



Capital Improvements Plan and Development Impact Fees

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EXECUTIVE SUMMARY

Impact fees are one-time payments that must be used solely to fund system improvements needed to accommodate new development. In contrast to development exactions, which are typically referred to as project-level improvements, impact fees fund growth-related infrastructure that will benefit multiple development projects, or even the entire jurisdiction.

As documented in this report, Georgetown County has complied with all requirements of the South Carolina Development Impact Fee Act. Impact fees are proportionate and reasonably related to the capital improvement demands of new development. Specific costs have been identified using local data and current dollars. With input from County staff, TischlerBise determined demand indicators (a.k.a. service units) for each type of infrastructure and calculated proportionate share factors to allocate costs by type of development. The formulas used to calculate the impact fees are diagrammed in a flow chart for each type of public facility. The middle section of this document indicates the specific factors used to derive each type of impact fee. Impact fee methodologies also evaluate whether new development is entitled to a revenue credit to avoid potential double payment of growth-related capital costs.

Highlights of the South Carolina Impact Fee Act

South Carolina requires impact fees to be spent within three years of collection on growth-related system improvements identified in a mandatory Capital Improvements Plan (CIP). To be funded by impact fees, improvements must have a useful life of at least five years and a purchase price of at least \$100,000. Because the CIP will be updated on a regular basis, impact fee calculations are in current dollars (not inflated over time). The South Carolina Act also requires an annual report on impact fee collections and expenditures.

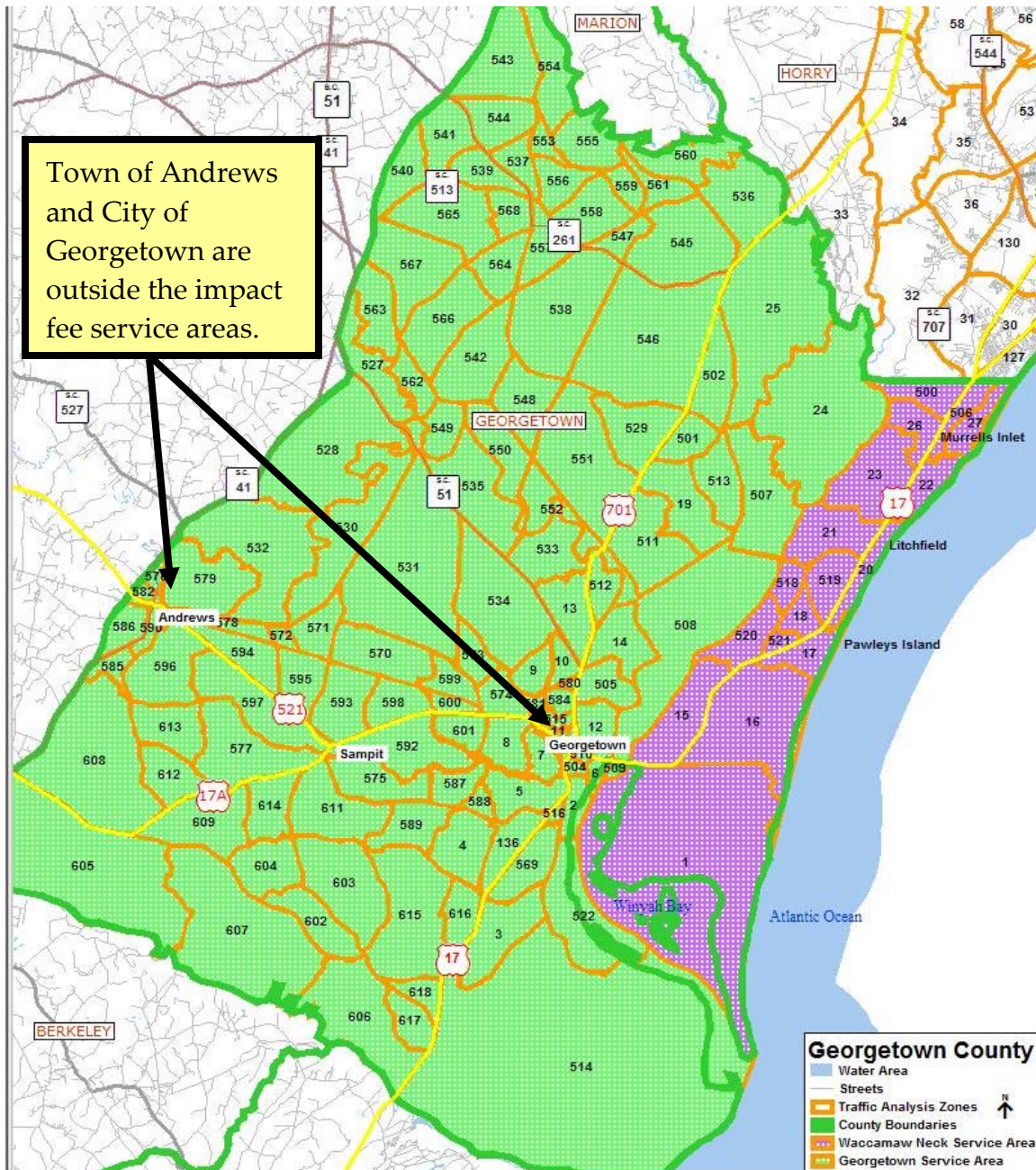
Report Organization

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

Service Areas

In Georgetown County, the City of Georgetown and the Town of Andrews are excluded from impact fee service areas. For growth-related road improvements, the county was divided into the Unincorporated Georgetown Service Area (UGSA) and the Waccamaw Neck Service Area (WNSA). In Figure 1, WNSA is shown with purple shading and UGSA is shown with green shading, with the exception of Town of Andrews and the City of Georgetown that are outside the impact fee service areas.

Figure 1 – Service Area Map for Road Impact Fees

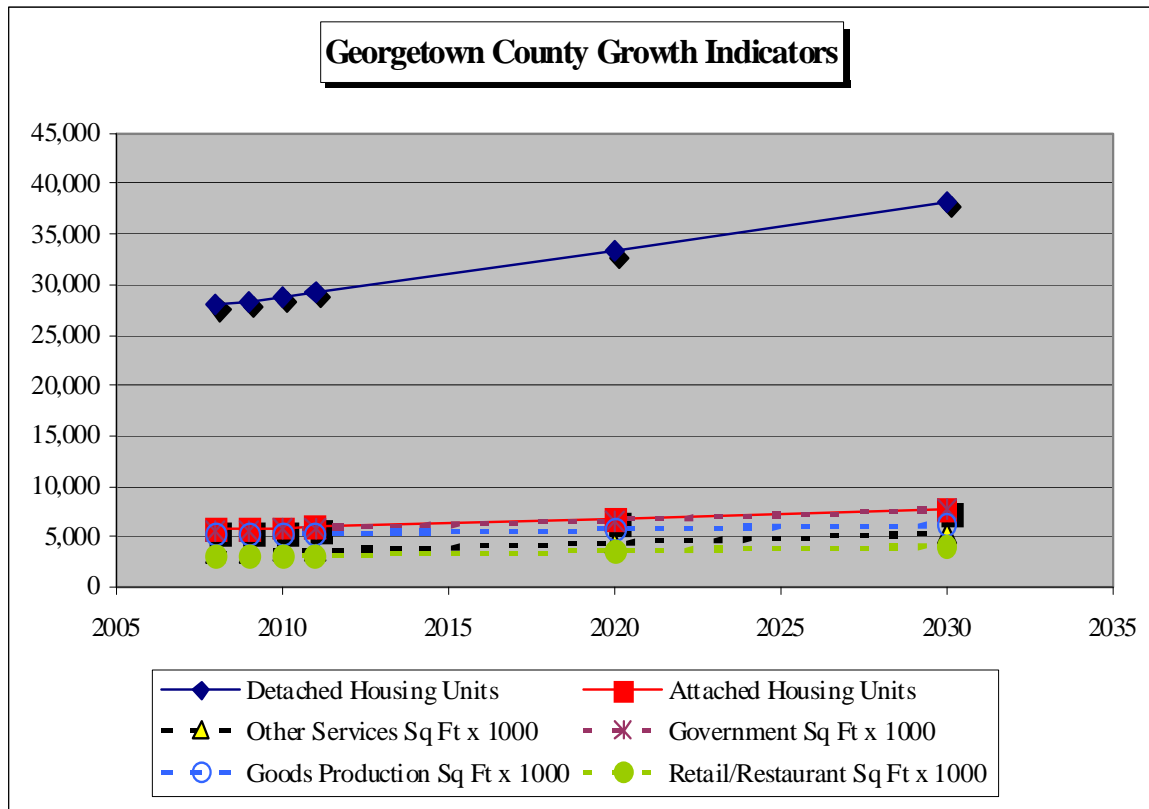


Land Use Assumptions

Key countywide land use assumptions are summarized in Figure 2. Over the next three years, Georgetown County anticipates residential growth rates averaging approximately 1.6% per year, or approximately 526 housing units per year. Nonresidential growth rates are in the range of 0.6% to 2.4% per year, with most of the increase in services. A detailed discussion of the demographic data is provided in Appendix A.

Figure 2 – Summary of Countywide Land Use Assumptions

Georgetown County, South Carolina	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2020</u>	<u>2030</u>	2008 to 2011	
	FY08-09	FY09-10	FY10-11	FY11-12	FY20-21	FY30-31	Average Annual Increase	Average Annual Growth Rate
Detached Housing Units	27,909	28,347	28,783	29,219	33,246	38,121	437	1.6%
Attached Housing Units	5,716	5,806	5,895	5,985	6,810	7,808	89	1.6%
Goods Production Sq Ft x 1000	5,220	5,240	5,270	5,310	5,660	6,180	30	0.6%
Retail/Restaurant Sq Ft x 1000	3,060	3,100	3,130	3,170	3,570	4,080	37	1.2%
Other Services Sq Ft x 1000	3,390	3,470	3,550	3,630	4,390	5,330	80	2.4%
Government Sq Ft x 1000	5,570	5,650	5,740	5,820	6,630	7,680	83	1.5%



Projected Service Units

For the library impact fee, the “service unit” is a year-round resident. Law enforcement impact fees use year-round population as the service units for residential development and workplace employment, or jobs, as the service units for nonresidential development. For road impact fees, the service unit is a Vehicle Mile of Travel (VMT), which is defined as one vehicle traveling one mile. Aggregate VMT is calculated from vehicle trip generation rates multiplied by residential and nonresidential development units, by service area. Countywide data on population, jobs, housing units and nonresidential floor area are shown in the top section of Figure 3. Data for the Unincorporated Georgetown Service Area (UGSA) and the Waccamaw Neck Service Area (WNSA) are shown at the middle of the following table. Total service area population for library and law enforcement fees are shown at the bottom of table, along with total service area jobs for the law enforcement impact fee.

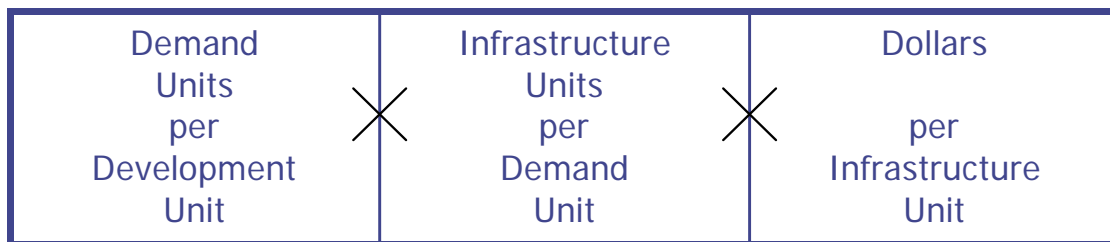
Figure 3 – Service Units by Geographic Area

Georgetown County, SC		Year =>	1	2	3	4	5	22
		2008	2009	2010	2011	2012	2013	2030
Cumulative Service Units		Base Year						
P	YR-RD POPULATION	62,394	63,176	63,967	64,768	65,579	66,401	82,049
J	JOBS	36,192	36,743	37,303	37,871	38,448	39,033	50,470
RT	Residential Units	33,625	34,153	34,678	35,204	35,731	36,259	45,929
R1	Detached (SFD & MH)	27,909	28,347	28,783	29,219	29,657	30,095	38,121
R2	Attached Housing	5,716	5,806	5,895	5,985	6,074	6,164	7,808
NRT	NonRes Sq Ft (in thousands)	17,240	17,460	17,690	17,930	18,180	18,420	23,270
NR1	Goods Producing	5,220	5,240	5,270	5,310	5,340	5,380	6,180
NR2	Retail/Restaurant	3,060	3,100	3,130	3,170	3,220	3,260	4,080
NR3	Other Services	3,390	3,470	3,550	3,630	3,710	3,790	5,330
NR4	Government	5,570	5,650	5,740	5,820	5,910	5,990	7,680
DB1	UGSA Detached HU	13,424	13,592	13,758	13,946	14,134	14,322	17,955
DB2	UGSA Attached HU	2,750	2,784	2,818	2,856	2,895	2,933	3,678
DB3	UGSA Goods Production KSF	846	859	875	889	901	916	1,193
DB4	UGSA Retail/Restaurant KSF	496	508	520	531	544	555	787
DB5	UGSA Other Services KSF	549	569	589	608	626	645	1,029
DB6	UGSA Government KSF	902	927	953	974	998	1,019	1,482
DB7	UGSA Total Vehicle Trips	101,235	102,837	104,405	106,061	107,764	109,430	142,326
DB8	WNSA Detached HU	9,238	9,496	9,757	9,990	10,226	10,464	14,715
DB9	WNSA Attached HU	1,892	1,945	1,998	2,046	2,094	2,143	3,014
DB10	WNSA Goods Production KSF	2,915	2,930	2,951	2,979	3,001	3,029	3,584
DB11	WNSA Retail/Restaurant KSF	1,709	1,734	1,753	1,778	1,810	1,835	2,366
DB12	WNSA Other Services KSF	1,893	1,941	1,988	2,036	2,085	2,134	3,091
DB13	WNSA Government KSF	3,111	3,160	3,214	3,265	3,321	3,372	4,454
DB14	WNSA Total Vehicle Trips	130,586	133,360	136,064	138,748	141,596	144,323	196,309
	UGSA Population	30,010	30,290	30,580	30,910	31,260	31,600	38,650
	WNSA Population	20,650	21,160	21,680	22,140	22,610	23,090	31,670
	Total Service Area Population	50,660	51,450	52,260	53,050	53,870	54,690	70,320
	UGSA Jobs	5,860	6,030	6,190	6,340	6,490	6,640	9,740
	WNSA Jobs	20,210	20,550	20,890	21,250	21,610	21,980	29,270
	Total Service Area Jobs	26,070	26,580	27,080	27,590	28,100	28,620	39,010

Impact Fee Methodologies

The basic steps in a conceptual impact fee formula are illustrated below (see Figure 4). The first step (see the left box) is to determine an appropriate demand indicator, for a particular type of infrastructure. The demand indicator measures the number of service units for each unit of development. For example, an appropriate indicator of the residential demand for library facilities is population growth and the increase in population can be estimated from the average number of persons per housing unit. The second step in the conceptual formula is shown in the middle box below. Infrastructure units per demand unit are typically called Level-Of-Service (LOS) or infrastructure standards. In keeping with the library example, a common infrastructure standard is square feet of library building per person. The third step in the conceptual formula, as illustrated in the right box, is the cost of various infrastructure units. To complete the library example, this part of the formula establishes the cost per square foot to provide a new library building.

