennis Center; the Recreation Center is excluded here as it is included under the Recreation Facilities component.*

Source: Town of Leesburg Fixed Asset Inventory unless otherwise noted.

Park Land

The Town of Leesburg anticipates purchasing additional land to expand its parks system. A potential land acquisition is a vacant parcel of 37 acres adjacent to Ida Lee Park. This expansion is anticipated to serve 10 years' worth of residential growth for a CFS of 5.02 acres per 1,000.

Figure 7. Park Land CFS

Facility	Type/Designation	Acres
Park Site Land Acqusition for Expansion	Town Park	37

Source: Town of Leesburg.

Capital Facility Standard (CFS)	
Planned Acres	37.0
Projected Population Increase 2023-2033	7,371
Acres Per 1,000 Persons	5.02

The estimated value for the site is $200,000 per acre per Loudoun County Real Estate Assessment.

Figure 8. Park Land Estimated Acquisition Cost

Facility	Date/Timing	Acres	Assessed Value	$/Acre
Park Site Land Acqusition for Expansion (O'Connor Property)	Current	37	$7,400,000	$200,000
			Cost per Acre (Rounded)	**$200,000**

Source: Loudoun County Real Estate Assessment via Town of Leesburg.

Trails

The Town's inventory of trails is shown in Figure 9 at 8.10 linear miles for a CFS of 0.16 miles per 1,000 persons. The Blue and Green Trails are part of the Town's bike trail network, on shared-use paths. The Blue Trail runs along Battlefield Parkway, from Ball's Bluff Road in the northeast to Meade Drive in the southwest. The Green Trail runs through Fox Ridge Park from the W&OD Trail, north along Catoctin Circle/Fairview Street, and through Ida Lee Park.

Figure 9. Trails CFS

Name	Type/Designation	Miles
Blue Trail	Shared Use Paths	5.50
Green Trail	Shared Use Paths	2.60
Total Current		**8.10**

Source: Town of Leesburg.

Capital Facility Standard (CFS)	
Miles	8.10
Population in 2023	51,097
Miles Per 1,000 Persons	0.16

The current estimated cost to the Town for trail expansion is $4.3 million per linear mile.

Figure 10. Trails Costs

Summary	Planned Time Frame	Size	Unit	Estimated Total Cost	Non-Town Funding	Town Cost	Total Cost/Unit	Local Cost/Unit
Tuscarora Creek Trail Phase I	FY 2030	0.30	Linear Mile	$2,360,000	$1,800,000	$560,000	$7,788,000	$1,848,000
Old Waterford Road Trail to Morven Park	FY 2027	0.19	Linear Mile	$1,107,000	$0	$1,107,000	$5,844,960	$5,844,960
Tuscarora Creek Trail Phase II[1]	FY2031+	0.47	Linear Mile	$5,000,000	$2,500,000	$2,500,000	$10,560,000	$5,280,000
Total		**0.97**		**$8,467,000**	**$4,300,000**	**$4,167,000**	**$8,765,835**	**$4,314,071**
						Rounded Cost per Unit		**$4,310,000**

[1] Non-Town Funding share based on weighted average of other projects listed at 50%.

Source: Draft Proposed FY2025 Town of Leesburg Capital Improvement Plan.

Recreation Facilities

The Town of Leesburg has a current inventory of 78,500 square feet of recreation facility space. Detailed in Figure 11, the current CFS is 1.54 square feet per person (78,500 square feet / 51,097 residents = 1.54 square feet per person).

Figure 11. Recreation Facilities CFS

Name	Type/Designation	Square Feet
Ida Lee Recreation Center	Recreation Center	71,000
Olde Izaak Walton Park	Recreation Center	7,500
Total		**78,500**

Source: Town of Leesburg.

Capital Facility Standard (CFS)	
Square Feet	78,500
Population in 2023	51,097
Sq. Ft. Per Person	1.54

The capital cost for recreation facility expansion is from Loudoun County and is estimated at $550 per square foot.

Parks and Recreation Capital Needs Assessment (CNA)

Capital needs from growth are derived using the CFS and cost factors for the infrastructure components discussed above. For example, based on projected population growth, current park improvements CFS, and the cost estimate per acre for park improvements, there is a 10-year need for improvements on 46.8 acres of parks at a total cost of $3.7 million. In total, $18.7 million in parks and recreation capacity costs are projected to serve growth over the next 10 years if growth occurs as projected in Appendix B.

Figure 12. Park & Recreation CNA

Parks CFS

A	Park Improvements	6.35	Acres Per 1,000 Persons
B	Park Land	5.02	Acres Per 1,000 Persons
C	Trails	0.16	Miles Per 1,000 Persons
D	Recreation Facilities	1.54	Sq. Ft. Per Person

	Park Needs Town of Leesburg	Base Year 2023	1 2024	2 2025	3 2026	4 2027	5 2028	10 2033	10-Year Increase	Cost per Unit	Cost of Future Dev.
							multi-year interval>>		K (sum Yrs 1-10)	L	M = K x L
E	Projected Population	51,097	51,834	52,571	53,308	54,046	54,783	58,468			
F	*Annual Population Increase*		*737*	*737*	*737*	*737*	*737*	*737*	7,371		
			Annual Increase								
G=A x F/1000	Park Improvements	Acres	5	5	5	5	5	5	46.8	$79,160	$3,705,139
H=B x F/1000	Park Land	Acres	4	4	4	4	4	4	37.0	$200,000	$7,400,460
I=C x F/1000	Trails	Miles	0.12	0.12	0.12	0.12	0.12	0.12	1.2	$4,310,000	$5,083,025
J=D x F	Recreation Facilities	Sq. Ft.	1,135	1,135	1,135	1,135	1,135	1,135	11,351	$550	$6,243,217
										Total Cost of Growth	$18,726,702

Parks and Recreation Capital Intensity Factor (CIF)

Figure 13 provides a summary of the input variables (described in the chapter sections above) used to calculate the total cost per person. The CIF per person is derived by multiplying the CFS by the local cost per infrastructure unit. For example, the park improvement cost per person of $503 is derived by multiplying 6.35 acres per 1,000 persons by $79,160 per acre and dividing by 1,000 (6.35 x $79,160/1,000 = $503 (rounded).)

The CIF per housing unit is derived by multiplying the total cost per person by the household size factors by type of housing unit. An example of the calculation for a single family detached unit is: the total cost per person ($3,044) multiplied by the persons per household (3.84) to arrive at the CIF per single family detached unit of $11,688 (truncated).

Figure 13. Parks and Recreation Capital Intensity Factor

Component	Infrastructure Unit	CFS	Local Cost per Infrastructure Unit	Cost per Person
Park Improvements	Acre	6.35 Acres Per 1,000 Persons	$79,160	**$503**
Park Land	Acre	5.02 Acres Per 1,000 Persons	$200,000	**$1,004**
Trails	Miles	0.16 Miles Per 1,000 Persons	$4,310,000	**$690**
Recreation Facilities	Square Feet	1.54 Sq. Ft. Per Person	$550	**$847**
Total Cost				**$3,044**

RESIDENTIAL			
Housing Unit Type	**Household Size**	**Cost per Person**	**Capital Intensity Factor**
Single Family Detached Suburban	3.84	$3,044	**$11,688**
Townhome (Single Family Attached)	3.12	$3,044	**$9,497**
Multi-family Attached	2.06	$3,044	**$6,270**
Multi-family Stacked	2.41	$3,044	**$7,336**

Capital Plans for Parks and Recreation

The Town of Leesburg plans to continue to add capacity in its parks system through the following anticipated projects:

- Expand capacity at existing parks per projects identified in the current CIP
- Acquire park land to expand system-level park offerings
- Continue to add to the Town's trail network per projects in the CIP
- Expand capacity at recreation facilities

Service Area

TischlerBise recommends a townwide collection and expenditure zone. Construction of system-level parks and recreation facilities serve all residents regardless of location.

