City of Savannah, Georgia
Impact Fee Program

METHODOLOGY REPORT

Including:
Parks and Recreation
Fire Protection Law Enforcement
Road Improvements

DRAFT **June 15, 2022**

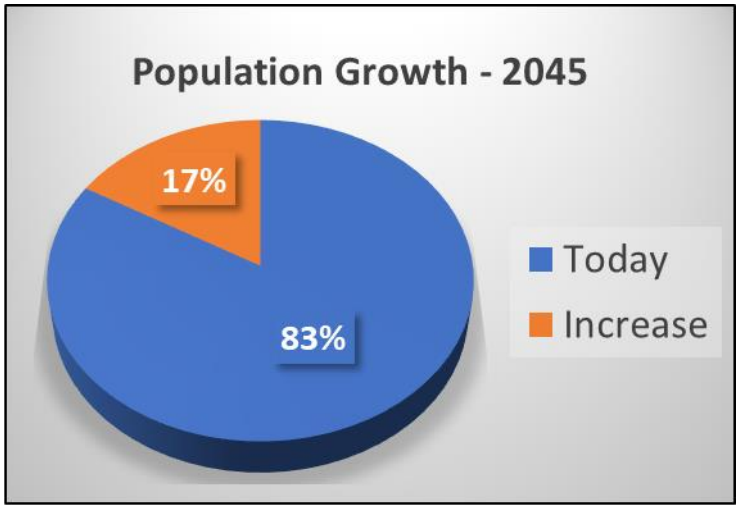
Introduction

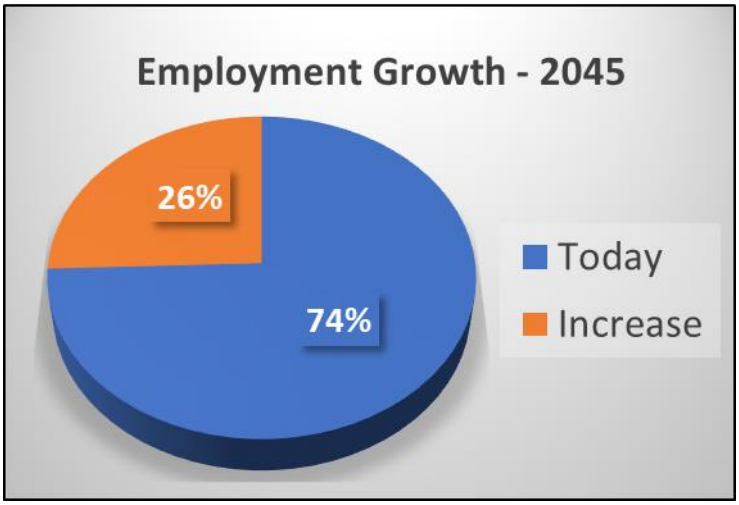
Looking Ahead

Forecasts indicate continued growth ahead for Savannah as people continue to move into the city, propelled by favorable living conditions, a variety of housing types, and exceptional access to jobs and services. Over the next 23 years to 2045, it is expected that about 17% of the people that will be living in Savannah then are not here today.

Population Outlook

The future increase in population is not unprecedented. Looking back, since 2000 the city's population grew from 132,895 to 150,034 in 2021—a 12.9% increase. After a slight 'slump' in population between 2000 and 2005, since 2005 the city's population has steadily grown, unimpeded by the collapse of the housing market and the onset of the Great Recession in 2008. As a relatively 'mature' city, the growth rate since 2005 has produced an overall population increase of 14.4%, which is an average annual rate of increase of 0.85%. As the city further matures and development and redevelopment opportunities continue, the annual rate of population growth is expected to continue at an overall average for the 24-year period of 0.87% per year, reflecting at total increase of 31,247 people, an overall growth of 20.8%.