Figure 4 – Conceptual Formula



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

accepted engineering or planning standards, and a specific capital improvements plan approved by the elected officials.

Types of Fees and Cost Components in Georgetown County

In Georgetown County, impact fees for library, law enforcement and road facilities are derived using a plan-based method. As shown in Figure 5, the library impact fees will be used to expand library buildings and provide new branch libraries in the Santee-Sampit and Waccamaw Neck areas. For law enforcement, Georgetown County is in the process of constructing a new Judicial Center and is planning to expand the existing Detention Center. Road impact fees will be used to provide additional lane miles and improve intersections, as identified in a specific list of capital projects for both the Unincorporated Georgetown and Waccamaw Neck service areas.

Figure 5 – Impact Fees Methods and Components

Facility Type	Service Units	Plan-Based Method Components
Library	Persons	Additional Branch Libraries and Building Expansions
Law Enforcement	Persons or Jobs (Workplace Employment)	Judicial and Detention Centers
Roads	Vehicle Miles of Travel (VMT)	Additional Lane Miles and Intersection Improvements

Maximum Supportable Impact Fees in Georgetown County

Figures 6 and 7 provide a schedule of maximum supportable impact fees for the Unincorporated Georgetown and Waccamaw Neck service areas, respectively. The library and law enforcement fees are uniform across the entire service area. Only road impact fees vary geographically.

Figure 6 – Maximum Supportable Fees in Unincorporated Georgetown Service Area

Unincorporated Georgetown Service Area	Library	Law Enforcement	Transportation	TOTAL
Residential				
Per Housing Unit				
Detached (SFD & MH)	\$685	\$750	\$1,740	\$3,175
Attached (all other)	\$303	\$332	\$1,200	\$1,835
Nonresidential				
Per 1,000 Square Feet of Floor Area				
Retail / Restaurant		\$322	\$4,210	\$4,532
Business Park		\$407	\$1,320	\$1,727
Office		\$535	\$1,900	\$2,435
Hospital		\$436	\$1,820	\$2,256
School		\$118	\$990	\$1,108
Mini-Warehouse		\$5	\$250	\$255
Warehousing		\$165	\$510	\$675
Manufacturing		\$230	\$390	\$620
Light Industrial		\$298	\$720	\$1,018
Other Nonresidential				
Per Unique Demand Indicator				
Nursing Home (per bed)		\$46	\$240	\$286
Day Care (per student)		\$20	\$220	\$240
Lodging (per room)		\$56	\$580	\$636

Figure 7 – Maximum Supportable Fees in Waccamaw Neck Service Area

Waccamaw Neck Service Area	Library	Law Enforcement	Transportation	TOTAL
Residential				
Per Housing Unit				
Detached (SFD & MH)	\$685	\$750	\$2,380	\$3,815
Attached (all other)	\$303	\$332	\$1,640	\$2,275
Nonresidential				
Per 1,000 Square Feet of Floor Area				
Retail / Restaurant		\$322	\$5,750	\$6,072
Business Park		\$407	\$1,800	\$2,207
Office		\$535	\$2,600	\$3,135
Hospital		\$436	\$2,480	\$2,916
School		\$118	\$1,350	\$1,468
Mini-Warehouse		\$5	\$350	\$355
Warehousing		\$165	\$700	\$865
Manufacturing		\$230	\$540	\$770
Light Industrial		\$298	\$980	\$1,278
Other Nonresidential				
Per Unique Demand Indicator				
Nursing Home (per bed)		\$46	\$330	\$376
Day Care (per student)		\$20	\$300	\$320
Lodging (per room)		\$56	\$790	\$846

As shown in Figure 8, impact fees could generate approximately \$2.4 million per year to help cover the cost of growth-related capital improvements. The revenue projections shown below assume implementation of the maximum supportable fees and the amount of new development documented in Appendix A.

Figure 8 – Anticipated Revenue from Impact Fees

Georgetown County, SC (Current \$ in thousands)	1 2009	2 2010	3 2011	12 2020	22 2030	Cumulative Total	Average Annual
REVENUES							
<i>Library Impact Fees</i>	\$319	\$319	\$314	\$343	\$378	\$7,476	\$340
<i>Law Enforcement Fees</i>	\$410	\$411	\$407	\$449	\$498	\$9,784	\$445
<i>Unincorp Georgetown SA Road Fees</i>	\$455	\$447	\$482	\$517	\$628	\$11,846	\$538
<i>Waccanaw Neck SA Road Fees</i>	\$1,041	\$1,027	\$988	\$1,141	\$1,189	\$23,945	\$1,088
TOTAL IMPACT FEE REVENUE	\$2,225	\$2,204	\$2,192	\$2,449	\$2,693	\$53,052	\$2,411

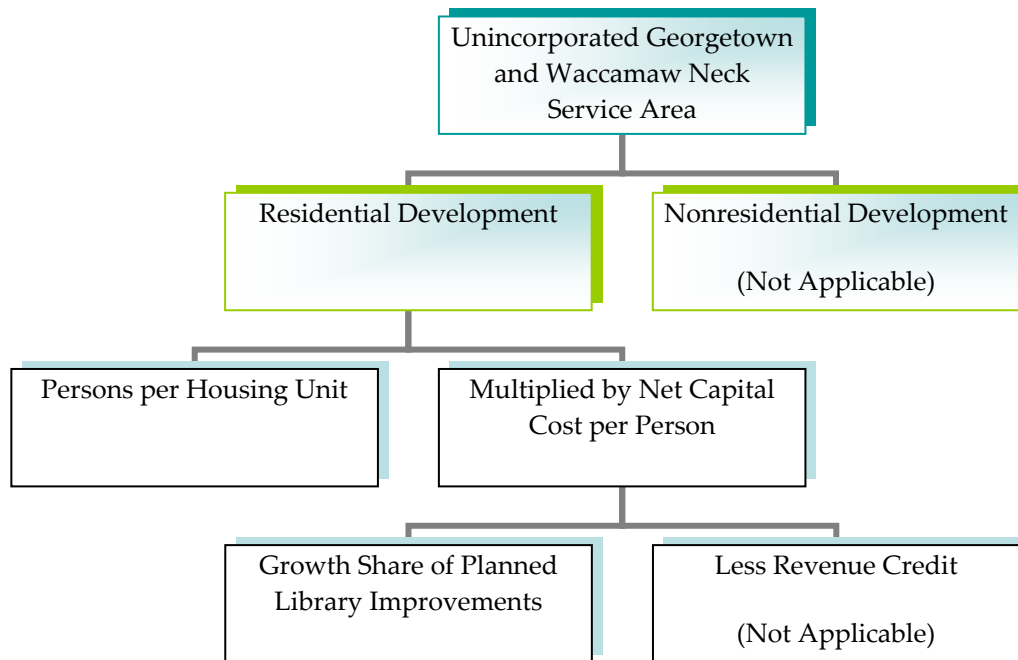
GROWTH-RELATED CIP AND IMPACT FEES

As required by the South Carolina Impact Fee Act, the previous section of this report discussed service areas, land use assumptions and projected service units. The following sections provide the remainder of the required CIP content for each type of public facility.

Library

For library facilities, capital costs are allocated 100% to residential development. As shown in Figure 9, per capita standards are multiplied by average persons per housing unit to yield the impact fee.

Figure 9 – Library Impact Fee Formula



Library Facilities, Costs, and LOS Standards

Figure 10 documents current and future infrastructure standards for libraries in Georgetown County. South Carolina's Development Impact Fee Act limits system improvements to "the level of service currently existing in the community or service area" [see Section 6-1-960(B)(5)]. As Georgetown County completes library improvements, LOS standards will increase over time and impact fees may also be raised.

For library buildings, the infrastructure standard in 2008, based on population in the service area, is 0.76 square feet of library building per year-round resident. The capital cost estimate of approximately \$515 per square foot of floor area includes design fees, construction, furniture (e.g., tables, chairs, shelving) and computer equipment, plus all site work.

Figure 10 – Existing and Future Libraries

	<i>Year</i>	<i>Current Sq Ft</i>	<i>Future Sq Ft</i>	<i>Total Project Cost</i>
Andrews	2009	5,000	10,000	\$1,300,000
Santee-Sampit	2012	-	7,550	\$2,100,000
Waccamaw Neck	2015	7,000	27,000	\$9,200,000
Georgetown	2018	18,750	40,000	\$15,100,000
Carvers Bay		7,550	7,550	
TOTAL		38,300	92,100	\$27,700,000
		Cost per Additional Sq Ft =>		\$514.87

	<i>2008</i>	<i>2030</i>
Total Service Area Population	50,660	70,320
Square Feet per Person	0.76	1.31
Cost per Person =>	\$389.25	\$674.33

Library Needs Analysis

The expected increase in service area population through 2030 is shown in Figure 11, along with the corresponding increase in library building space. To maintain the current LOS, Georgetown County will need to provide 14,863 square feet of additional library space by the year 2030. Based on the current LOS standard, development impact fees would pay approximately 28% of the planning improvements for libraries.

Figure 11 – Needs Analysis for Libraries

		Library LOS Standards		
Library Building		0.76	square feet per person	
Total Project Cost		\$514.87	per square foot of floor area	
		Infrastructure Needed		
Year		Service Area Population	Building Sq Ft	Project Cost
Base	FY 08-09	50,660	38,300	
Year 1	2009	51,450	38,897	
Year 2	2010	52,260	39,510	
Year 3	2011	53,050	40,107	
Year 4	2012	53,870	40,727	
Year 5	2013	54,690	41,347	
Year 6	2014	55,520	41,974	
Year 7	2015	56,360	42,609	
Year 8	2016	57,230	43,267	
Year 9	2017	58,100	43,925	
Year 10	2018	58,970	44,583	
Year 11	2019	59,870	45,263	
Year 12	2020	60,780	45,951	
Year 13	2021	61,680	46,631	
Year 14	2022	62,580	47,312	
Year 15	2023	63,500	48,007	
Year 16	2024	64,430	48,710	
Year 17	2025	65,380	49,429	
Year 18	2026	66,340	50,154	
Year 19	2027	67,310	50,888	
Year 20	2028	68,290	51,629	
Year 21	2029	69,300	52,392	
Year 22	2030	70,320	53,163	
22-Yr Increase		19,660	14,863	\$7,653,000
		Growth Share		
		Current Square Feet	38,300	
		Existing Deficiency (square feet)	0	\$0
		Planned Enhancement (sq ft)	38,937	\$20,047,000
		TOTAL	92,100	\$27,700,000

Library Credit Evaluation

As shown in the cash flow analysis, projected impact fee revenue roughly matches the growth-related cost of library expansion. Therefore, a revenue credit is not applicable because there is no double payment of growth-related capital costs.

Library Impact Fee Calculations

Development impact fees for libraries are shown in Figure 12. Impact fee standards are listed in the box at the top of the table. The impact fee is equal to the average number of persons per housing unit, multiplied by the net capital cost per person. For example, the fee for a detached house is 1.76 x \$389.25, or \$685 per housing unit.

Figure 12 - Library Impact Fee

	<i>Standards:</i>
<i>Persons Per Housing Unit</i>	
Detached (SFD & MH)	1.76
Attached (all other)	0.78
<i>Level Of Service</i>	<u>Per Person</u>
Cost of New Libraries	\$389.25
Revenue Credit (not applicable)	
Net Capital Cost	\$389.25
<i>Maximum Supportable Impact Fee</i>	
	<u>Per Housing Unit</u>
Residential	
Detached (SFD & MH)	\$685
Attached (all other)	\$303

Library Funding Strategy

Figure 13 indicates projected library impact fee revenue and anticipated capital costs, which average \$1.7 million per year, assuming each library project is bond financed over 12 years with 5% annual interest. A 12-year term was selected so the final library project (constructed in 2018) will be paid off by the year 2030. Impact fee revenue from new housing in the service area is projected to yield approximately \$340,000 in average annual revenue, based on the maximum supportable impact fee.

The cash flow summary provides an indication of the impact fee revenue and expenditures necessary to meet the demand for library facilities in Georgetown County. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the impact fee revenue and timing of capital improvements. See Appendix A for discussion of the development projections that drive the cash flow analysis.