POLICE CAPITAL IMPACTS

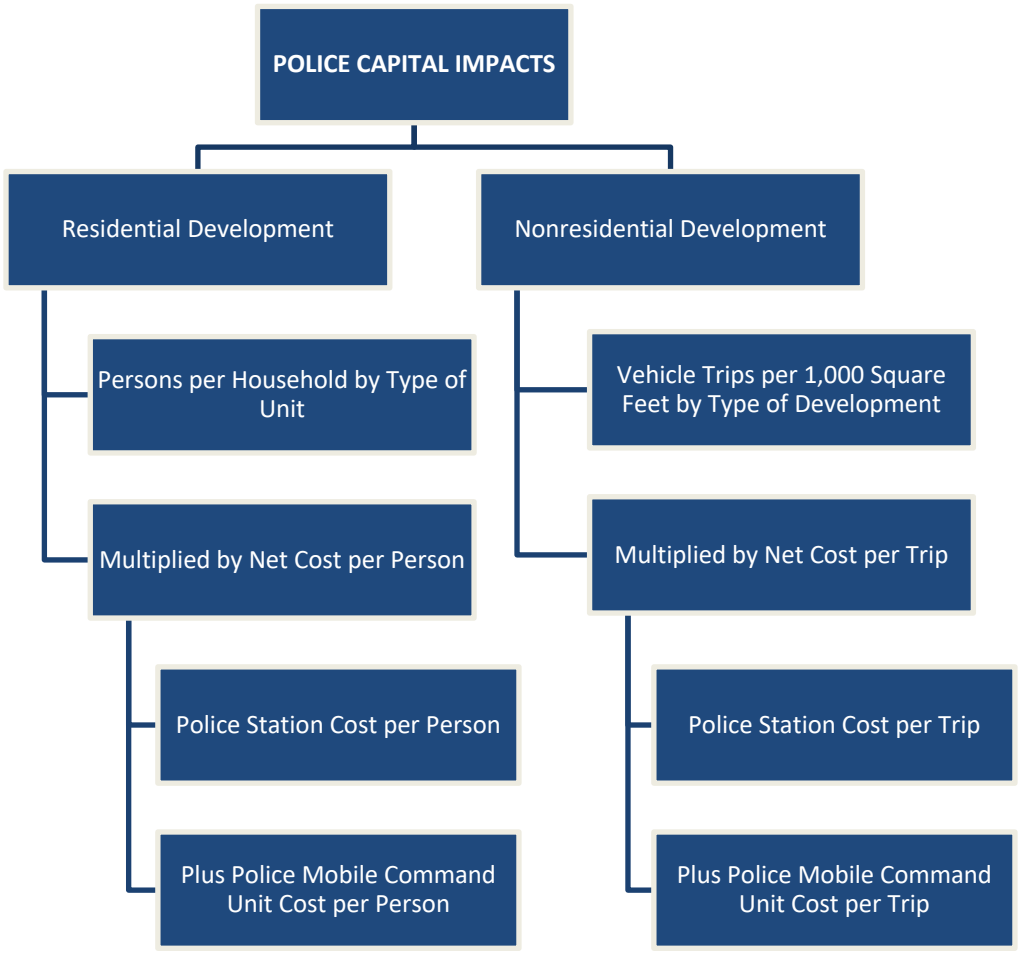
Methodology

Town of Leesburg Police Department capital impact costs are calculated using the plan-based methodology. Components include:

- Police Station Expansion
- Police Mobile Command Post

Capital impacts are calculated on a per capita basis for residential development and a per vehicle trip basis for nonresidential development. Figure 14 illustrates the methodology used to determine the capital impact amount. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the components. The residential portion is derived from the product of persons per household multiplied by the net cost per person. The nonresidential portion is derived from the product of average daily vehicle trips per 1,000 square feet of nonresidential space multiplied by the net cost per trip.

Figure 14. Police Capital Impact Methodology Diagram



A *plan-based approach* is used for the Police capital impact calculation. Police station space is at capacity currently hence the current plan for expansion of police station space and the purchase of a mobile command post.

Cost Allocation for Police Capital Improvements

Police facilities serve both residential and nonresidential development. Although cash proffers are likely to be collected only from residential development, an allocation is necessary to ensure proportionality between residential and nonresidential demand. A functional population approach is used that allocates the cost of facilities to residential and nonresidential development based on the activity of residents and workers in the Town over 24 hours in a day.

Residents that do not work are assigned 20 hours per day to residential development and 4 hours per day to nonresidential development (annualized averages). Residents that work in Leesburg are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside the Town are assigned 14 hours to residential development, the remaining hours in the day are assumed to be spent outside of the Town working. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2020 functional population data, residential development accounts for 73 percent of the functional population, while nonresidential development accounts for 27 percent. See Figure 15.

Figure 15. Proportionate Share Factors for Police Facilities

Demand Units in 2020					
Residential				*Demand*	*Person*
Population	48,381			*Hours/Day*	*Hours*
Residents Not Working		23,153		20	463,060
Employed Residents		25,228			
Employed in Leesburg			3,065	14	42,910
Employed outside Leesburg			22,163	14	310,282
				Residential Subtotal	816,252
				Residential Share =>	**73%**
Nonresidential					
Non-working Residents		23,153		4	92,612
Jobs Located in Leesburg		20,698			
Residents Employed in Leesburg			3,065	10	30,650
Non-Resident Workers (inflow commuters)			17,633	10	176,330
				Nonresidential Subtotal	299,592
				Nonresidential Share =>	**27%**
				TOTAL	1,115,844

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2020).

Police Capital Facility Standards and Capital Cost Analysis

The following section details the CFS calculations and capital cost per person for each infrastructure category under the Police category.

Police Stations

The Town of Leesburg has a current Police Headquarters Station of 24,769 square feet and is in the process of expanding the facility with a 14,000 square foot addition. Combined the 38,769 square feet is anticipated to serve existing development plus growth ten years after completion (assumed at 2036). The total cost to improve the entire facility (current and addition) is $26.5 million, resulting in a cost per square foot of $684.

As shown in Figure 16, the Town's CFS for Police station space is allocated to residential development as detailed above and results in 0.47 square feet per person. (38,769 square feet x 73% residential share / 60,679 projected residents in 2036 = 0.47 square feet per person).

Applying the cost per square foot to the CFS yields a CIF of $321 per person (0.47 square feet per person x $684 per square foot = $321 per person).

Figure 16. Police Station CFS and CIF

Facility	Date/Timing	Square Feet		
Police Station Current	Current	24,769		
Police Station Expansion	FY26	14,000	Cost	$/Sq. Ft.
Total Police Station		38,769	$26,529,400	$684

Source: Town of Leesburg.