Increased Job Opportunities

New employment opportunities will continue to be attracted to the city as well. It is expected that job growth in 'value-added' categories[1] will outpace population increase such that, by 2045, there will be almost as many value-added jobs as there will be people living in the city. About two-thirds of the increase in jobs will be in four employment categories: the most notable being office administrators (20% of all new jobs), accommodation & food services (18%), transportation & warehousing (16%), and health care & social assistance (12% of all new jobs). Together, these four categories account for two-thirds of all new jobs created in the city. Compared to today's

[1] 'Value-added' jobs exclude government, construction and agricultural workers, since they are not assessed impact fees.

total value-added employment of 132,000, new jobs will have added more than 45,000—a 34% increase over today. Bottom line – 26% of all value-added jobs in the city in 2045 are not here now.

With all of this projected population and employment growth by 2045, Savannah will be called upon to increase the capacity of its facilities and infrastructure. This expansion will be necessary in order to maintain the attractive quality of life and business environment enjoyed today by residents and businesses alike. For more information on anticipated growth, see the Forecasts section of this report. In addition, detailed growth forecast methodologies are presented in Technical Appendix A, *Future Growth Forecasts*.

Impact Fees

Impact Fees Authorized by State

Impact fees are a form of revenue allowed by the State, and strictly defined and regulated through State law. Impact fees are authorized in Georgia under Code Section 37-71, the Georgia Development Impact Fee Act (DIFA), and are administered by the Georgia Department of Community Affairs (DCA) under Chapter 110-12-2, Development Impact Fee Compliance Requirements.

Under DIFA, a city or county can collect money from new development based on that development's proportionate share—the 'fair share'—of the cost to provide future public facilities that will be needed. An impact fee is assessed as new development occurs and can help shift the burden for funding public facilities from the tax base as a whole to the new growth and development actually creating the need for these capital improvement projects.

The provisions of the DIFA are extensive in order to assure that new development pays no more than its fair share of the costs and that impact fees are not used to solve existing service deficiencies. Ultimately, and importantly, the services provided in the public facility categories for which impact fees are being charged must be the same for both the existing community and future growth. Under DIFA, these categories include:

- parks, open space, and recreation areas and related facilities;
- public safety facilities, including law enforcement, fire, emergency medical services, and E-911 emergency communications;
- animal control;
- libraries;
- roads, streets, and bridges;
- stormwater and flood control facilities;
- water supply, treatment, and distribution; and,
- wastewater collection, treatment, and disposal.

Focus of This Report

This report focuses on the following public facility categories[2]: **Parks and Recreation**, Public Safety Facilities (including **Law Enforcement** and **Fire Protection**), and **Road Improvements**. For each public facility category, this report identifies the current level of service provided throughout the city in order to quantify the capital facilities needed to meet future needs. Based on that analysis,

[2] The City currently collects water and sewer tap-in/collection fees, which are not addressed in this report.

calculations have been carried out in order to identify what portion of future capital facilities could be funded through impact fee collections.

The key is that the capital improvement, whether it is land, buildings or long-lived vehicles, must create new capacity within the system to keep pace with the number of future residents and businesses as the city grows. Maintenance and personnel are not eligible for impact fee funding, nor would replacement of deteriorated floor space or a run-down vehicle because, although the replacement is maintaining the level of service, no new capacity is created to serve the needs of new growth.

In the end, impact fees represent a potential funding source that must be balanced against other needs of the City. In this report the ***maximum allowable impact fee*** for each public facility category ***has been calculated***; this is the most that could be charged. ***The City may adopt a fee less than the maximum but cannot charge more.***