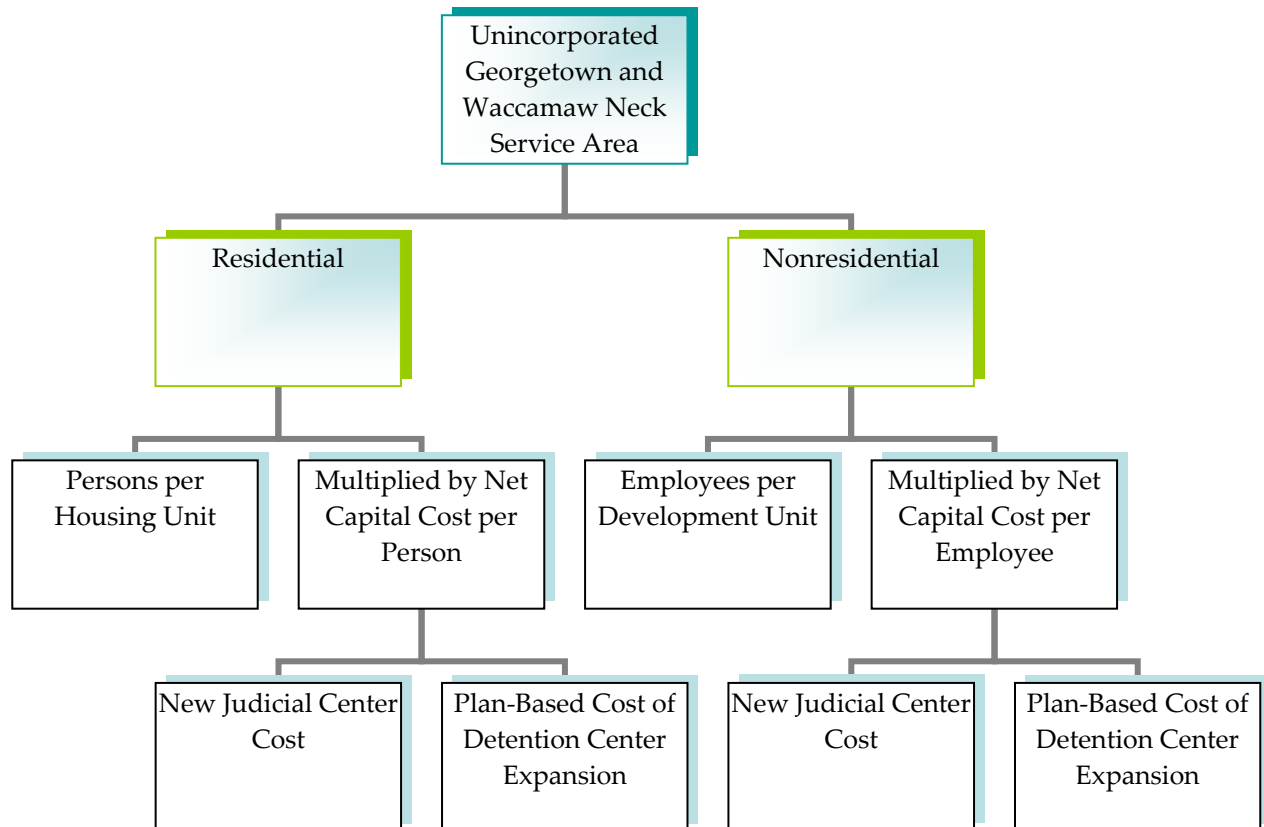
Figure 13 – Cash Flow Analysis for Library Facilities

Georgetown County, SC (Current \$ in thousands)	1 2009	2 2010	3 2011	12 2020	22 2030	Cumulative Total	Average Annual
REVENUES							
<i>Library Impact Fees</i>	\$319	\$319	\$314	\$343	\$378	\$7,476	\$340
CAPITAL COSTS							
<i>Library Debt Service</i>	\$147	\$147	\$147	\$3,125	\$0	\$37,503	\$1,705
NET CAPITAL FACILITIES CASH FLOW - Library							
Annual Surplus (or Deficit)	\$172	\$172	\$168	(\$2,783)	\$378	(\$30,027)	(\$1,365)
Cumulative Surplus (or Deficit)	\$172	\$344	\$512	(\$11,323)	(\$30,027)		

Law Enforcement

The law enforcement impact fee formula is diagrammed in Figure 14. For residential development, law enforcement impact fees are a function of population growth. Law enforcement impact fees for nonresidential development are based on the estimated number of employees per development unit (e.g. per 1,000 square feet of floor area).

Figure 14 – Law Enforcement Impact Fee Formula



Law Enforcement Infrastructure Standards

The demand for Judicial and Detention Center building space is a function of both residential and nonresidential development. As shown in Figure 15, functional population was used to allocate the demand for infrastructure to residential and nonresidential development. Functional population uses time at home (two-thirds of a day or 16 hours) and time at work (one-third of a day or 8 hours) to account for commuting patterns in Georgetown County. For residential development, the proportionate share factor is based on estimated person hours of non-working residents, plus the non-working hours of resident workers. Based on year 2000 census data, 41.5% of Georgetown County residents worked in 2000 and 58.5% did not work.

In 2000, the U.S. Census Bureau estimated that 17,121 county residents also worked in Georgetown County. According to Census Transportation Planning Package place-of-work data, there were 24,290 jobs in Georgetown County in 2000. Based on estimated person hours, the cost allocation for residential development is 86% while nonresidential development accounts for 14% of the demand for law enforcement infrastructure.

Figure 15 – Functional Population

	<u>Demand Units in 2000</u>	<u>Demand</u> <u>Hours/Day</u>	<u>Person</u> <u>Hours</u>
Residential			
Year-Round Population	55,797		
Residents Not Working	32,635	24	783,240
Workers Living in County*	23,162		
Residents Working in County*	17,121	16	273,936
Residents Working Outside County*	6,041	16	96,656
		Residential Subtotal	1,153,832
			86%
Nonresidential			
Jobs Located in County**	24,290		
Residents Working in County*	17,121	8	136,968
Non-Resident Workers in 2000	7,169	8	57,352
		Nonresidential Subtotal	194,320
			14%
		TOTAL	1,348,152

* Table P26 from SF3, Census 2000.

** Census Transportation Planning Package.

Judicial functions are presently located in the historic County Courthouse. During FY08-09, Georgetown County will relocate all judicial functions to a new Judicial Center that will have 79,300 square feet of floor area and is expected to cost approximately \$20.97 million. Infrastructure standards for the Judicial Center, based on 2030 demand units, are shown in Figure 16.

Georgetown County's Detention Center has a rated capacity of 167 beds. The County plans to construct three additional "pods" that will provide capacity for an additional 150 beds. Based on an estimated total project cost of \$9 million, the Detention Center cost factor is \$60,000 per inmate bed.

Figure 16 – Law Enforcement Building Standards

Judicial Center Level Of Service (LOS)

Site	Proportionate Share	New Sq Ft	Project Cost	Cost per New Sq Ft
Judicial Functions		79,300	\$20,970,000	\$264.44
		2030 Service Area Demand Units		Cost per Demand Unit
Residential	86%	70,320 Yr-Rd Population		\$256.46
Nonresidential	14%	39,010 Jobs		\$75.25

0.97 sq ft per person
0.28 sq ft per job

Current Detention Center LOS

Site	Proportionate Share	Current Beds	2008 Service Area Demand Units	Cost per Demand Unit
Detention Center		167		
		2008 Service Area Demand Units		Cost per Demand Unit
Residential	86%	50,660 Yr-Rd Population		\$170.09
Nonresidential	14%	26,070 Jobs		\$53.80

2.83 beds per 1,000 persons
0.90 beds per 1,000 jobs

Plan-Based Cost of Detention Center

Site	Proportionate Share	Additional Beds	Project Cost	Cost per Additional Bed
Detention Center		150	\$9,000,000	\$60,000
		2030 Service Area Demand Units		Cost per Demand Unit
Residential	86%	70,320 Yr-Rd Population		\$232.61
Nonresidential	14%	39,010 Jobs		\$68.25

3.88 beds per 1,000 persons
1.14 beds per 1,000 jobs

Projection of Needs for Law Enforcement Infrastructure

LOS standards from the table above were applied to projected service units over the next 22 years to yield the infrastructure needs shown in Figure 17. New development will pay for approximately 29% of the new Judicial Center cost. The remainder of the capital cost is needed to serve existing development.

Figure 17 – Judicial Center Needs Analysis

Standards

Judicial Center - Residential	0.97	square feet per person
Judicial Center - Nonresidential	0.28	square feet per job
Building Cost	\$264.44	per square foot

	Year	Service Area		Infrastructure Needed			Building Cost
		Year-Round Population	Workplace Employment	Building SF Residential	Building SF Nonresidential	TOTAL Building SF	
Base	2008	50,660	26,070	49,131	7,419	56,550	
Year 1	2009	51,450	26,580	49,897	7,565	57,462	
Year 2	2010	52,260	27,080	50,683	7,707	58,390	
Year 3	2011	53,050	27,590	51,449	7,852	59,301	
Year 4	2012	53,870	28,100	52,244	7,997	60,241	
Year 5	2013	54,690	28,620	53,040	8,145	61,185	
Year 6	2014	55,520	29,150	53,845	8,296	62,141	
Year 7	2015	56,360	29,690	54,659	8,450	63,109	
Year 8	2016	57,230	30,240	55,503	8,606	64,109	
Year 9	2017	58,100	30,800	56,347	8,765	65,112	
Year 10	2018	58,970	31,370	57,191	8,928	66,119	
Year 11	2019	59,870	31,950	58,063	9,093	67,156	
Year 12	2020	60,780	32,540	58,946	9,261	68,207	
Year 13	2021	61,680	33,140	59,819	9,431	69,250	
Year 14	2022	62,580	33,750	60,692	9,605	70,297	
Year 15	2023	63,500	34,370	61,584	9,781	71,365	
Year 16	2024	64,430	35,000	62,486	9,961	72,447	
Year 17	2025	65,380	35,640	63,407	10,143	73,550	
Year 18	2026	66,340	36,290	64,338	10,328	74,666	
Year 19	2027	67,310	36,950	65,279	10,516	75,795	
Year 20	2028	68,290	37,620	66,229	10,706	76,935	
Year 21	2029	69,300	38,310	67,209	10,903	78,112	
Year 22	2030	70,320	39,010	68,198	11,102	79,300	
22-Yr Increase		19,660	12,940	19,067	3,683	22,750	\$6,016,000

Growth Share		
Sq Ft for Existing Development	56,550	\$14,954,000
TOTAL	79,300	\$20,970,000

As shown in Figure 18, the Detention Center needs analysis indicates that new development will pay approximately 45% of the anticipated expansion cost. Based on the current LOS standard, new development over the next 22 years will require 67 additional beds in the Detention Center.

Figure 18 – Detention Center Needs Analysis

		<i>Service Area</i>		<i>Infrastructure Needed</i>			
		<i>Year-Round Population</i>	<i>Workplace Employment</i>	<i>Beds Residential</i>	<i>Beds Nonresidential</i>	<i>TOTAL Beds</i>	<i>Estimated Cost</i>
Standards							
Detention Center - Residential		2.83		beds per 1,000 persons			
Detention Center - Nonresidential		0.90		beds per 1,000 jobs			
Building Cost (with interest)		\$60,000		per new bed			
	<i>Year</i>						
Base	2008	50,660	26,070	144	23	167	
Year 1	2009	51,450	26,580	146	24	170	
Year 2	2010	52,260	27,080	148	24	172	
Year 3	2011	53,050	27,590	150	25	175	
Year 4	2012	53,870	28,100	153	25	178	
Year 5	2013	54,690	28,620	155	26	181	
Year 6	2014	55,520	29,150	157	26	183	
Year 7	2015	56,360	29,690	160	27	187	
Year 8	2016	57,230	30,240	162	27	189	
Year 9	2017	58,100	30,800	165	28	193	
Year 10	2018	58,970	31,370	167	28	195	
Year 11	2019	59,870	31,950	170	29	199	
Year 12	2020	60,780	32,540	172	29	201	
Year 13	2021	61,680	33,140	175	30	205	
Year 14	2022	62,580	33,750	177	30	207	
Year 15	2023	63,500	34,370	180	31	211	
Year 16	2024	64,430	35,000	183	31	214	
Year 17	2025	65,380	35,640	185	32	217	
Year 18	2026	66,340	36,290	188	33	221	
Year 19	2027	67,310	36,950	191	33	224	
Year 20	2028	68,290	37,620	194	34	228	
Year 21	2029	69,300	38,310	196	34	230	
Year 22	2030	70,320	39,010	199	35	234	
<i>22-Yr Increase</i>		19,660	12,940	55	12	67	\$4,020,000
				Growth Share			
				Current Beds		167	
				Existing Deficiency (beds)		0	\$0
				Planned Enhancement (beds)		83	\$4,980,000
				TOTAL		317	\$9,000,000

Law Enforcement Credit Evaluation

As shown in the cash flow analysis, projected impact fee revenue roughly matches the growth-related cost of the new Judicial Center and the planned expansion of the Detention Center. Because growth-related costs are fully funded by impact fees, there is no potential double-payment from other revenue sources.

Law Enforcement Impact Fee Calculations

Maximum supportable law enforcement impact fees are shown in Figure 19. For most types of nonresidential development, the fees are expressed per thousand square feet of floor area. Therefore, a retail store, such as a Wal-Mart with 125,000 square feet of floor area would pay a law enforcement impact fee of \$40,250 (i.e. $125 \times \$322$).