RESIDENTIAL	
Capital Facility Standard	
Planned Total Square Feet	38,769
Residential Share*	73%
Residential Sq. Ft.	28,301
Population 2036	60,679
Square Feet per Person	**0.47**

Capital Intensity Factor	
Square Feet per Person	0.47
Cost per Sq. Ft.	$684
Cost per Person	**$321**

** See functional population figure*

Police Mobile Command Unit

The Town of Leesburg plans to expand capacity by adding a Mobile Command Post to its fleet. This apparatus would allow for a command center to be established away from a fixed site thereby augmenting capacity in the Police system. The apparatus is planned for acquisition around FY2026 at a total cost of $488,000 (current dollars), which includes the estimated cost for the Command Post Trailer ($403,000) and a tow vehicle ($85,000).

As shown in Figure 17, the Town's CFS for the Mobile Command Unit is allocated to residential development as detailed above and is anticipated to serve the Town through the year 2043. This results in a CFS of 0.01 of a unit per 1,000 persons. (1 unit x 73% residential share / 65,839 projected residents in 2043 = 0.01 unit per 1,000 persons).

The CIF per person of $5.00 is derived by multiplying the CFS of .01 per 1,000 persons by the cost for the Mobile Command Unit of $488,000. (0.01 unit per 1,000 persons / 1,000 persons x $488,000 per unit = $5.00 per person (rounded)).

Figure 17. Police Mobile Command Unit CFS and CIF

Facility	Date/Timing	Cost
Police Mobile Command Post*	FY26	$488,000

** Trailer and tow vehicle.*

Source: Town of Leesburg.

RESIDENTIAL	
Capital Facility Standard	
Planned Number of Units	1.00
Residential Share*	73%
Residential Unit	0.73
Population 2043	65,839
Unit per 1,000 Persons	**0.01**

Capital Intensity Factor	
Unit per 1,000 Persons	0.010
Cost per Unit	$488,000
Cost per Person	**$5.00**

** See functional population figure*

Police Capital Needs Assessment (CNA)

Capital needs from growth are derived using the CFS and cost factors for the infrastructure components discussed above. In total, $2.4 million in police capacity costs are projected to serve growth over the next 10 years if growth occurs as projected in Appendix B.

Figure 18. Police CNA

Police CFS

Police Stations	0.47	Sq. Ft. Per Person
Police Mobile Command Post	0.01	Unit Per 1,000 Persons

multi-year interval>>

Police Needs Town of Leesburg	Base Year 2023	1 2024	2 2025	3 2026	4 2027	5 2028	10 2033	10-Year Increase	Cost per Unit	Cost of Future Dev.
Projected Population	51,097	51,834	52,571	53,308	54,046	54,783	58,468			
Annual Population Increase		*737*	*737*	*737*	*737*	*737*	*737*	7,371		
		Annual Increase								
Police Stations	Square Feet	346	346	346	346	346	346	3,464	$684	$2,369,621
Police Mobile Command Post	Unit	0.01	0.01	0.01	0.01	0.01	0.01	0.07	$488,000	$35,970
								Total Cost of Growth		$2,405,592

Police Capital Intensity Factor (CIF)

Figure 19 provides a summary of the input variables (described in the chapter sections above) used to calculate the total cost per person. The CIF per person is derived by multiplying the CFS by the local cost per infrastructure unit as discussed above (i.e., the police cost per person of $321 is derived by multiplying 0.47 square feet per person by $684 per square foot (0.47 x $684 = $321 (rounded)).

The CIF per housing unit is derived by multiplying the total cost per person by the household size factors by type of housing unit. An example of the calculation for a single family detached unit is: the total cost per person ($326) multiplied by the persons per household (3.84) to arrive at the CIF per single family detached unit of $1,251 (truncated).

Figure 19. Police Capital Intensity Factor

Component	Infrastructure Unit	CFS	Local Cost per Infrastructure Unit	Cost per Person
Police Stations	Square Feet	0.47 Sq. Ft. Per Person	$684	**$321**
Police Mobile Command Post	Unit	0.01 Unit Per 1,000 Persons	$488,000	**$5**
Total Cost				**$326**

RESIDENTIAL			
Housing Unit Type	**Household Size**	**Cost per Person**	**Capital Intensity Factor**
Single Family Detached Suburban	3.84	$326	**$1,251**
Townhome (Single Family Attached)	3.12	$326	**$1,017**
Multi-family Attached	2.06	$326	**$671**
Multi-family Stacked	2.41	$326	**$785**

Capital Plans for Police

The Town of Leesburg plans to continue to add capacity in its police system through the following anticipated projects:

- Expansion of the Town's Headquarters Police Station.
- Acquisition and fit out of a Mobile Command Post and tow vehicle.

Service Area

TischlerBise recommends a townwide collection and expenditure zone. Construction of police facilities and acquisition of the Mobile Command Post serve all Town residents regardless of location.

TRANSPORTATION CAPITAL IMPACTS

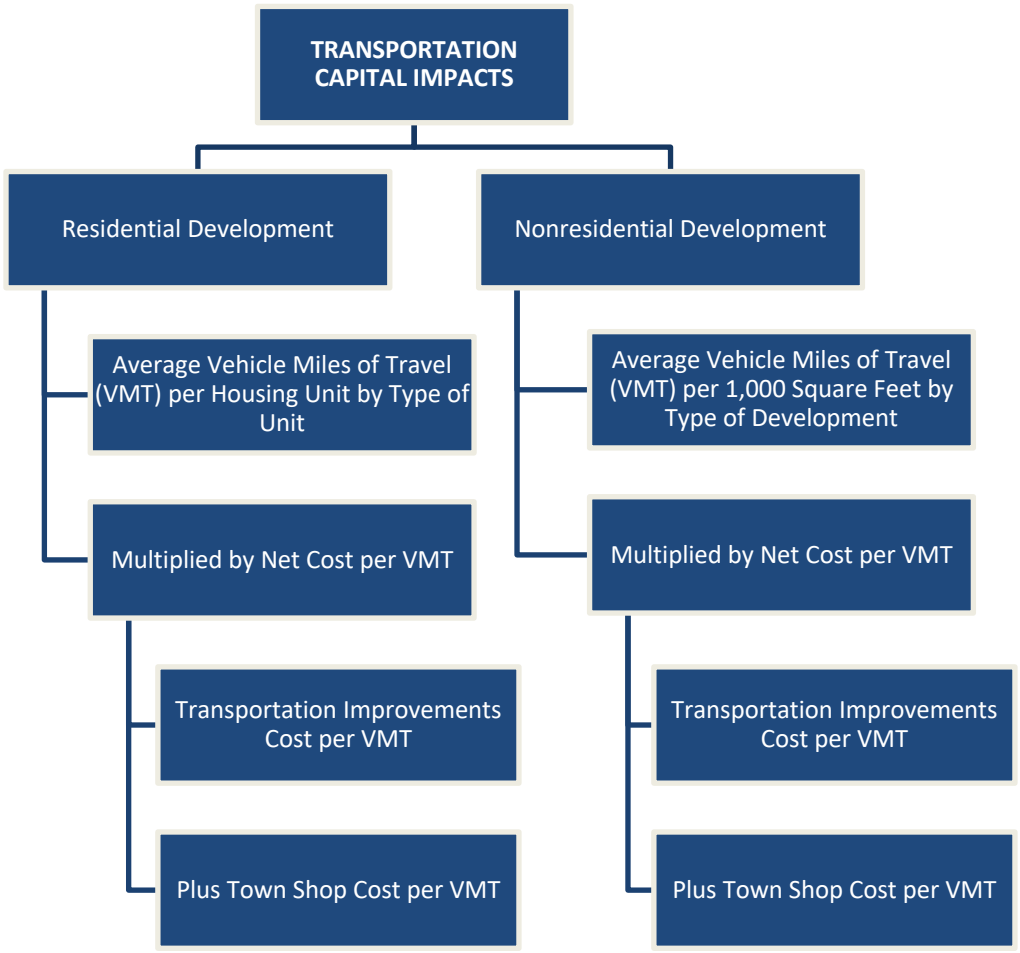
Methodology

Town of Leesburg transportation capital impact costs are calculated using the plan-based methodology. Components include:

- Transportation Capacity Improvements on Arterials and Collectors
- Public Works and Capital Projects Town Shop Expansion

Capital impacts are calculated on a per vehicle mile of travel basis for residential and nonresidential development. Figure 20 illustrates the methodology used to determine the capital impact amount. It is intended to read like an outline, with lower levels providing a more detailed breakdown of the components. Both portions are derived from the product of average vehicle miles of travel per demand unit (i.e., housing unit or nonresidential square feet) multiplied by the cost per vehicle mile of travel.

Figure 20. Transportation Capital Impact Methodology Diagram



A *plan-based approach* is used for the Transportation capital impact calculation. Transportation capacity projects have been identified through planning efforts and traffic analyses to identify the need and location for additional roadway capacity.

Demand Units

The Transportation CFS and CIF uses vehicle miles of travel (VMT) as the demand unit. Components used to determine VMT include average weekday vehicle trip generation rates, adjustments for pass-by trips, average trip length on system-level roads, and trip length weighting factors.

Vehicle Trip Generation Rates

TischlerBise uses trip generation rates published in *Trip Generation*, Institute of Transportation Engineers (ITE), 11th Edition (2021) for all development. The prototype for single-family development

is Single Family Detached Housing (ITE 210) which generates 9.43 average weekday vehicle trip ends per dwelling unit; the prototype for a townhome (single family attached) housing unit is Single Family Attached Housing (ITE 215), which generates 7.20 weekday vehicle trip ends per unit; the prototype for multifamily development is Multifamily Housing Low-Rise (ITE 220), which generates 6.74 average weekday vehicle trip ends per dwelling unit.

For nonresidential development, the prototype for retail development is Shopping Center (ITE 820) which generates 37.01 average weekday vehicle trips per 1,000 square feet of floor area; for office development, the proxy is General Office (ITE 710), and it generates 10.84 average weekday vehicle trip ends per 1,000 square feet of floor area; for industrial development, the proxy is Manufacturing (ITE 140), which generates 4.75 average weekday vehicle trip ends per 1,000 square feet of floor area.

Figure 21. Average Weekday Vehicle Trip Ends by Land Use

Development Type	ITE Code	Weekday VTE	Dev Unit
Single Family Detached	210	9.43	HU
Single Family Attached	215	7.20	HU
Multifamily	220	6.74	HU
Retail/Commercial	820	37.01	1,000 SF
Office/Institutional	710	10.84	1,000 SF
Industrial/Flex	140	4.75	1,000 SF

VTE=Vehicle Trip Ends

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

Trip Rate Adjustments

To calculate capital impacts, 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.

Adjustment for Pass-By Trips

For commercial / retail development, the trip adjustment factor is less than 50 percent because this type of development attracts vehicles as they pass by on arterial or collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, ITE data indicate 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 / retail 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.

Base Year Vehicle Trips

Figure 22 shows the calculation of vehicle trips generated by existing development. When average weekday vehicle trip ends and trip adjustment percentages discussed above are multiplied by the development unit quantities for Leesburg from the Land Use Assumptions in Appendix B (housing units and nonresidential square feet in thousands), the total number of average daily vehicle trips generated by existing development is determined. As shown, this totals 171,263 average daily vehicle trips.

Figure 22. Average Daily Vehicle Trips in the Town of Leesburg

Development Type	ITE Code	Weekday VTE	Dev Unit	Trip Adj	2023 Dev. Units	2023 Avg. Daily Trips
Single Family Detached	210	9.43	HU	50%	7,237	34,122
Townhome (Single Family Attached)	215	7.20	HU	50%	4,699	16,916
Multifamily	220	6.74	HU	50%	4,921	16,584
Retail/Commercial	820	37.01	1,000 SF	38%	4,760	66,939
Office/Institutional	710	10.84	1,000 SF	50%	6,022	32,642
Industrial/Flex	140	4.75	1,000 SF	50%	1,709	4,059

VTE=Vehicle Trip Ends

Total Adjusted Vehicle Trips in Base Year	**171,263**

Average Trip Length and Vehicle Miles of Travel

Using vehicle miles of travel (VMT) in the calculation requires a determination of the average trip length on the Town's arterial and collector network.[6] VMT is a measurement unit equal to one vehicle traveling one mile. In the aggregate, VMT is the product of daily traffic on a roadway segment (vehicle trips) multiplied by the length of that segment. A lane mile is a rectangular area of pavement, one lane wide and one mile long. The segment length in this study reflects the "consumption" or utilization of the roadway system and is calibrated to the current network.

To determine average trip length on arterials and collectors in Leesburg, Virginia Department of Transportation (VDOT) data was obtained for Daily Vehicle Mile of Travel on principal and minor arterials and major collectors in Leesburg. Given this figure and average daily vehicle trips from existing development (see Figure 22), an average trip length can be calculated. The formula for VMT is trips x lane miles. Knowing VMT and average daily trips, one can solve for lane miles: 546,979 VMT / 171,263 trips = 3.2 lane miles average trip length (rounded).

[6] 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 is captured in the analysis of average trip length, which is used to calculate vehicle miles of travel. Specifically, the analysis narrows the average trip length determination to the following question, "what is the average vehicle trip length on the transportation system (arterials and collectors) (i.e., the same type of streets used to document current infrastructure standards)?"

Figure 23. Average Trip Length on Leesburg System Roadway Network

Actual VMT on Leesburg Arterials and Major Collectors*	546,979
Average Daily Trips from Development^	171,263
Estd. Trip Length (lane miles) (Arterials and Collectors)**	3.2

** VDOT, 2021 VDOT, Daily Vehicle Miles Traveled (DVMT) by Physical Jurisdiction by Federal Functional System (for Town of Leesburg).*

^ See supporting respective figure.

*** Reflects amount of arterial and collector infrastructure used per trip (VMT on arterials and collectors divided by average daily trips).*

Trip Length Weighting Factor by Type of Land Use

The transportation capital impacts methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. Per the National Household Travel Survey, vehicle trips from residential development are approximately 117 percent of the average trip length. The residential trip length adjustment factor includes data on home-base work trips, social, and recreational purposes. Conversely, shopping trips associated with commercial / retail development are roughly 73 percent of the average trip length while other nonresidential development typically accounts for trips that are 73 percent of the average for all trips.[7]

Using the above factors, VMT per land use can be calculated, shown below in Figure 24.