Impact Fee Documentation

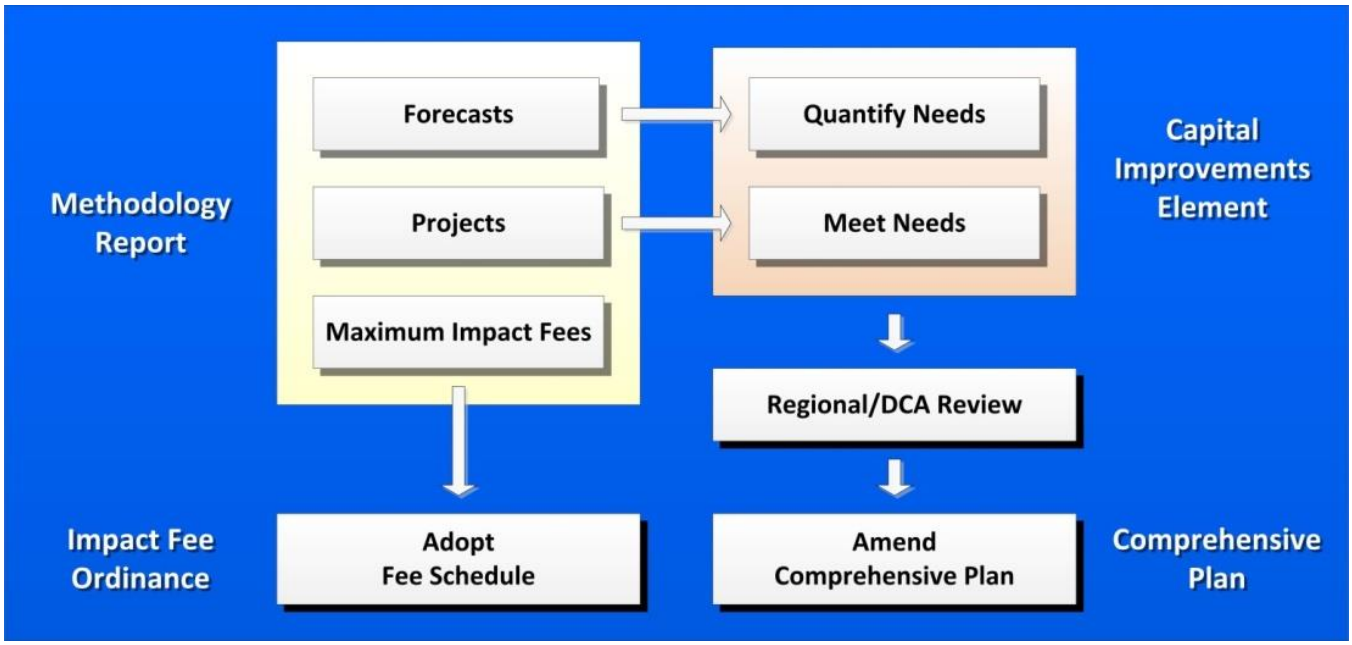
One document required for the collection of impact fees is called the Capital Improvements Element (CIE), and is adopted as a chapter, or 'element', of the City's Comprehensive Plan. As defined by the Georgia Development Impact Fee Act (DIFA), the CIE must include certain calculations and information, and those are included in this report along with additional information regarding the amount that could be charged in an impact fee program. The calculations and information, repeated (as applicable) for each public facility category for which an impact fee will be charged, are:

- a **projection of needs** for the planning period (a minimum of 20-years);
- the designation of **service areas** - the geographic area in which a defined set of public facilities provide service to development within the area;
- the designation of **levels of service** (LOS) - the service level that will be provided;
- a **schedule of improvements** listing impact fee related projects and costs for at least the coming 5 years; and
- a description of **funding sources** anticipated for the planning period.

In addition, this Methodology Report goes further, providing:

- An **extended estimate of improvements** needed to serve new growth to the end of the planning period;
- The calculation of the gross impact of new development, credits, and **net impact cost**; and
- A schedule of **maximum impact fees** that could be adopted, by land use category.

The following diagram illustrates the documents and their interrelationship in an impact fee program.



This Methodology Report contains the growth forecasts for the city, identifies capital projects that would be needed to meet the City's Level of Service standards, and presents all of the calculations related to establishing the maximum impact fees that could be charged for each public facility category.