Figure 19 – Law Enforcement Impact Fees

		<i>Standards</i>	
<i>Persons per Housing Unit</i>			
Detached (SFD & MH)		1.76	
Attached (all other)		0.78	
<u><i>Nonresidential (per 1,000 Sq Ft of Floor Area)</i></u>		<u><i>Employees</i></u>	
Retail / Restaurant			2.50
Business Park			3.16
Office			4.15
Hospital			3.38
School			0.92
Mini-Warehouse			0.04
Warehousing			1.28
Manufacturing			1.79
Light Industrial			2.31
<i>Other Nonresidential (per unique demand indicator)</i>			
Nursing Home (per bed)			0.36
Day Care (per student)			0.16
Lodging (per room)			0.44
<u><i>Level of Service</i></u>		<u><i>Per Person</i></u>	<u><i>Per Employee</i></u>
Judicial Center Cost		\$256.46	\$75.25
Judicial Center Revenue Credit		\$0.00	\$0.00
Detention Center Cost		\$170.09	\$53.80
Detention Center Revenue Credit		\$0.00	\$0.00
Net Capital Cost		\$426.55	\$129.05

Maximum Supportable Law Enforcement Impact Fee	
<i>Residential</i>	
	<i>Per Housing Unit</i>
Detached	\$750
Attached	\$332
<i>Nonresidential</i>	
	<i>Per 1,000 Square Feet of Floor Area</i>
Retail / Restaurant	\$322
Business Park	\$407
Office	\$535
Hospital	\$436
School	\$118
Mini-Warehouse	\$5
Warehousing	\$165
Manufacturing	\$230
Light Industrial	\$298
<i>Other Nonresidential</i>	
	<i>Per Unique Demand Indicator</i>
Nursing Home (per bed)	\$46
Day Care (per student)	\$20
Lodging (per room)	\$56

Funding Sources for Law Enforcement Infrastructure

As shown in Figure 20, law enforcement impact fees are expected to generate approximately \$9.8 million in revenue through the year 2030. This revenue projection is based on the demographic data described in Appendix A and the maximum supportable fees. In addition to the impact fee revenue, the County intends to utilize General Fund revenue to make the required debt payments. The cash flow analysis assumes bond financing of both the Judicial and Detention Centers over 20 years at 4.3% annual interest. Expansion of the Detention Center could begin after 2011 as long as the County spends some impact fee revenue within the next three years on facility design and/or site work.

Figure 20 – Cash Flow Analysis for Law Enforcement Facilities

Georgetown County, SC (Current \$ in thousands)	1 2009	2 2010	3 2011	12 2020	22 2030	Cumulative Total	Average Annual
REVENUES							
Law Enforcement Fees	\$410	\$411	\$407	\$449	\$498	\$9,784	\$445
CAPITAL COSTS							
Judicial Center Debt Service	\$1,584	\$1,584	\$1,584	\$1,584	\$0	\$31,686	\$1,440
Detention Center Debt Service	\$0	\$0	\$680	\$680	\$680	\$13,599	\$618
Law Enforcement Debt Service	\$1,584	\$1,584	\$2,264	\$2,264	\$680	\$45,284	\$2,058
NET CAPITAL FACILITIES CASH FLOW - Law Enforcement							
Annual Surplus (or Deficit)	(\$1,174)	(\$1,174)	(\$1,857)	(\$1,816)	(\$182)	(\$35,500)	(\$1,614)
Cumulative Surplus (or Deficit)	(\$1,174)	(\$2,348)	(\$4,204)	(\$20,731)	(\$35,500)		

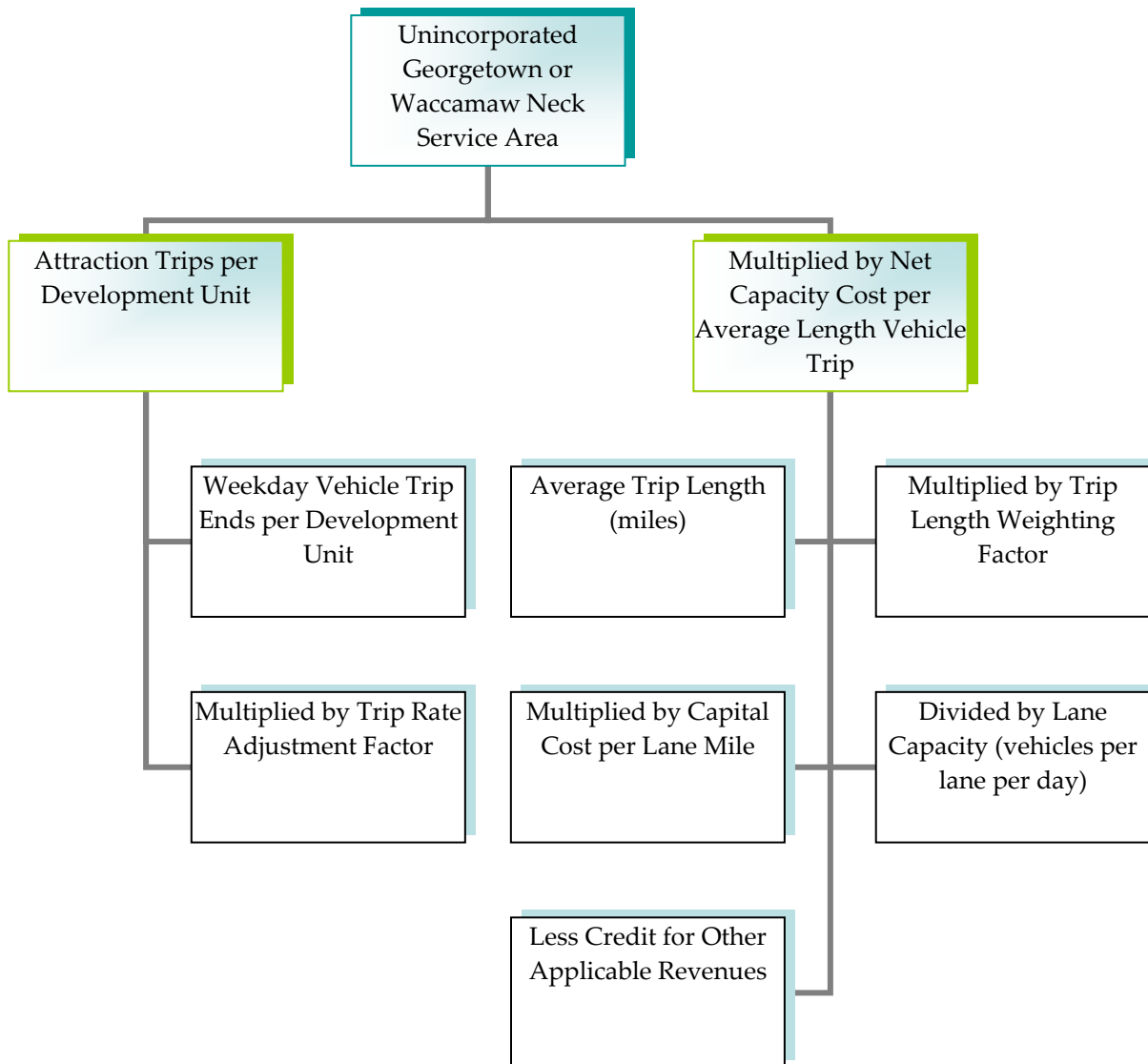
Roads

In Georgetown County, road impact fees are derived for two service areas. The following sections describe common components applicable to both service areas.

Road Impact Fee Formula and Input Variables

As shown in Figure 21, the road impact fee is derived from trip generation rates, trip rate adjustment factors and the net capacity cost per average length vehicle trip. The cost per vehicle trip is a function of the average trip length, trip length weighting factor, costs per lane mile and lane capacity.

Figure 21 – Road Impact Fee Formula



Trip Generation

Georgetown County road impact fees are based on average weekday vehicle trip ends. Trip generation rates are from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 2003). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate road impact fees, trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor is 50%. As discussed further below, the impact fee methodology includes additional adjustments to make the fees proportionate the infrastructure demand for particular types of development.

Adjustments for Commuting Patterns and Pass-By Trips

Residential development has a larger trip adjustment factor of 54% to account for commuters leaving Georgetown County for work. According to the 2001 National Household Travel Survey (see Table 29 in the Federal Highway Administration publication dated 12/04) home-based weekday work trips are typically 31% of production trips (i.e., all out-bound trips, which are 50% of all trip ends). Also, Census 2000 data from Table P26 in Summary File 3 indicates that 26% of Georgetown County workers travel outside the county for work. In combination, these factors ($0.31 \times 0.50 \times 0.26 = 0.04$) support the additional 4% allocation of trips to residential development.

Data contained in Trip Generation Handbook (ITE 2004) indicate an inverse relationship between commercial building size and pass-by trips. Therefore, appropriate trip adjustment factors have been calculated according to commercial building size, as explained further in Appendix B. For commercial developments, the trip adjustment factor is less than 50% because retail development and some services (day care centers) attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For commercial building of 100,000 square feet of floor area, the ITE data indicates that on average 34% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66% of attraction trips have the commercial building as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 66% multiplied by 50%, or approximately 33% of the trip ends.

Vehicle Miles of Travel and LOS Standard

A Vehicle Mile of Travel (VMT) is a measurement unit equal to one vehicle traveling one mile. In the aggregate, VMT is the product of vehicle trips multiplied by the

average trip length¹. The average trip length in each service area is calibrated using data on planned lane-miles of system improvements and a lane capacity standard (discussed below). The current infrastructure standard in Georgetown County is 1.37 lane-miles per 10,000 VMT (see Figures 24 and 29).

Lane Capacity

Transportation impact fees are based on a lane capacity standard of 7,300 vehicles per lane, obtained from South Carolina Department of Transportation. Based on these guidelines for annualized average daily traffic by functional classification and road characteristics, the impact fee calculations assume a two-lane undivided roadway operating at LOS “C” has an estimated capacity of 14,600 vehicles per day, or 7,300 vehicles per lane.

Trip Length Weighting Factor by Type of Land Use

The road impact fee methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As documented in Table 6 of the 2001 National Household Travel Survey (published 12/04 by the Federal Highway Administration), vehicle trips from residential development are approximately 122% of the average trip length. The residential trip length adjustment factor includes data on home-based work trips, social and recreational purposes. Conversely, shopping trips associated with commercial development are roughly 68% of the average trip length while other nonresidential development typically accounts for trips that are 75% of the average trip length. The specific weighting factors for each development prototype are shown in the right column of Figure 22.

Development Prototypes

The relationship between the amount of development in each service area and planned system improvements is documented below. Figure 22 summarizes the input variables used to determine the average trip length on planned system improvements. In the

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

table below HU means housing units, KSF means square feet of nonresidential development, in thousands, and the Institute of Transportation Engineers is abbreviated ITE.

Figure 22 – Travel Demand Model Inputs

	<i>ITE Code</i>	<i>Development Prototype</i>	<i>Weekday Veh Trip Ends</i>	<i>Dev Unit</i>	<i>Trip Adj</i>	<i>Trip Length Wtg Factor</i>
R1	210	Detached Hsg	9.57	HU	54%	122%
R2	221	Attached Hsg	6.59	HU	54%	122%
NR1	140	Goods Production	3.82	KSF	50%	75%
NR2	820	Retail/Restaurant	67.91	KSF	33%	68%
NR3	710	Other Services	18.35	KSF	50%	75%
NR4	520	Government	14.49	KSF	33%	75%

Growth-Related Road Improvements in the Unincorporated Georgetown Service Area

As shown in Figure 23, the Unincorporated Georgetown Service Area needs an additional 4.68 lane miles of system improvements to accommodate projected development through 2030. The total cost of system improvements, including intersections, is estimated to be approximately \$13.53 million in current dollars (not inflated over time). Of this amount, approximately \$11.81 million is eligible for impact fee funding. For new road segments and intersections with no existing deficiency, the growth share is 100% of the total cost. For all other projects, the growth share is 60% of the total cost, based on the countywide increase in VMT indicated by the long-range transportation model (Build Scenario).

Dividing the growth cost by the total lane mile increase indicates an average cost of \$2,524,000 per lane mile in the Unincorporated Georgetown Service Area. A lane mile is a rectangular area of pavement, one lane wide and one mile long. Planning-level cost estimates were prepared by Wilbur Smith Associates. Comparing the growth cost to total cost for all projects indicates that impact fee will pay for approximately 87% of the planned improvements listed below.

Figure 23 – Unincorporated Georgetown Service Area Roads CIP

Ref #	Project	Location	Lane Miles	Total Cost (1)	Other Funding (2)	Growth Cost (3)
1	Environmental Impact Statement	Georgetown By-Pass	0.00	\$2,000,000	\$800,000	\$1,200,000
2	Intersection and Realignment	US 701 / SC 51 / Wedgefield Rd	0.12	\$530,000	\$0	\$530,000
6	Widen Pennyroyal Rd	Old Town Ave to Montford Dr	0.88	\$2,300,000	\$920,000	\$1,380,000
A1	Georgetown By-Pass	Segment C (purchase ROW and construct 2 lanes)	3.68	\$8,700,000	\$0	\$8,700,000
TOTAL			4.68	\$13,530,000	\$1,720,000	\$11,810,000
Cost per Lane Mile =>				\$2,891,000	\$368,000	\$2,524,000

(1) Countywide Transportation Master Plan (Wilbur Smith Associates 11/08).

(2) Other funding from SCDOT or Georgetown County.

(3) New development pays 100% of the cost of new road segments. For intersections with no existing deficiency, the growth share is 100%. For all other projects, the growth share is 60% based on the countywide increase in VMT indicated by the long-range transportation model (Build Scenario).

Travel Demand in the Unincorporated Georgetown Service Area

Projected development in the Unincorporated Georgetown Service Area over the next 22 years, and the corresponding need for additional lane miles, is documented in Figure 24. Trip generation rates and trip adjustment factors convert projected development into average weekday vehicle trips. A typical vehicle trip, such as a person leaving their home and traveling to work, generally begins on a local street that connects to a collector street, which connects to an arterial road and eventually to a state or interstate highway. This progression of travel up and down the functional classification chain limits the average trip length question to the following, “What is the average vehicle trip length on impact fee system improvements (i.e., major roads listed in the growth-related CIP)?”