Figure 24. VMT per Service Unit on Arterial and Collector Network

Development Type	ITE Code	Weekday VTE	Dev Unit	Trip Adj	Avg. Trip Length	Trip Length Weighting Factor*	Weekday VMT per Dev. Unit^
Single Family Detached	210	9.43	HU	50%	3.2	117%	17.65
Townhome (Single Family Attached)	215	7.20	HU	50%	3.2	117%	13.48
Multifamily	220	6.74	HU	50%	3.2	117%	12.62
Retail/Commercial	820	37.01	1,000 SF	38%	3.2	73%	32.85
Office/Institutional	710	10.84	1,000 SF	50%	3.2	73%	12.66
Industrial/Flex	140	4.75	1,000 SF	50%	3.2	73%	5.55

VTE=Vehicle Trip Ends

** U.S. Dept. of Transportation, Federal Highway Administration, "2017 National Household Transportation Survey."*

^ VMT = Weekday VTE x Trip Adj x Trip Length Weighting x Average Trip Length on Arterials and Collectors

Source: Institute of Transportation Engineers, 11th Edition (2021); U.S. DOT; VDOT; TischlerBise analysis.

[7] U.S. Department of Transportation, Federal Highway Administration, *2017 National Household Travel Survey.*

Projected Travel Demand

Given the above factors and projected residential and nonresidential growth (see Appendix B), travel demand on Leesburg arterials and collectors can be projected.

Figure 25. Travel Demand Model

Five-Year Increments ===>

		2023	2024	2025	2026	2027	2028	2033	2038	2043	10-Year	20-Year
		Base	1	2	3	4	5	10	15	20	Increase	Increase
Development	Single Family Detached Units	7,237	7,304	7,371	7,438	7,505	7,572	7,907	8,242	8,577	670	1,340
	Townhome (Single Family Att.) Units	4,699	4,806	4,912	5,019	5,125	5,232	5,764	6,297	6,829	1,065	2,130
	Multifamily Units	4,921	5,006	5,090	5,175	5,259	5,344	5,766	6,189	6,611	845	1,690
	Retail/Commercial(1,000 SF)	4,760	4,805	4,850	4,895	4,940	4,985	5,211	5,436	5,662	451	902
	Office/Instit (1,000 SF)	6,022	6,083	6,143	6,203	6,263	6,323	6,623	6,923	7,223	600	1,201
	Industrial/Flex (1,000 SF)	1,709	1,759	1,808	1,858	1,907	1,957	2,204	2,452	2,699	495	990
Average Weekday Vehicle Trips	Single Family Det Res Trips	34,122	34,438	34,754	35,070	35,386	35,702	37,282	38,861	40,441	3,159	6,318
	Townhome (Single Family Att) Trips	16,916	17,300	17,683	18,067	18,450	18,833	20,750	22,667	24,584	3,834	7,668
	Multifamily Res Trips	16,584	16,869	17,153	17,438	17,723	18,008	19,431	20,855	22,279	2,848	5,695
	Retail/Commercial Trips	66,939	67,574	68,208	68,842	69,477	70,111	73,282	76,454	79,625	6,343	12,686
	Office/Instit Trips	32,642	32,967	33,293	33,618	33,944	34,269	35,896	37,524	39,151	3,255	6,509
	Industrial Trips	4,059	4,177	4,294	4,412	4,529	4,647	5,235	5,822	6,410	1,175	2,351
	Total Vehicle Trips	**171,263**	**173,324**	**175,386**	**177,447**	**179,508**	**181,570**	**191,877**	**202,183**	**212,490**	20,613	41,227
VMT	**Vehicle Miles of Travel (VMT) (arterials and collectors)**	**495,283**	**501,484**	**507,685**	**513,886**	**520,087**	**526,288**	**557,292**	**588,297**	**619,301**	62,009	124,018

VMT = Weekday VMT by Type x Development by Type

Transportation Capital Facility Standards and Capital Cost Analysis

This section details the level of service and capital cost per demand unit for each infrastructure category.

Transportation Capacity Improvements

Figure 26 summarizes the cost of planned transportation system capacity improvements to accommodate growth in the Town of Leesburg. The Town anticipates spending an estimated $63 million on the projects listed below, which will benefit both new and existing development.

To calculate the capital cost per VMT, total cost to the Town is divided by the 2033 VMT estimate resulting in a cost of $114 per VMT. The capital cost is calculated using total VMT, reflecting existing development (495,283 VMT) plus projected growth (an additional 62,009 VMT for a total of 557,292 VMT), and not allocated solely to growth as the planned projects will serve existing development as well as growth.

Figure 26. Transportation CFS and CIF

Capacity Transportation Projects	Date/Timing	Estimated Total Cost	Non-Town Funding	Town Cost
Battlefield Parkway/Route 15 Bypass Interchange (20004)	FY29+	$59,375,000	$59,000,000	$375,000
Catoctin Circle Turn Lane and Trail (25301)	FY29+	$2,920,890	$1,040,000	$1,880,890
East Market/Battlefield Parkway Interchange (15303)	2022/2024	$77,541,300	$76,000,000	$1,541,300
Evergreen Mill Road Widening (15302)	2028	$32,000,000	$19,450,300	$12,549,700
Route 15 Bypass/Edwards Ferry/Fort Evans Interchange (09307)	TBD	$231,338,200	$187,396,800	$43,941,400
Traffic Signal Fiber Connections (23303)	2024/27-30	$845,000	$0	$845,000
Traffic Signal - Fieldstone/Battlefield Parkway (29301)	2027	$1,559,500	$0	$1,559,500
Traffic Signal - Sycolin/Gateway (24302)	2027	$1,150,000	$589,405	$560,595
East Market Street Improvements (Plaza to Ft Evans)	2029/2030	$6,984,659	$6,984,659	$0
Total		**$413,714,549**	**$350,461,164**	**$63,253,385**

Source: Town of Leesburg Proposed FY2025 Budget and FY 2025-2030 Capital Improvements Program; Town of Leesburg Department of Public Works and Capital Projects.

RESIDENTIAL	
Capital Intensity Factor	
Town Cost for Capacity Transportation Projects	$63,253,385
2033 Vehicle Miles of Travel (VMT)	557,292
Cost per VMT	**$114**

Public Works and Capital Projects Town Shop

The Town of Leesburg has a current Public Works and Capital Improvements Town Shop planned for expansion and refurbishment. The current shop has 16,656 square feet and is planned for expansion to a total of 20,644 square feet (an increase of 3,988 square feet). Combined, the 20,644 square feet is anticipated to serve growth ten years after completion (assumed at 2037). The total cost to improve the entire facility (current and addition) is estimated at $16.2 million, resulting in a cost per square foot of $786.

As shown in Figure 27, the Town's CFS for the Town Shop is allocated to all development and results in 35 square feet per 1,000 VMT. (20,644 square feet / 582,096 VMT projected in 2037 x 1,000 = 35 square feet per 1,000 VMT (rounded).)

Applying the cost per square foot to the CFS yields a CIF of $28 per VMT (35 square feet per 1,000 VMT x $786 per square foot / 1,000 = $28 per VMT (rounded)).

Figure 27. Public Works and Capital Projects Town Shop CFS and CIF

Facility	Date/Timing	Square Feet	Cost	$/Sq. Ft.
Town Shop Expansion and Refurbishment	FY2027	20,644	$16,225,000	$786

Source: Town of Leesburg Proposed FY2025 Budget and FY 2025-2030 Capital Improvements Program; Town of Leesburg Department of Public Works and Capital Projects.