With 4.68 lane miles of system improvements and a lane capacity standard of 7,300 vehicles per lane, the impact fee road network has approximately 34,000 vehicle miles of capacity (i.e., 7,300 vehicles per lane traveling the entire 4.68 miles). To derive the average utilization (i.e., average trip length expressed in miles) of the system improvements, divide vehicle miles of travel by the vehicle trips attracted to new development in the service area. As shown below, new development increases average weekday vehicle trips from 101,235 in 2008 to 142,326 in 2030, for a net increase of 41,091 trips. Dividing 34,000 vehicle miles of capacity by the net increase in average weekday vehicle trips yields an unweighted average trip length of approximately 0.83 miles. However, the calibration of average trip length includes the same adjustment

factors used in the impact fee calculations (i.e., journey-to-work commuting, commercial pass-by adjustment and average trip length adjustment by type of land use). Using a series of spreadsheet iterations, the weighted-average trip length is 0.80 miles, as shown in Figure 24.

Figure 24 – Unincorporated Georgetown SA Road Impact Fee Calibration

Avg Trip Length (miles)	0.80					
Capacity Per Lane	7,300					
Cost per Lane-Mile	\$2,524,000					
Year->	<i>Base</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>22</i>	<i>22-Year</i>
	<i>FY08-09</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2030</i>	<i>Increase</i>
Unincorporated Georgetown Service Area						
DETACHED HU	13,424	13,592	13,758	13,946	17,955	4,531
ATTACHED HU	2,750	2,784	2,818	2,856	3,678	928
GOODS PRODUCTION KSF	846	859	875	889	1,193	347
RETAIL/RESTAURANT KSF	496	508	520	531	787	292
OTHER SERVICES KSF	549	569	589	608	1,029	480
GOVERNMENT KSF	902	927	953	974	1,482	580
DETACHED RES TRIPS	69,373	70,243	71,099	72,072	92,788	
ATTACHED RES TRIPS	9,784	9,907	10,028	10,165	13,087	
GOODS PRODUCTION TRIPS	1,615	1,641	1,671	1,698	2,278	
RETAIL/RESTAURANT TRIPS	11,109	11,393	11,644	11,892	17,647	
OTHER SERVICES TRIPS	5,039	5,221	5,407	5,575	9,438	
PUBLIC TRIPS	4,315	4,431	4,556	4,659	7,088	
<i>Total Vehicle Trips</i>	101,235	102,837	104,405	106,061	142,326	
<i>Vehicle Miles of Travel (VMT)</i>	89,882	91,200	92,495	93,892	124,216	
LANE MILES	12.3	12.5	12.7	12.9	17.0	4.7
ANL LN MI		0.2	0.2	0.2	0.2	
Anl Lane Mile Cost (millions)		\$0.50	\$0.50	\$0.50	\$0.50	\$11.86
Lane Miles per 10,000 VMT	1.37	1.37	1.37	1.37	1.37	

Credit for Future Gas Taxes in UGSA

A credit for future gas taxes is only necessary if there is potential double payment for system improvements. In Georgetown County, gas tax revenue will be used for maintenance of existing facilities, correcting existing deficiencies and for capital projects that are not impact fee system improvements. As shown below in the cash flow analysis, cumulative impact fee revenue (i.e. approximately \$11.8 million over 22 years) matches the cost of growth-related cost system improvements. There is no potential double payment from other revenues because road impact fees will exclusively fund system improvements.

Unincorporated Georgetown Service Area Road Impact Fees

Input variables for the road impact fee are shown in Figure 25. Attraction trips by type of development are multiplied by the capacity cost per average length vehicle trip to yield the road impact fees. To derive the capital cost per trip, multiply the average trip length by the trip length weighting factor (by type of land use), then multiply by the cost per lane mile and divide by the lane capacity. For example, the road impact fee formula for attached housing is $6.59 \times 0.54 \left((0.80 \times 1.22 \times \$2,524,000 / 7300) - 0 \right) = \$1,200$ per unit.

For consistency with terms used in the South Carolina Impact Fee Act, the above formula can be restated as VMT per housing unit multiplied by the cost per service unit, which is a vehicle mile of travel. Estimated VMT per attached housing unit in the Unincorporated Georgetown Service Area is $6.59 \times 0.54 \times 0.80 \times 1.22$, or 3.47 vehicle miles of travel on the planned system improvements on an average weekday. Given a capacity standard of 7,300 vehicles per lane, the capital cost per service unit is approximately \$346 per VMT, derived from the formula $[\$2,524,000 / 7,300]$. In other words, it cost \$2,524,000 to provide one lane mile of system improvements, which is shared by 7,300 vehicles on an average weekday. With 3.47 vehicle miles of travel per attached housing unit and a cost factor of \$346 per VMT, the road impact fee is \$1,200 per housing unit ($3.47 \times \346).

Figure 25 – Unincorporated Georgetown SA Road Impact Fee Inputs

Unincorp Georgetown SA ITE Code	Weekday Vehicle Trip Ends	Trip Rate Adjustment Factors	Trip Length Weighting Factors
Weekday Vehicle Trip Ends			
<i>Residential (per Household)</i>			
210 Detached	9.57	54%	122%
221 Attached	6.59	54%	122%
<i>Nonresidential (per 1,000 Sq Ft of floor area)</i>			
820 Retail / Restaurant	67.91	33%	68%
770 Business Park	12.76	50%	75%
710 Office	18.35	50%	75%
610 Hospital	17.57	50%	75%
520 School	14.49	33%	75%
151 Mini-Warehouse	2.50	50%	75%
150 Warehousing	4.96	50%	75%
140 Manufacturing	3.82	50%	75%
110 Light Industrial	6.97	50%	75%
<i>Nonresidential (per unique demand indicator)</i>			
620 Nursing Home (per bed)	2.37	50%	75%
565 Day Care (per student)	4.48	24%	75%
320 Lodging (per room)	5.63	50%	75%
Infrastructure Standards			
Average Miles per Vehicle Trip	0.80		
Cost per Lane Mile	\$2,524,000		
Lane Capacity (vehicles per day)	7,300		
Revenue Credit (not applicable)	\$0		

Maximum Supportable UGSA Road Impact Fees

The input variables discussed above yield the maximum supportable impact fees shown in Figure 26. Fees for most types of nonresidential development are listed per 1,000 square feet of floor area. For example, the fee for a retail building such as a Wal-Mart store with 125,000 square feet of floor area would be \$526,250 (125 x \$4,210). At the bottom of the following table are some nonresidential development types that have unique demand indicators. For example, the impact fee for lodging is based on the number of rooms.

Figure 26 – Unincorporated Georgetown Service Area Road Impact Fees

Maximum Supportable Road Impact Fee	
<u>Residential (per housing unit)</u>	
210 Detached	\$1,740
221 Attached	\$1,200
<u>Nonresidential (per 1,000 Sq Ft of floor area)</u>	
820 Retail / Restaurant	\$4,210
770 Business Park	\$1,320
710 Office	\$1,900
610 Hospital	\$1,820
520 School	\$990
151 Mini-Warehouse	\$250
150 Warehousing	\$510
140 Manufacturing	\$390
110 Light Industrial	\$720
<u>Nonresidential (per unique demand indicator)</u>	
620 Nursing Home (per bed)	\$240
565 Day Care (per student)	\$220
320 Lodging (per room)	\$580

Funding Strategy for Unincorporated Georgetown Service Area Roads

The cash flow summary shown in Figure 27 provides an indication of the road impact fee revenue and expenditures necessary to meet the demand for system improvements over the next 22 years. Assuming government buildings will pay road impact fees, projected revenues essentially match the growth share of the capital improvements plan for roads (i.e. \$11.8 million). Projected deficits, averaging \$77,000 per year, will require funding from other State or County revenue sources. Georgetown County will spend an average of approximately \$615,000 per year on growth-related road improvements in the Unincorporated Georgetown Service Area.

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

Figure 27 – Cash Flow for Unincorporated Georgetown Service Area Roads

Georgetown County, SC (Current \$ in thousands)	1 2009	2 2010	3 2011	12 2020	22 2030	Cumulative Total	Average Annual
REVENUES							
9 UGSA Road Fee - Detached	\$293	\$288	\$328	\$338	\$419	\$7,884	\$358
10 UGSA Road Fee - Attached	\$41	\$41	\$46	\$48	\$59	\$1,114	\$51
11 UGSA Road Fee - Goods Pr	\$5	\$6	\$5	\$6	\$7	\$135	\$6
12 UGSA Road Fee - Retail/Re	\$53	\$47	\$47	\$59	\$63	\$1,228	\$56
13 UGSA Road Fee - Other Se	\$38	\$38	\$35	\$42	\$50	\$911	\$41
14 UGSA Road Fee - Governm	\$24	\$26	\$21	\$25	\$31	\$574	\$26
Unincorp Georgetown SA Road Fees	\$455	\$447	\$482	\$517	\$628	\$11,846	\$538
CAPITAL COSTS							
Unincorp Georgetown SA Roads CIP	\$615	\$615	\$615	\$615	\$615	\$13,530	\$615
NET CAPITAL FACILITIES CASH FLOW - Unincorporated Georgetown Service Area Roads							
Annual Surplus (or Deficit)	(\$160)	(\$168)	(\$133)	(\$98)	\$13	(\$1,684)	(\$77)
Cumulative Surplus (or Deficit)	(\$160)	(\$329)	(\$462)	(\$1,510)	(\$1,684)		

Growth-Related Road Improvements in the Waccamaw Neck Service Area

As shown in Figure 28, the Waccamaw Neck Service Area needs an additional 16.24 lane miles of system improvements to accommodate projected development through 2030. The total cost of system improvements, including intersections, is estimated to be approximately \$27.18 million in current dollars (not inflated over time). Of this amount, approximately \$24 million is eligible for impact fee funding. New development will pay 100% of the total cost of new road segments listed in the CIP. Also, for intersections with no existing deficiency the growth share is 100% of the total cost. For all other projects, the growth share is 60% of the total cost, based on the countywide increase in VMT indicated by the long-range transportation model (Build Scenario).

Dividing the growth cost by the total lane mile increase indicates an average cost of \$1,483,000 per lane mile in the Waccamaw Neck Service Area. A lane mile is a rectangular area of pavement, one lane wide and one mile long. Planning-level cost estimates were prepared by Wilbur Smith Associates. Comparing the growth cost to total cost for all projects indicates that impact fee will pay for approximately 89% of the planned improvements listed below.

Figure 28 – Waccamaw Neck Service Area Roads CIP

Ref #	Project	Location	Lane Miles	Total Cost (1)	Other Funding (2)	Growth Cost (3)
1	Widen SC 707	US 17 to Horry Co	1.05	\$2,100,000	\$840,000	\$1,260,000
2	Intersection	US 17 & SC 707	0.00	\$300,000	\$120,000	\$180,000
3	Intersection	US 17 & N Causeway / Waverly Rd	0.00	\$150,000	\$0	\$150,000
5	Realignment	Petigru Dr & Waverly Rd	0.00	\$490,000	\$0	\$490,000
6	Improve/Connect Roads	Old Kings Hwy and Wesley Rd	0.48	\$3,500,000	\$0	\$3,500,000
7	Extend Left Turn Lanes	US 17 & Willbrook Blvd	0.13	\$130,000	\$52,000	\$78,000
8	Litchfield Dr Intersection	Country Club	0.00	\$150,000	\$0	\$150,000
9	Install Median in US 17	S Causeway to MLK	0.00	\$5,200,000	\$2,080,000	\$3,120,000
A1	Connect Beaumont Dr to Petigru Dr	Pawleys Island west of US 17	1.80	\$2,140,000	\$0	\$2,140,000
A2	Connect S 1st St to Murrells Inlet Rd	Murrells Inlet east of US 17	1.20	\$1,510,000	\$0	\$1,510,000
A3	Extend Petigru Dr north to Aspen Loop	Litchfield Beach	1.14	\$950,000	\$0	\$950,000
A4	Extend Parkersville Rd north to Gilman Rd	Litchfield Beach	1.14	\$1,310,000	\$0	\$1,310,000
A5	East Connector	Arcadia	3.46	\$4,590,000	\$0	\$4,590,000
B1	Extend Library Lane	north to Litchfield Dr	3.38	\$3,300,000	\$0	\$3,300,000
B2	Extend Library Lane	south to Waverly	1.04	\$700,000	\$0	\$700,000
B3	Extend Otis Dr	Willbrook Rd to Plantation	1.42	\$660,000	\$0	\$660,000

TOTAL 16.24 \$27,180,000 \$3,092,000 \$24,088,000
 Cost per Lane Mile => \$1,674,000 \$190,000 \$1,483,000

- (1) Countywide Transportation Master Plan (Wilbur Smith Associates 11/08).
 (2) Other funding from SCDOT or Georgetown County.
 (3) New development pays 100% of the cost of new road segments. For intersections with no existing deficiency, the growth share is 100%. For all other projects, the growth share is 60% based on the countywide increase in VMT indicated by the long-range transportation model (Build Scenario).

Travel Demand in the Waccamaw Neck Service Area

Projected development in the Waccamaw Neck Service Area over the next 22 years, and the corresponding need for additional lane miles, is documented in Figure 29. Trip generation rates and trip adjustment factors convert projected development into average weekday vehicle trips. A typical vehicle trip, such as a person leaving their home and traveling to work, generally begins on a local street that connects to a collector street, which connects to an arterial road and eventually to a state or interstate highway. This progression of travel up and down the functional classification chain

limits the average trip length question to the following, “What is the average vehicle trip length on impact fee system improvements (i.e., major roads listed in the growth-related CIP)?”

With 16.2 lane miles of system improvements and a lane capacity standard of 7,300 vehicles per lane, the impact fee road network has 118,260 vehicle miles of capacity (i.e., 7,300 vehicles per lane traveling the entire 16.2 miles). To derive the average utilization (i.e., average trip length expressed in miles) of the system improvements, divide vehicle miles of travel by the vehicle trips attracted to new development in the service area. As shown below, new development increases average weekday vehicle trips from 130,586 in 2008 to 196,309 in 2030. Dividing 118,260 vehicle miles of capacity by the net increase in average weekday vehicle trips (65,723) yields an unweighted average trip length of approximately 1.8 miles. However, the calibration of average trip length includes the same adjustment factors used in the impact fee calculations (i.e., journey-to-work commuting, commercial pass-by adjustment and average trip length adjustment by type of land use). Using a series of spreadsheet iterations, the weighted-average trip length is 1.86 miles, as shown in Figure 29.

Figure 29 – Waccamaw Neck SA Road Impact Fee Calibration

Avg Trip Length (miles)	1.86					
Capacity Per Lane	7,300					
Cost per Lane-Mile	\$1,483,000					
Year->	<i>Base</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>22</i>	<i>22-Year</i>
	<i>FY08-09</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2030</i>	<i>Increase</i>
Waccamaw Neck Service Area						
DETACHED HU	9,238	9,496	9,757	9,990	14,715	5,477
ATTACHED HU	1,892	1,945	1,998	2,046	3,014	1,122
GOODS PRODUCTION KSF	2,915	2,930	2,951	2,979	3,584	669
RETAIL/RESTAURANT KSF	1,709	1,734	1,753	1,778	2,366	657
OTHER SERVICES KSF	1,893	1,941	1,988	2,036	3,091	1,198
GOVERNMENT KSF	3,111	3,160	3,214	3,265	4,454	1,344
DETACHED RES TRIPS	47,739	49,075	50,424	51,627	76,043	
ATTACHED RES TRIPS	6,733	6,922	7,112	7,281	10,725	
GOODS PRODUCTION TRIPS	5,568	5,597	5,637	5,690	6,846	
RETAIL/RESTAURANT TRIPS	38,299	38,852	39,281	39,854	53,032	
OTHER SERVICES TRIPS	17,371	17,805	18,240	18,684	28,364	
PUBLIC TRIPS	14,875	15,109	15,370	15,612	21,300	
Total Vehicle Trips	130,586	133,360	136,064	138,748	196,309	
Vehicle Miles of Travel (VMT)	224,801	229,930	234,992	239,863	342,799	
LANE MILES	30.8	31.5	32.2	32.9	47.0	16.2
ANL LN MI		0.7	0.7	0.7	0.8	
Anl Lane Mile Cost (millions)		\$1.04	\$1.04	\$1.04	\$1.19	\$24.02
Lane Miles per 10,000 VMT	1.37	1.37	1.37	1.37	1.37	

Credit for Future Gas Taxes in WNSA

A credit for future gas taxes is only necessary if there is potential double payment for system improvements. In Georgetown County, gas tax revenue will be used for maintenance of existing facilities, correcting existing deficiencies and for capital projects that are not impact fee system improvements. Since road impact fees will be used exclusively for growth-related system improvements, there is no need for a revenue credit. As shown below in the cash flow analysis for the Waccamaw Neck Service Area, projected impact fee revenue matches the growth-related cost of system improvements (i.e. ~\$24 million).

Waccamaw Neck Service Area Road Impact Fees

Input variables for the Waccamaw Neck road impact fee are shown in Figure 30. Attraction trips by type of development are multiplied by the net capital cost per unit of trip capacity to yield the road impact fees. To derive the capital cost per average length trip, multiply the average trip length by the trip length weighting factor (by type of land use), then multiply by the cost per lane mile and divide by the lane capacity. For example, the road impact fee formula for a single family detached house is $9.57 \times 0.54 \times ((1.86 \times 1.22 \times \$1,483,000 / 7300) - 0) = \$2,380$ per housing unit (truncated to tens place).

For consistency with terms used in the South Carolina Impact Fee Act, the above formula can be restated as VMT per housing unit multiplied by the cost per service unit, which is a vehicle mile of travel. Estimated VMT for a detached housing unit in the Waccamaw Neck Service Area is $9.57 \times 0.54 \times 1.86 \times 1.22$, or 11.73 vehicle miles of travel on the planned system improvements during an average weekday. Given a capacity standard of 7,300 vehicles per lane, the cost per service unit is approximately \$203 per VMT, derived from the formula $[\$1,483,000 / 7,300]$. In other words, it cost \$1,483,000 to provide one lane mile of system improvements, which is shared by 7,300 vehicles on an average weekday. With 11.73 vehicle miles of travel per detached housing unit and a cost factor of \$203 per VMT, the road impact fee is \$2,380 per housing unit (truncated to tens place).

Figure 30 – Waccamaw Neck Service Area Road Impact Fee Inputs

Waccamaw Neck Service Area ITE Code	Weekday Vehicle Trip Ends	Trip Rate Adjustment Factors	Trip Length Weighting Factors
Weekday Vehicle Trip Ends			
<i>Residential (per Household)</i>			
210 Detached	9.57	54%	122%
221 Attached	6.59	54%	122%
<i>Nonresidential (per 1,000 Sq Ft of floor area)</i>			
820 Retail / Restaurant	67.91	33%	68%
770 Business Park	12.76	50%	75%
710 Office	18.35	50%	75%
610 Hospital	17.57	50%	75%
520 School	14.49	33%	75%
151 Mini-Warehouse	2.50	50%	75%
150 Warehousing	4.96	50%	75%
140 Manufacturing	3.82	50%	75%
110 Light Industrial	6.97	50%	75%
<i>Nonresidential (per unique demand indicator)</i>			
620 Nursing Home (per bed)	2.37	50%	75%
565 Day Care (per student)	4.48	24%	75%
320 Lodging (per room)	5.63	50%	75%
Infrastructure Standards			
Average Miles per Vehicle Trip	1.86		
Cost per Lane Mile	\$1,483,000		
Lane Capacity (vehicles per day)	7,300		
Revenue Credit (not applicable)	\$0		

Maximum Supportable WNSA Road Impact Fees

The input variables discussed above yield the maximum supportable impact fees shown in Figure 31. Fees for most types of nonresidential development are listed per 1,000 square feet of floor area. For example, the fee for a retail building such as a Wal-Mart store with 125,000 square feet of floor area would be \$718,750 (125 x \$5,750). At the bottom of the following table are some nonresidential development types that have unique demand indicators. For example, the impact fee for lodging is based on the number of rooms.

Figure 31 – Waccamaw Neck Service Area Road Impact Fees

Maximum Supportable Road Impact Fee	
<i>Residential (per housing unit)</i>	
210 Detached	\$2,380
221 Attached	\$1,640
<i>Nonresidential (per 1,000 Sq Ft of floor area)</i>	
820 Retail / Restaurant	\$5,750
770 Business Park	\$1,800
710 Office	\$2,600
610 Hospital	\$2,480
520 School	\$1,350
151 Mini-Warehouse	\$350
150 Warehousing	\$700
140 Manufacturing	\$540
110 Light Industrial	\$980
<i>Nonresidential (per unique demand indicator)</i>	
620 Nursing Home (per bed)	\$330
565 Day Care (per student)	\$300
320 Lodging (per room)	\$790

Funding Strategy for Waccamaw Neck Service Area Roads

The cash flow summary shown in Figure 32 provides an indication of the road impact fee revenue and expenditures necessary to meet the demand for system improvements over the next 22 years in the Waccamaw Neck Service Area. Assuming government buildings will pay road impact fees, projected revenues essentially match the growth share of the capital improvements plan for roads (i.e. ~\$24 million). Projected deficits, averaging \$147,000 per year, will require funding from other State or County revenue sources. Georgetown County will spend an average of approximately \$1.2 million per year on growth-related road improvements in the Waccamaw Neck Service Area.

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

Figure 32 – Cash Flow for Waccamaw Neck Service Area Roads

Georgetown County, SC (Current \$ in thousands)	1 2009	2 2010	3 2011	12 2020	22 2030	Cumulative Total	Average Annual
REVENUES							
15 WNSA Road Fee - Detached	\$615	\$621	\$554	\$630	\$631	\$13,035	\$593
16 WNSA Road Fee - Attached	\$87	\$88	\$78	\$89	\$89	\$1,840	\$84
17 WNSA Road Fee - Goods P	\$8	\$11	\$15	\$15	\$19	\$361	\$16
18 WNSA Road Fee - Retail/R	\$142	\$110	\$147	\$184	\$190	\$3,780	\$172
19 WNSA Road Fee - Other Se	\$123	\$123	\$126	\$145	\$164	\$3,115	\$142
20 WNSA Road Fee - Governm	\$66	\$74	\$68	\$78	\$96	\$1,814	\$82
Waccamaw Neck SA Road Fees	\$1,041	\$1,027	\$988	\$1,141	\$1,189	\$23,945	\$1,088
CAPITAL COSTS							
Waccamaw Neck SA Roads CIP	\$1,235	\$1,235	\$1,235	\$1,235	\$1,235	\$27,180	\$1,235
NET CAPITAL FACILITIES CASH FLOW - Waccamaw Neck Service Area Roads							
Annual Surplus (or Deficit)	(\$195)	(\$208)	(\$247)	(\$95)	(\$46)	(\$3,235)	(\$147)
Cumulative Surplus (or Deficit)	(\$195)	(\$403)	(\$650)	(\$2,159)	(\$3,235)		

APPENDIX A – DEMOGRAPHIC DATA

In this Appendix, TischlerBise documents the demographic data and development projections used in the study of potential impact fees for transportation, libraries, and law enforcement facilities. Although long-range projections are necessary for planning capital improvements, a shorter time frame of three to five years is critical for the impact fees analysis. Infrastructure standards will be calibrated using fiscal year 2008-2009 data and the first projection year for the cash flow model will be fiscal year 2009-2010. The Georgetown County fiscal year begins July 1st.

Population and Housing Characteristics

As shown in Figure A1, Georgetown County had 28,282 housing units in 2000. The weighted average, household size in 2000 for all housing types was 2.55 persons per household. According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. TischlerBise recommends the use of two residential categories in the impact fee calculations. Differentiating impact fees by type of housing helps make the fees proportionate to the demand for public facilities. The housing mix (i.e. 83% detached units vs. 17% attached housing) is assumed to remain unchanged over the next five years.

Impact fees often use per capita standards and persons per housing unit or persons per household to derive proportionate-share fee amounts. When persons per housing unit multipliers are used in the fee calculations, infrastructure standards are derived using year-round population. When persons per household multipliers are used in the fee calculations, the impact fee methodology assumes all housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. In Georgetown County, impact fees for library and law enforcement facilities will be derived using year-round population and the average number of persons per housing unit, which is expected to continue declining over time. By 2030 the impact fee study assumes 1.76 persons per detached unit and 0.78 persons per attached housing unit.

Figure A1 – Persons per Housing Unit

<i>Countywide Summary by Type of Housing</i>	<i>Persons</i>	<i>House- holds</i>	<i>Persons per Household</i>	<i>Housing Units</i>	<i>Persons Per Hsg Unit</i>	<i>Housing Mix</i>
Detached (SFD & MH)	50,723	19,490	2.60	23,555	2.15	83%
Attached (all other)	4,493	2,169	2.07	4,727	0.95	17%
Subtotal	55,216	21,659	2.55	28,282	1.95	<i>Vacancy</i>
Group Quarters	581					<i>Rate</i>
TOTAL	55,797	21,659		28,282		23.4%

Source: 2000 U.S. Census Bureau.

Recent Residential Construction

Figure A2 indicates the US Census Bureau's 2006 population estimate of 60,860 year-round residents for Georgetown County and the corresponding increase in housing units to match the population increase. Since the 2000 census, Georgetown County has increased by an average of 684 housing units per year. In contrast, recent housing construction has slowed with only 455 housing units receiving permitted during the first ten months of the current fiscal year.

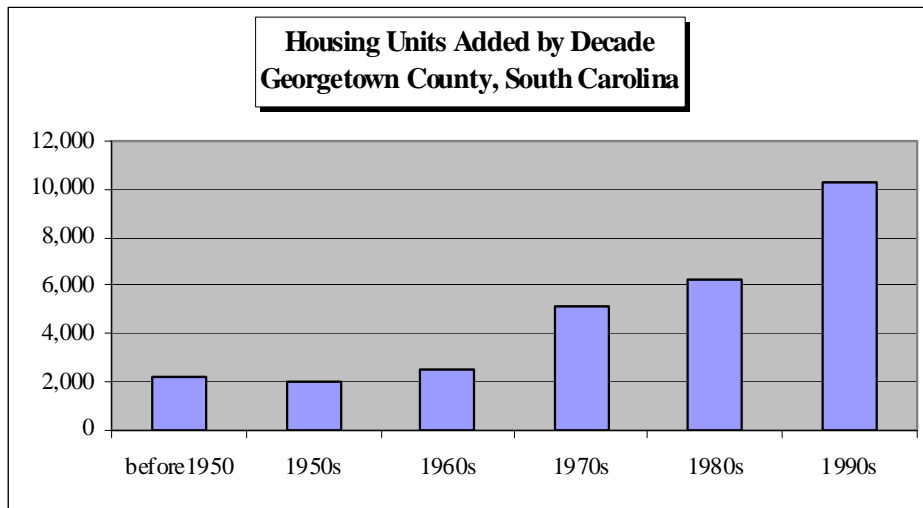
The chart at the bottom of Figure A2 indicates the estimated number of housing units added by decade in Georgetown County. If the recent rate of housing construction continues, the first decade of the 21st century might increase by 5,000 to 6,000 housing units, which is lower than the previous decade when approximately 10,000 units were constructed in Georgetown County.

Figure A2 – Georgetown County Housing Units and Population in 2006

Georgetown County, South Carolina	
Estimated Year-Round Population in 2006*	60,860
Total Housing Units 7/1/00*	28,458
New Housing Units 2000-2006	4,104
Total Units in 2006*	32,562

* US Census Bureau Population and Housing Unit Estimates for 7/1/06.

From 2000 to 2006, Georgetown County added an average of 684 housing units per year.