RESIDENTIAL	
Capital Facility Standard	
Planned Total Square Feet	20,644
Total VMT 2037	582,096
Square Feet per 1,000 VMT	**35**

Capital Intensity Factor	
Square Feet per 1,000 VMT	35
Cost per Sq. Ft.	$786
Cost per VMT	**$28**

Transportation Capital Needs Assessment (CNA)

Capital needs from growth are derived using the CFS and cost factors for the infrastructure components discussed above. For example, based on projected VMT growth and current Town Shop CFS and cost estimate, there is a 10-year need for 2,170 square feet of Town Shop space to serve projected growth at a cost of $1.7 million. In total, $8.8 million in Transportation capacity costs are projected to serve growth over the next 10 years, if growth occurs as projected in Appendix B.

Figure 28. Transportation CNA

Transportation CFS

Arterial and Collector Improvements	$114.00	per VMT
Town Shop	35.00	Sq. Ft. per 1,000 VMT

multi-year interval>>

Transportation Needs Town of Leesburg	Base Year 2023	*1* 2024	*2* 2025	*3* 2026	*4* 2027	*5* 2028	*10* 2033	10-Year Increase	Cost per Unit	Cost of Future Dev.
Projected VMT	495,283	501,484	507,685	513,886	520,087	526,288	557,292			
Annual VMT Increase		*6,201*	*6,201*	*6,201*	*6,201*	*6,201*	*6,201*	62,009		
		Annual Increase								
Arterial and Collector Improvements	VMT	6,201	6,201	6,201	6,201	6,201	6,201	62,009	$114	$7,069,007
Town Shop	Square Feet	217	217	217	217	217	217	2,170	$786	$1,705,863
									Total Cost of Growth	$8,774,870

Transportation Capital Intensity Factor (CIF)

Figure 29 provides a summary of the input variables (described in the chapter sections above) used to calculate the CIF.

The CIF per housing unit is derived by multiplying the total cost per VMT by the VMT per housing unit. An example of the calculation for a single family detached unit is: the total cost per VMT ($142) multiplied by the VMT per single family detached unit (17.65) to arrive at the CIF per single family detached unit of $2,506 (truncated).

Figure 29. Transportation Capital Intensity Factor

Component	Infrastructure Unit	CFS	Local Cost per Infrastructure Unit	Cost per VMT
Arterial and Collector Improvements	$	$114.00 per VMT		$114
Town Shop	Square Feet	35.00 Sq. Ft. per 1,000 VMT	$786	$28
Total Cost				$142

RESIDENTIAL

Housing Unit Type	Weekday Avg. Daily Trips	Trip Adj.	Trip Length	Trip Length Adj.	VMT	Cost per VMT	Capital Intensity Factor
Single Family Detached Suburban	9.43	50%	3.20	117%	17.65	$142	$2,506
Townhome (Single Family Attached)	7.20	50%	3.20	117%	13.48	$142	$1,914
Multi-family Attached	6.74	50%	3.20	117%	12.62	$142	$1,792
Multi-family Stacked	6.74	50%	3.20	117%	12.62	$142	$1,792

Capital Plans for Transportation

The Town of Leesburg plans to continue to add capacity in its transportation system through construction of the capital projects identified in Figure 26 as well as the planned Town Shop expansion identified in the Town's CIP. Additional or comparable capacity projects can be substituted in the CFS, CIF, and CNA analysis in the future to meet the needs brought about by growth. At this time, the capacity transportation projects in the Town's Six-Year Capital Improvement Program are predominately vehicle-related. The CIP does not include discrete transit, bicycle, or pedestrian infrastructure projects at this time (with the exception of one project that adds capacity to pedestrian infrastructure). Absent a plan and funding strategy, the proposed CIF does not currently address multimodal goals as identified in the Town Plan. As plans evolve, future multimodal projects can be explored for inclusion in the CIF.

Service Area

TischlerBise recommends a townwide collection and expenditure zone. Construction of system-level transportation improvements serve all Town residents regardless of location.

APPENDIX A: HOUSING UNIT TYPE DEFINITIONS

Single-Family Detached: A dwelling unit designed for and occupied by one family only and not structurally connected or attached to any other dwelling and with each building having a separate lot, with minimum dimensions required by district regulations.

Townhome (Single-Family Attached): A duplex, triplex, quadruplex, or townhouse dwelling unit.

Multifamily Attached: One of a group of dwelling units contained within a building, where each dwelling unit in the building is separated from other dwelling units within the building by a vertical wall and a ceiling/floor, with each dwelling unit generally consisting of a single floor or level, and each such unit being accessed by one or more common entrances leading directly from the outdoors at ground level, except that a ground floor dwelling unit may have its own ground floor external entrance. The dwelling unit may be separately transferable and capable of being individually owned, such as a condominium, or offered for rent. Each such dwelling unit within the multifamily building may be referred to as a "multifamily dwelling unit" or "attached multifamily dwelling unit", and such dwelling units may include various floor plans, such as studio/efficiency units, and floor plans with one or more bedrooms. Attached multifamily dwelling units are commonly referred to as garden style, mid-rise, and high-rise condominiums/apartments.

Multifamily Stacked: A vertical and horizontal grouping of dwelling units, where at least 1 dwelling unit within the grouping contains 2 or more stories and is situated over or under another dwelling unit. Each unit has its own ground floor external entrance or shares its entrance with only an adjacent unit. Stacked multifamily dwelling units are commonly referred to as stacked townhomes, one over twos, and two over twos.

Source: Loudoun County Zoning Ordinance, Chapter 12: Definitions.

APPENDIX B: LAND USE ASSUMPTIONS

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Overview

This section documents the demographic data and land use projections used in the Capital Impacts Study for the Town of Leesburg.

The following section includes discussion and findings on:

- Household Sizes
- Current population and housing unit estimates
- Residential projections
- Current employment and nonresidential floor area estimates
- Nonresidential projections

Household Size

Capital impact calculations often use per capita standards and persons per housing unit or persons per household to derive proportionate-share fee amounts. A household is a housing unit that is occupied by year-round residents.

TischlerBise recommends that capital impacts for residential development in the Town of Leesburg be calculated according to the number of residents per household consistent with household sizes used by Loudoun County. As shown below a single family detached suburban housing unit averages 3.84 persons per household. A townhome (single family attached) unit (including duplexes, triplexes, and quadruplexes) averages 3.12 persons per unit. Multifamily attached has an average household size of 2.06 and multifamily stacked has an average household size of 2.41. Housing unit types are consistent with Loudoun County's Capital Intensity Factors.

Figure 30. Household Size

Housing Unit Type	Household Size
Single Family Detached Suburban	3.84
Townhome (Single Family Attached)	3.12
Multi-family Attached	2.06
Multi-family Stacked	2.41

Source: Loudoun County Fiscal Impact Committee, 2020 Fiscal Impact Committee Guidelines

Residential Estimates and Projections

Estimate of Housing Units

The 2023 estimate of housing units in the Town of Leesburg is from Town data and is current as of April 1, 2023.

Figure 31. Town of Leesburg 2023 Housing Unit Estimate

Housing Unit Type	# of Units*
Single Family Detached	7,237
Townhome (Single Family Attached)^^	4,699
Multifamily Attached	4,666
Multifamily Stacked	255
Grand Total	**16,857**

** Town of Leesburg*

^^ Includes townhome, duplex, triplex, and quadraplex units.

Estimate of Population

Based on the 2023 housing unit estimate and household size factors discussed above, TischlerBise estimates the Town's April 1, 2023, population at 51,097. The current number of housing units are multiplied by average household sizes, by respective unit type, to derive the estimate. See Figure 32.