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

Population by Service Area

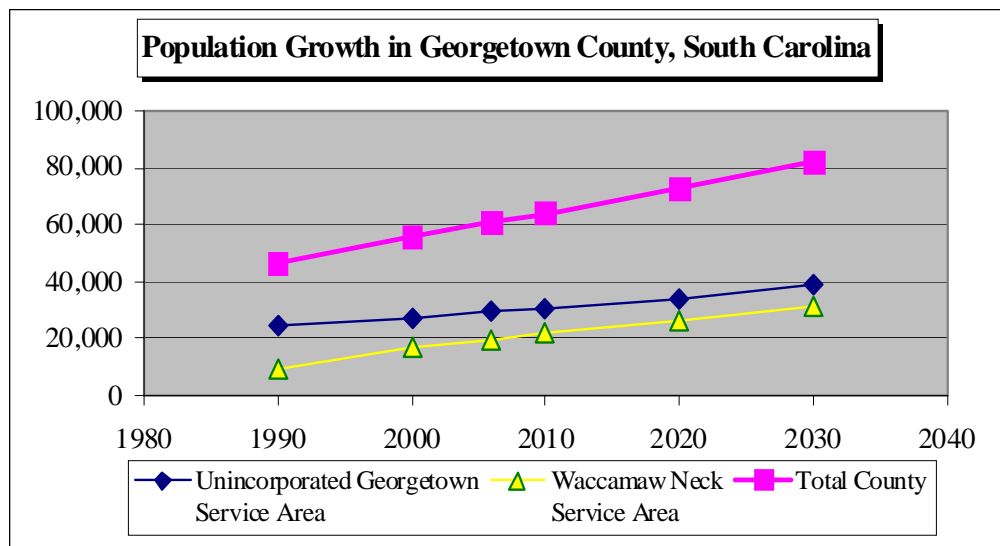
U.S. Census Bureau data on Georgetown County population in 1990, 2000, and 2006 are shown in Figure A3, along with countywide population projections published by Woods & Poole Economics (2007). Projected 2030 population share of 38.6% in the Waccamaw Neck Service Area (WNSA), defined as the County Census Division (CCD), is from the Georgetown County Recreation Needs Analysis. The Unincorporated Georgetown Service Area (UGSA) excludes the City of Georgetown, the Town of Andrews, and the Waccamaw Neck Service Area.

Figure A3 – Georgetown County Population by Service Area

	1990	2000	2006	2010	2020	2030
Total County	46,654	55,797	60,860	63,967	72,446	82,049
City of Georgetown	9,517	8,950	8,706	8,700	8,700	8,700
Town of Andrews	3,050	3,068	3,034	3,007	2,966	3,029
Unincorporated Georgetown Service Area	24,407	27,133	29,460	30,580	34,120	38,650
Waccamaw Neck Service Area	9,680	16,646	19,660	21,680	26,660	31,670
UGSA Share			48.4%	47.8%	47.1%	47.1%
WNSA Share			32.3%	33.9%	36.8%	38.6%

Source: U.S. Census Bureau data for 1990, 2000, and 2006

Total Georgetown County projection for 2030 from Woods & Poole Economics, Inc. (2007).



Jobs by Place of Work

In addition to data on residential development, the calculation of impact fees requires data on nonresidential development. TischlerBise uses the term “jobs” to refer to employment by place of work. Similar to the population share evaluation discussed above, countywide jobs are shown in Figure A4 along with the job allocation to the Unincorporated Georgetown Service Area (UGSA) and the Waccamaw Neck Service Area (WNSA). Countywide job data are from Woods & Poole Economics (2007). Estimated jobs in the City of Georgetown and the Town of Andrews, in both 1990 and 2000, are based on Census Transportation Planning Package data. Job data by geographic area in 2006 are from the Longitudinal Employer-Household Dynamics website provided by U.S. Census Bureau. Consistent with the land use assumptions used in the long-range transportation model, TischlerBise projects an increase of almost than 4,200 jobs in the Unincorporated Georgetown Service Area between 2006 and 2030.

In comparison, the Waccamaw Neck Service Area is expected to increase by more than 9,700 jobs over the same time period.

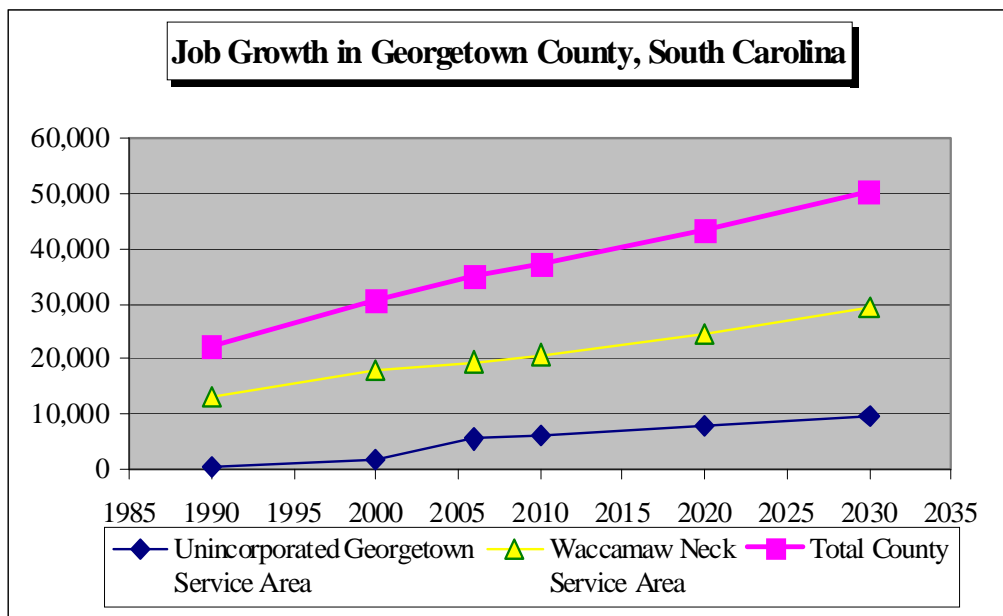
Figure A4 – Georgetown County Jobs by Service Area

	1990	2000	2006	2010	2020	2030
Total County	22,545	30,629	35,114	37,303	43,390	50,470
City of Georgetown	8,300	10,000	9,200	9,440	10,040	10,640
Town of Andrews	800	800	814	783	810	820
Unincorporated Georgetown Service Area	380	1,822	5,550	6,190	7,810	9,740
Waccamaw Neck Service Area	13,065	18,007	19,550	20,890	24,730	29,270
UGSA Share			15.8%	16.6%	18.0%	19.3%
WNSA Share			55.7%	56.0%	57.0%	58.0%

Source: Total County from Woods & Poole Economics, Inc. 2007.

1990 and 2000 shares based on Census Transportation Planning Package, Place of Work data.

2006 shares based on Census Bureau Longitudinal Employer-Household Dynamics.



Nonresidential Demand Indicators

Figure A5 provides employee and building area ratios derived using national data published by the Institute of Transportation Engineers (ITE) and the Urban Land Institute (ULI). In the impact fee study, vehicle trips per demand unit (i.e., one thousand square feet of floor area, beds, students or rooms) will be used to differentiate fees by type of nonresidential development. In the table below, gray shading indicates the four nonresidential development prototypes used by TischlerBise to calculate vehicle trips and potential impact fee revenue. The first prototype, for goods-producing

jobs, is manufacturing. The second prototype, for retail/restaurant jobs, is a shopping center with 100,000 square feet of floor area. The third prototype, for other services, is an office building with 25,000 square feet of floor area. The fourth prototype, for government jobs, is an elementary school.

Figure A5 – Employee and Building Area Ratios

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit*	Wkdy Trip Ends Per Employee*	Emp Per Dmd Unit**	Sq Ft Per Emp
Commercial / Shopping Center						
821	25K gross leasable area	1,000 Sq Ft	110.32	na	3.33	300
820	50K gross leasable area	1,000 Sq Ft	86.56	na	2.86	350
820	100K gross leasable area	1,000 Sq Ft	67.91	na	2.50	400
820	200K gross leasable area	1,000 Sq Ft	53.28	na	2.22	450
820	400K gross leasable area	1,000 Sq Ft	41.80	na	2.00	500
General Office						
710	10K gross floor area	1,000 Sq Ft	22.66	5.06	4.48	223
710	25K gross floor area	1,000 Sq Ft	18.35	4.43	4.15	241
710	50K gross floor area	1,000 Sq Ft	15.65	4.00	3.91	256
710	100K gross floor area	1,000 Sq Ft	13.34	3.61	3.69	271
710	200K gross floor area	1,000 Sq Ft	11.37	3.26	3.49	287
Industrial						
770	Business Park***	1,000 Sq Ft	12.76	4.04	3.16	317
151	Mini-Warehouse	1,000 Sq Ft	2.50	56.28	0.04	22,512
150	Warehousing	1,000 Sq Ft	4.96	3.89	1.28	784
140	Manufacturing	1,000 Sq Ft	3.82	2.13	1.79	558
110	Light Industrial	1,000 Sq Ft	6.97	3.02	2.31	433
Other Nonresidential						
720	Medical-Dental Office	1,000 Sq Ft	36.13	8.91	4.05	247
620	Nursing Home	bed	2.37	6.55	0.36	na
610	Hospital	1,000 Sq Ft	17.57	5.20	3.38	296
565	Day Care	student	4.48	28.13	0.16	na
530	Secondary School	student	1.71	19.74	0.09	na
520	Elementary School	student	1.29	15.71	0.08	na
520	Elementary School	1,000 Sq Ft	14.49	15.71	0.92	1,084
320	Lodging	room	5.63	12.81	0.44	na

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

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

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

Development Projections

Key demographic data for the impact fee study are shown in Figure A6. Cumulative data are shown in the top section and annual increases at the bottom of the table.

Projected population and jobs in 2030 are from Wood & Poole Economics (2007). Population and job projections between 2006 and 2030 were derived using exponential growth curves that yield slower annual increases in the short-term. For example, the annual population increase in the first year is 782 persons (see the change from 2008 to 2009 as shown in the bottom section of Figure A6) and grows larger over time.

Using job projections by type of development from Woods & Poole Economics (2007) and the square feet per employee multipliers discussed above, TischlerBise derived the nonresidential floor area data shown below. From 2008 to 2030, nonresidential floor area is projected to increase by approximately 274,000 square feet per year in Georgetown County.

Figure A6 – Detailed Countywide Demographic Data

Georgetown County, SC <i>Cumulative</i>	<i>Base Year</i>								
	2000	2008	2009	2010	2011	2015	2020	2025	2030
	<i>FY 08-09</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>7</i>	<i>12</i>	<i>17</i>	<i>22</i>	
Pop in Households	55,216	61,813	62,595	63,386	64,187	67,494	71,865	76,517	81,468
Pop in Group Quarters*	581	581	581	581	581	581	581	581	581
Year-Round Population	55,797	62,394	63,176	63,967	64,768	68,075	72,446	77,098	82,049
Jobs	30,629	36,192	36,743	37,303	37,871	40,231	43,390	46,796	50,470
Housing Units	28,282	33,625	34,153	34,678	35,204	37,325	40,056	42,916	45,929
Jobs to Housing Ratio	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.09	1.10
Residential Vacancy Rate	23.4%	23.4%	23.4%	23.4%	23.4%	23.4%	23.4%	23.4%	23.4%
Households	21,659	25,751	26,155	26,558	26,960	28,584	30,676	32,866	35,173
Persons Per Household	2.55	2.40	2.39	2.39	2.38	2.36	2.34	2.33	2.32
Nonres Sq Ft (x 1,000)									
Goods Producing	4,830	5,220	5,240	5,270	5,310	5,450	5,660	5,910	6,180
Retail/Restaurant	2,610	3,060	3,100	3,130	3,170	3,340	3,570	3,820	4,080
Other Services	2,670	3,390	3,470	3,550	3,630	3,960	4,390	4,840	5,330
Government	4,740	5,570	5,650	5,740	5,820	6,170	6,630	7,140	7,680
Total	14,850	17,240	17,460	17,690	17,930	18,920	20,250	21,710	23,270
Avg Sq Ft Per Job	485	476	475	474	473	470	467	464	461
									<i>2008 to 2030</i>
Annual Increase		<i>08-09</i>	<i>09-10</i>	<i>10-11</i>	<i>11-12</i>	<i>15-16</i>	<i>20-21</i>	<i>25-26</i>	Increase
Year-Round Population		782	791	801	811	853	907	966	19,655
Jobs		551	560	568	577	613	661	713	14,278
Housing Units		528	525	526	527	537	561	589	12,304
Goods Producing KSF**		20	30	40	30	40	50	50	960
Retail/Restaurant KSF**		40	30	40	50	50	50	50	1,020
Other Services KSF**		80	80	80	80	80	90	100	1,940
Government KSF**		80	90	80	90	90	100	100	2,110
									Total KSF Increase =>
									Avg Anl KSF Increase =>

* Group quarters population is held constant over time.

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

APPENDIX B – PASS-BY TRIP ADJUSTMENT FACTORS

Abstract

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

Purpose

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

Literature Review

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

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

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

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

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

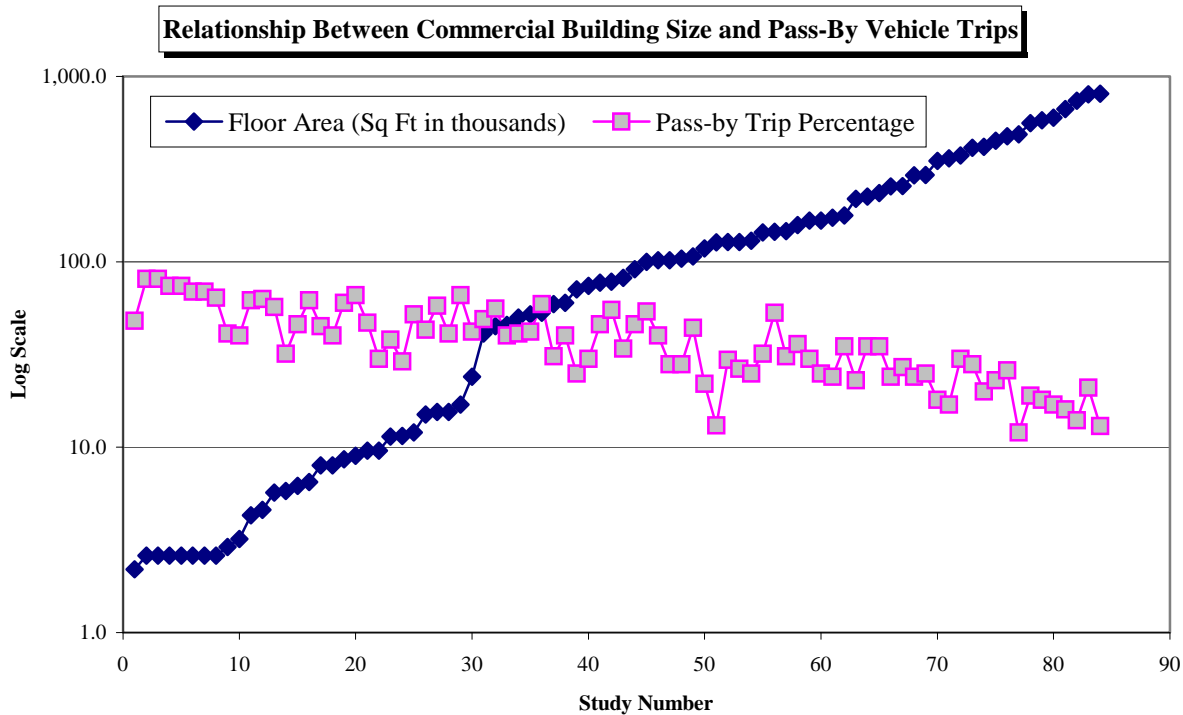
The second edition of Trip Generation Handbook (ITE, 2004), provides a data plot of average pass-by trip percentage based on gross leasable floor area of a shopping center. The fitted curve equation shown in Figure 5.5 indicates a fitted logarithmic curve with an R-squared value of 0.37. The analysis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

Analysis

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

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

FIGURE B1



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

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

FIGURE B2

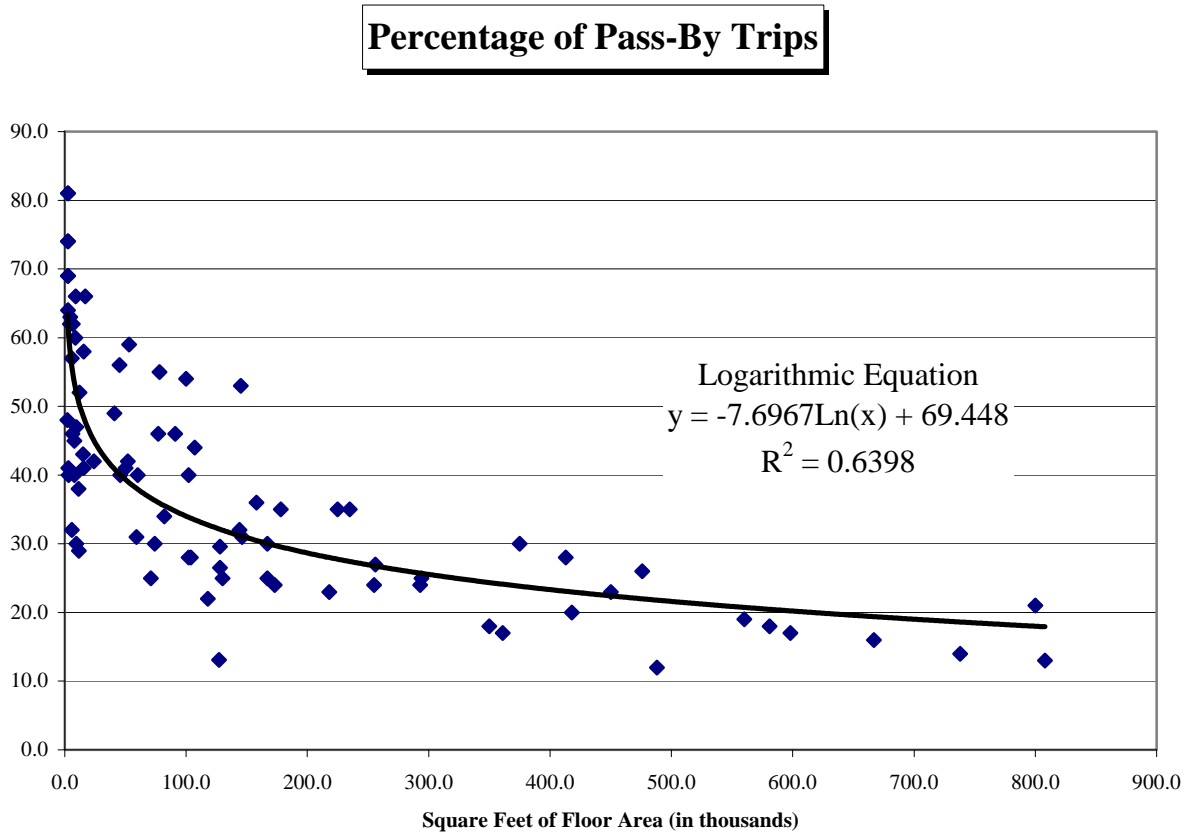
Summary of Pass-By Trips Database

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

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

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

FIGURE B3



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

FIGURE B4

Trip Rates and Adjustment Factors by Size Threshold

Floor Area in thousands (KSF)	<i>Shopping Centers</i> (ITE 820 Weekday*)		<i>Shopping Centers</i> (ITE 820 PM-Peak Hour*)		Commercial Pass-by Trips**	Commercial Trip Adj Factor***
	Trip Ends	Rate/KSF	Trip Ends	Rate/KSF		
10	1,520	152.03	137	13.70	52%	24%
25	2,758	110.32	251	10.03	45%	28%
50	4,328	86.56	396	7.92	39%	31%
100	6,791	67.91	626	6.26	34%	33%
200	10,656	53.28	989	4.95	29%	36%
400	16,722	41.80	1,563	3.91	23%	39%
800	26,239	32.80	2,470	3.09	18%	41%

* Trip Generation, ITE, 2003.

** Based on data published by ITE in Trip Generation Handbook (2004), the best trendline correlation between pass-by trips and floor area is a logarithmic curve with the equation $((-7.6967 * \ln(\text{KSF})) + 69.448)$.

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

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

Conclusions

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

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APPENDIX C - IMPLEMENTATION AND ADMINISTRATION

TischlerBise recommends that impact fees be deposited in a separate interest bearing account. Also, the County must prepare an annual report on impact fee collections and expenditures. To ensure reasonable benefit to new development that pays the one-time fees, impact fees must be spent within three years of when they are collected, with the expenditures limited to growth-related system improvements in Georgetown County's CIP. It is not necessary to track charges on a project-specific basis. Rather, the common approach is to consider the first funds into the account as first funds out of the account.

Credits and Reimbursements

A general requirement that is common to impacts is the evaluation of credits. A revenue credit may be necessary to avoid potential double payment situations arising from one-time impact fees plus the payment of other revenues that may also fund growth-related capital improvements. The determination of credits is dependent upon the methodology used in the cost analysis. There are three basic approaches used to calculate impact fees and each is linked to different credit methodology.

A cost recovery method is used for facilities that have adequate capacity to accommodate new development for at least a three to five-year time frame, which is the typical horizon for a Capital Improvements Plan (CIP). The rationale for the cost recovery is that new development is paying for its share of the useful life or remaining capacity of the existing facility. When using a cost recovery method, outstanding principal payments are typically deducted from the value of the asset that was oversized for new development. Also, the jurisdiction may only recover its actual cost in the oversized facility.

A second basic approach used to calculate impact fees is the incremental expansion cost method. This method documents current factors and it is best suited for infrastructure that will be expanded incrementally in the future. Because new development will provide front-end funding of infrastructure, there is potential double payment for future principal payments on existing debt for public facilities. A credit is not necessary for interest payments if interest costs are not included in the impact fees.

A third basic approach used to calculate impact fees is the plan-based method. This method is based on future capital improvements needed to accommodate new development. The plan-based method may be used for public facilities that have engineering studies or commonly accepted service delivery factors to determine the need for future projects. This method may also be used when a jurisdiction plans to

significantly increase current standards and it has a financially feasible strategy to cover the cost of existing deficiencies. If a plan-based approach is used to derive impact fees, the credit evaluations should focus on future bonds and revenues that will fund planned capital improvements.

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

Based on TischlerBise's experience, it is better for a jurisdiction to establish a reimbursement agreement with the developer that constructs a system improvement. The reimbursement agreement should be limited to a payback period of no more than ten years and the jurisdiction should not pay interest on the outstanding balance. The developer must provide sufficient documentation of the actual cost incurred for the system improvement. The jurisdiction should only agree to pay the lesser of the actual construction cost or the estimated cost used in the impact fee analysis. If the jurisdiction pays more than the cost used in the impact fee analysis, there will be insufficient revenue. Reimbursement agreements should only obligate the jurisdiction to reimburse developers annually from fees collected in the benefiting area. Site specific credits or developer reimbursements for one type of system improvement does not negate payment of fees for other system improvements.

Nonresidential Development Categories

The nonresidential development categories listed in the impact fee schedules will cover a majority of the new construction anticipated within the study area. Nonresidential development categories are based on land use classifications from the book Trip Generation (ITE, 2003). For unique developments, the jurisdiction may allow or require documentation of reasonable demand indicators to facilitate an impact fee determination, consistent with the methodologies and factors documented in this report.

Even though churches are a common type of development, they do not have a specific impact fee category due to a lack of sufficient data. The Institute of Transportation Engineers does not publish trip rates per church employee and the weekday trip generation rate per 1,000 square feet of floor area is not based on enough studies to be

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

APPENDIX D – REPORT ESTIMATING THE EFFECT OF IMPACT FEES ON THE AVAILABILITY OF AFFORDABLE HOUSING

As specified in South Carolina Development Impact Fee Act, “affordable housing” means housing affordable to families whose incomes do not exceed eighty percent of the median income within the jurisdiction of the governmental entity (see Section 6-1-920). According to 2000 census data for Georgetown County, the median family income in 1999 was \$41,554. In 2008 dollars, the median family income would be \$52,197 (based on Gross Domestic Product Implicit Price Deflators for 7/1/99 and 7/1/08 published by the U.S. Department of Commerce, Bureau of Economic Analysis) and 80% of the median family income would be \$41,758 per year. The generally accepted guideline from the U.S. Department of Housing and Urban Development website is that housing costs should not exceed 30% of income, which would be \$12,527 per year, or \$1,044 per month. Based on guidelines in the South Carolina Development Impact Fee Act, affordable housing in Georgetown County will cost less than \$1,044 per month for either rent or mortgage payments (including principal, interest, taxes and insurance). To help increase the supply of affordable housing, Georgetown County may pay development impact fees for a qualifying affordable housing project from a revenue source such as the General Fund (see Section 6-1-970).

Academic evidence on the effect of impact fees on the availability of affordable housing is summarized in a recent book by Nelson, Bowles, Juergensmeyer, and Nicholas (see [Guide to Impact Fees and Housing Affordability](#), published by Island Press, 2008). Chapter four on impact fees, housing prices and affordable housing supply helps explain how the effect of impact fees varies according to market conditions. When housing demand is high and prices are rising (i.e. a seller’s market), impact fees tend to be passed through to the buyer. When housing demand is low and prices are falling (i.e. a buyer’s market), impact fees tend to be absorbed by the land owner. In the latter case, impact fees are backwardly capitalized and fully recovered in the price of finished residential lots. Several journal articles document positive correlations between housing supply and impact fees, with causality attributed to a reduction in NIMBYism (i.e. “not in my backyard” anti-growth activity) and the provision of adequate infrastructure. Increasing the supply of housing tends to lower prices and thus offset some of the direct price effects of impact fees in the long run.

To minimize the effect of impact fees on the availability of affordable housing, Nelson et al recommend that impact fees increase with unit size, measured by number of bedrooms or floor area. In Georgetown County, there were two obstacles prohibiting the calculation of impact fees by unit size. First, this alternative requires detailed

demographic data only available for geographic areas with a minimum of at least 100,000 persons. Because Georgetown County is under this threshold, demographic factors would be based on a multi-county area, including Georgetown, Williamsburg, and Clarendon Counties. Second, County staff determined that floor area and bedroom data were not readily available from local property tax records.

Market conditions vary by community, but normally the most affordable housing tends to be existing, attached units. At the other end of the spectrum, new, detached units are generally the most expensive type of housing. To help avoid legal challenges alleging impact fees to be an illegal tax, fee amounts are not based on property value, but other tangible indicators of the demand for infrastructure. Flat fees that do not increase with property value are labeled “regressive” with the fee amount representing a lower percentage of larger, more expensive units. A potential range for estimated housing unit price increases, due to impact fees, is indicated in the table below. For detached housing units in Georgetown County, impact fees could raise house prices from one to four percent. Assuming attached units have a lower price range, impact fees could raise an attached unit’s price from one to five percent. In comparison, proposed impact fees in Georgetown County would be lower than a typical 6% real estate commission.

<i>Detached Housing</i>			
Price Increase in UGSA	3.2%	2.1%	1.6%
Total Fee in UGSA	\$3,175	\$3,175	\$3,175
Price of a New Unit	\$100,000	\$150,000	\$200,000
Total Fee in WNSA	\$3,815	\$3,815	\$3,815
Price Increase in WNSA	3.8%	2.5%	1.9%
<i>Attached Housing</i>			
Price Increase in UGSA	3.7%	1.8%	1.2%
Total Fee in UGSA	\$1,835	\$1,835	\$1,835
Price of a New Unit	\$50,000	\$100,000	\$150,000
Total Fee in WNSA	\$2,275	\$2,275	\$2,275
Price Increase in WNSA	4.6%	2.3%	1.5%