Figure 32. Town of Leesburg 2023 Population Estimate

Housing Unit Type	# of Units*	HH Size^	Population**
Single Family Detached	7,237	3.84	26,956
Townhome (Single Family Attached)^^	4,699	3.12	14,221
Multifamily Attached	4,666	2.06	9,324
Multifamily Stacked	255	2.41	596
Grand Total	**16,857**		**51,097**

** Town of Leesburg*

^ Loudoun County Fiscal Impact Committee, 2020 Fiscal Impact Committee Guidelines

*** Assumes 97% occupancy, per Town of Leesburg.*

^^ Includes townhome, duplex, triplex, and quadraplex units.

Residential Projections

The Town of Leesburg recently completed a comprehensive plan update, *Legacy Leesburg,* that included a market study and evaluation of potential future residential development. Assuming land use policy as adopted in the plan, reflecting a constrained projection under current zoning and regulatory constraints, 20-year residential growth is projected at just over 5,000 housing units (assuming constraints) distributed among single family detached, townhome (single family attached), and multifamily units.

Figure 33 shows housing unit and population projections through 2043. (Starting in year 5, five-year increments are shown in the figure below, although interim years are projected.) Projected housing unit growth by *type* of housing unit reflects recent trends with townhome (single family attached) and multifamily units making up a higher share of new housing development than their current shares. New townhome (single family attached) units are projected at 41 percent of total new units compared to the current share of inventory at 28 percent; new multifamily units are projected at 33 percent compared to the current share of inventory at 29 percent.

Population and housing unit projections are used for the purpose of understanding of the possible future pace of service/facility demands, revenues, and expenditures. As these facility demand factors will vary to the extent that future development varies, there will be minimal effect on the capital impact calculation.

Housing unit and population projections use a base year of 2023. The number of total housing units projected by 2043 is 22,017 with a projected total population of 65,839. The breakdown of population and units by type is shown in the figure below.

Figure 33. Housing Unit and Population Projections

		Projections				*Five-year increments*				10-Year	20-Year
	Base Year	1	2	3	4	5	10	15	20	2023-2033	2023-2043
	2023	2024	2025	2026	2027	2028	2033	2038	2043	Total Increase	Total Increase*
Housing Units *HH Size^*											
Single Family Detached 3.84	7,237	7,304	7,371	7,438	7,505	7,572	7,907	8,242	8,577	**670**	**1,340**
Townhome (Single Family Attached)^^ 3.12	4,699	4,806	4,912	5,019	5,125	5,232	5,764	6,297	6,829	**1,065**	**2,130**
Multifamily 2.02	4,921	5,006	5,090	5,175	5,259	5,344	5,766	6,189	6,611	**845**	**1,690**
Total Housing Units	16,857	17,115	17,373	17,631	17,889	18,147	19,437	20,727	22,017	**2,580**	**5,160**
Annual Increase		*258*	*258*	*258*	*258*	*258*	*258*	*258*	*258*		
Town Population**	51,097	51,834	52,571	53,308	54,046	54,783	58,468	62,154	65,839	**7,371**	**14,742**
Annual Increase		*737*	*737*	*737*	*737*	*737*	*737*	*737*	*737*		

* *Legacy Leesburg* constrained housing projection per Metropolitan Washington Council of Governments (MWCOG); reflects current zoning and regulatory constraints (*Legacy Leesburg,* page 54).

^ Multifamily household size reflects weighted average for multifamily attached and multifamily stacked.

** TischlerBise base year estimate from current housing units. Projection based on housing unit projections, average household size, and a 97% occupancy rate (per Town of Leesburg).

^^ *Includes townhome, duplex, triplex, and quadraplex units.*

Nonresidential Development Estimates and Projections

Current Nonresidential Estimates

In addition to data on residential development, the calculation of police and transportation capital impacts requires data on nonresidential square footage in the Town of Leesburg. TischlerBise obtained nonresidential square footage by type of land use from the Town of Leesburg. Figure 34 provides a summary.

Figure 34. Town of Leesburg 2023 Nonresidential Floor Area Estimate

	2023
Nonresidential Square Feet	
Retail	4,759,700
Office/institutional	6,022,453
Industrial/Flex	1,709,185
Total	12,491,338

Source: Town of Leesburg

Nonresidential Projections

Projected nonresidential development in the Town is from *Legacy Leesburg* and the market study that was conducted as part of the plan. Based on recent development activity and discussions with Town staff, the midpoint between the constrained and market-driven projections are assumed for the capital impacts study resulting in approximately 155,000 square feet of nonresidential space being built each year. Results are shown below.

Figure 35. Town of Leesburg Nonresidential Floor Area Projections

		Projections				*Five-year increments*					10-Year	20-Year
	Base Year	1	2	3	4	5	10	15	20		2023-2033 Total	2023-2043 Total
	2023	2024	2025	2026	2027	2028	2033	2038	2043		Increase	Increase*
Nonresidential Square Feet (in thousands)												
Retail	4,760	4,805	4,850	4,895	4,940	4,985	5,211	5,436	5,662		**451**	**902**
Office/institutional	6,022	6,083	6,143	6,203	6,263	6,323	6,623	6,923	7,223		**600**	**1,201**
Industrial/Flex	1,709	1,759	1,808	1,858	1,907	1,957	2,204	2,452	2,699		**495**	**990**
Total Nonresidential Sq. Ft.	12,491	12,646	12,801	12,955	13,110	13,265	14,038	14,811	15,584		**1,546**	**3,093**
Annual Increase		*155*	*155*	*155*	*155*	*155*	*155*	*155*	*155*			

* *Legacy Leesburg* nonresidential projection; reflects mid-range between constrained and market demand projection to align with recent nonresidential growth trends (*Legacy Leesburg*, page 55).

Summary Projections

The following figure provides a summary of the above growth projections.

Figure 36. Town of Leesburg Summary of Growth Projections

Demand Base	Base Year 2023	Year 10 2033	Year 20 2043	10-Year 2023-2033 Increase	20-Year 2023-2043 Increase
Population[1]	51,097	58,468	65,839	7,371	14,742
Housing Units[2]	16,857	19,437	22,017	2,580	5,160
Nonresidential Square Feet[3]	12,491,338	14,037,738	15,584,138	1,546,400	3,092,800

[1] TischlerBise base year estimate from current housing units. Projection based on housing unit projections, average household size, and a 97% housing unit occupancy rate (per Town of Leesburg).

[2] *Legacy Leesburg* constrained housing projection per Metropolitan Washington Council of Governments (MWCOG); reflects current zoning and regulatory constraints (*Legacy Leesburg,* page 54).

[3] *Legacy Leesburg* nonresidential projection; reflects mid-range between constrained and market demand projection to align with recent nonresidential growth trends (*Legacy Leesburg,* page 55).

APPENDIX C: CASH PROFFER BACKGROUND

Definition

A proffer is an offer by a landowner during the rezoning process to mitigate impacts of a rezoning. A form of *conditional zoning*, it applies additional conditions, or requirements, beyond existing requirements and regulations. A proffer can include the acceptance of cash payments to mitigate the impacts of a rezoning, called *cash proffers,* and are allowed under Virginia Code §15.2-2303 and §15.2-2298.

Cash proffers are voluntary one-time payments used to fund capital improvements necessitated by new growth. Cash proffers are akin to *impact fees,* which have been utilized by local governments in various forms for at least fifty years.[8] However, unlike impact fees, cash proffers only apply during the rezoning process and do not apply to "by-right" development. Cash proffers are not to be used to correct existing deficiencies but to provide additional capacity to serve new growth. Because cash proffers do not apply to by-right development and only apply during the rezoning process, only a portion of the impacts from new growth can be mitigated with a cash proffer system. *Cash proffers therefore have limitations for infrastructure funding and should not be regarded as the total solution for capital improvement needs. Rather, they should be considered one component of a comprehensive portfolio to ensure adequate provision of public facilities with the goal of maintaining current levels of service in a community.*

- Cash proffers only apply to rezonings and are not collected on any by-right development.
- Cash proffers can only be used to finance capital infrastructure that provides additional capacity and cannot be used to finance ongoing operations and/or maintenance and rehabilitation costs. Virginia law restricts the infrastructure categories to **public transportation facilities, public safety facilities, public school facilities, and public parks.**[9]
- Cash proffers cannot be deposited in the local government's General Fund. The funds must be accounted for separately and earmarked for the capital expenses for which they were collected.
- Cash proffers cannot be used to correct existing infrastructure deficiencies unless negotiated apart from the cash proffer system presented herein, or if there is a funding plan in place to correct the deficiency for all current residents and businesses in the community.
- Because cash proffers reflect a point in time, the calculations and study should be updated periodically (typically 3 to 5 years). Costs reflect the direct impact of new development on the need for new facilities and infrastructure and do not reflect secondary or indirect impacts.

[8] Other than Road Impact Fees, localities in the Commonwealth of Virginia are not authorized to implement impact fees (see Va. Code §15.2-2317 et seq. for authority and guidance).
[9] See Virginia Code §15.2-2303.4.

Approach

To ensure a reasonable relationship to new development and rezonings in particular, the cash proffer study focuses on three elements: "impact or need," "benefit," and "proportionality."

Demonstrating an Impact. All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the supply of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Cash proffers are calculated in a manner to determine what the applicable cost of development-related facilities, to the extent that the need for facilities is a consequence of development that is subject to the cash proffers. In this study, the impact of development on improvement 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.

Demonstrating a Benefit. A sufficient benefit relationship requires that cash proffer funds be segregated from other funds and expended only for the categories for which the proffers were collected. Cash proffers must be expended in a timely manner[10] and the facilities funded by the proffers must benefit the development paying the proffers. However, this does not require that facilities funded with cash proffer revenues be available *exclusively* to development paying the proffers. In other words, existing development may use and benefit from these improvements as well.

Procedures for the earmarking and expenditure of revenues are outlined in Virginia Code (see specifically §15.2303.2(B)). These requirements are intended to ensure that developments benefit from the cash proffers paid. Thus, an adequate showing of benefit must address procedural as well as practical issues.

Demonstrating Proportionality. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate the cash proffers for various types of facilities and categories of development. The demand for facilities is measured in terms of relevant and measurable attributes of development. For example, the need for school improvements is measured by the number of public school-age children generated by development.

The above requirements are further reinforced in the Code of Virginia under §15.2-2303.4 (effective July 1, 2016). Specifically, Section 15.2-2303.4(B) states that localities cannot request or accept an *unreasonable* proffer or deny a rezoning application or proffer condition amendment due to applicant's failure or refusal to submit an unreasonable proffer.

[10] Virginia Code §15.2-2303.2(A) states: "*The governing body of any locality accepting cash payments voluntarily proffered on or after July 1, 2005, shall, within twelve (12) years of receiving full payment of all cash proffered pursuant to an approved rezoning application, begin, or cause to begin (i) construction, (ii) site work, (iii) engineering, (iv) right-of-way acquisition, (v) surveying, or (vi) utility relocation on the improvements for which the cash payments were proffered.*"

The implementation of the proffer changes hinges on defining an unreasonable proffer, or more positively, defining a reasonable proffer. The figure below provides further detail on the approach to meet requirements of the law.

REASONABLE PROFFERS

VA Code Section	VA Code Text	Interpretation	How to Meet the Requirement
15.2-2303.4 (C)	*addresses an impact that is specifically attributable to a proposed new residential development or other new residential use applied for*	The demand from the residential land use creates a need for additional capacity in the infrastructure category for which the cash proffer is being requested or offered	Establish a nexus between types of residential development and specific impacts on infrastructure in locality. (E.g., student generation rates by type of housing unit.)
	addresses an impact to an offsite public facility	The need for the capital improvement must be for a system-level facility, provided to a larger geographic area than the project site	Use system-level infrastructure to establish current levels of service in cash proffer calculations.
	the new residential development or new residential use creates a need, or an identifiable portion of a need, for one or more public facility improvements in excess of existing public facility capacity at the time of the rezoning or proffer condition amendment	The impact from the residential development causes a need for additional capacity above what is available to the applicant. The additional capacity can be for a single facility or a portion of a facility improvement. Available capacity is determined by analyzing the current and projected levels of service provided in specific categories of infrastructure in the locality.	Define current levels of service / available capacities in cash proffer analysis and identify when capacities are reached. Identify incremental impact on facilities from residential development in cash proffer analysis.
	each such new residential development or new residential use applied for receives a direct and material benefit from a proffer made with respect to any such public facility improvements.	Entity/applicant paying the cash proffer receives a benefit in the form of a facility or portion of a facility being built or purchased.	Localities use cash proffer funding to build or purchase additional capacity in the infrastructure categories for which a cash proffer is collected. Separate funds established. Collection and expenditure areas may be necessary to ensure "direct" benefit.

Source: TischlerBise

Cash Proffer Implementation Considerations

While cash proffers are voluntary contributions, there are procedures that must be followed per Virginia law and to ensure payers receive benefit from the contribution.

Accounting

Monies received are accounted for separately and expenditures should be indicated in the capital improvement plan. Within twelve (12) years of receiving full payment of committed cash proffers, a locality must begin construction or relevant improvement for which the proffer was made. Localities that do not begin construction or other authorized alternative improvement must pay the amount to the Commonwealth Transportation Board for allocation to the secondary system construction program or the urban system construction program for the locality in which the proffered cash payments were collected (VA § 15.2-2303.2).

Cost Updates

All costs in the capital impact calculations are in current dollars with no assumed inflation over time. Necessary cost adjustments can be made as part of the recommended annual evaluation and update of the capital impact amounts using consumer price index (CPI), Marshall and Swift Building Cost Index, or Engineering News Record (ENR). TischlerBise recommends using ENR or Marshall Swift, which is specific to construction and accounts for geographic differences. The index can be applied against the calculated capital impact amounts. If cost estimates or other factors change significantly, calculations should be revisited. As capital impact calculations are based on a snapshot in time, an adopted policy should be periodically reviewed and updated. A full update is recommended no later than 5 years to reflect changes in development trends, infrastructure capacities, costs, funding formulas, etc.

Independent Analyses

Extraordinary costs, if any, in servicing newly developed properties should be addressed through administrative procedures and policies that allow independent studies to be submitted to the Town. Independent studies can also be allowed in certain circumstances when development will generate different amounts of demand than assumed in this study. These procedures should be addressed in the capital impact policy.

Written Policies

Written policies and implementation practices should be established to cover the items identified in this section to provide consistency in the process.

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