The forecasts and the identified capital improvement projects from this report comprise the Capital Improvements Element which, in turn, will be reviewed by the Coastal Georgia Regional Commission and DCA for compliance with the state's requirements. Once approved, the City would adopt the CIE as an amendment to its Comprehensive Plan and would be authorized to collect the impact fees.

The maximum impact fees established in this Methodology Report are intended to generate discussion and determination by the City Council as to the appropriate fees to be charged. The state law provides that new growth and development may not be charged more than their 'fair share' of the cost of capital improvements that will serve them. The maximums in this report establish that ceiling beyond which the City cannot go. Lower fees, however, are fully within the purview of the City Council, although the 'shortfall' in funding would have to be made up from revenue other than impact fees.

Once determined, the fees are summarized in an Impact Fee Schedule and incorporated into an Impact Fee Ordinance. Upon adoption of the ordinance, in conjunction with the CIE described above, the City may begin collecting impact fees.

Editorial Conventions

This report observes the following conventions:

- The capitalized word 'City' applies to the government of Savannah, the City Council or any of its departments or officials, as appropriate to the context. An example is "the City has adopted an impact fee ordinance".

- The lower-case word 'city' refers to the geographical area of Savannah, as in "the population of the city has grown".
- The same conventions are applied to the words 'County' and 'county', 'State' and 'state'.
- Single quote marks (' and ') are used to highlight a word or phrase that has a particular meaning as used in this report or refers to a heading in a table.
- Double quote marks (" and ") are used to set off a word or phrase that is a direct quote taken from another source, such as a passage or requirement copied directly from a law or report.

Importantly …

- Numbers shown on tables are often rounded from the actual calculation of the figures for clarity, but the actual calculated number of decimal points is retained within the table for accuracy and further calculations.

Creating the Impact Fee Program

Eligible Facilities

The following Overview Table shows the public facility categories that are eligible for impact fee funding (in whole or in part) under Georgia law and that are considered in this report.

The following terms are used in the Overview Table:

Eligible Facilities under the State Act are limited to capital items having a life expectancy of at least 10 years, such as land, buildings and other facilities, and major rolling stock (such as fire trucks). Impact fees cannot be used for maintenance, supplies, personnel salaries, or other operational costs, or for short-term capital items such as desktop computers, furniture and tennis nets and balls. None of these costs are included in the impact fee system.

Service Areas are the geographic areas that the facilities serve, and the areas within which the impact fee would apply. Monies collected in a service area for a particular type of facility may only be spent for that purpose, and only for projects that serve that service area.

Level of Service Standards are critical to determining new development's fair share of the costs. The same standards must be applied to existing development as well as new to assure that each is paying only for the facilities that serve it. New development cannot be required to pay for facilities at a higher standard than that available to existing residents and businesses, nor to subsidize existing facility deficiencies.

Table 1: Overview of Impact Fee Program Facilities

	Public Safety		Parks and Recreation		Road Improvements
	Fire Protective Services	Police Protective Services	Parks & Recreation Components	Trail System	
Eligible Facilities	Fire Stations, fire trucks and other apparatus, training facilities	Headquarters and support space, precinct stations, and long-lived vehicles	Recreation buildings and components such community centers, ballfields, and playgrounds	Comprehensive system of multi-use trails	Road projects creating capacity for Savannah residents and workers
Service Area	Citywide	Citywide	Citywide	Citywide	Citywide
Level of Service Standard Based on ...	Floor area and number of vehicles per day-night population	Floor area and number of vehicles per day-night population	Number of acres and number of recreation components per housing unit	Legnth of trail per 2045 day/night population	LOS "D" for entire road network
Historic Funding Source(s)	General Fund, Sales Taxes	General Fund, Sales Taxes	General Fund, Sales Taxes	General Fund, Sales Taxes	General Fund, Sales Taxes

Maximum Impact Fee Schedule

The summary fee schedule presented on the next page shows the **maximum impact fees** that could be charged in Savannah for the public facility categories included in this report, based on the calculations carried out in this report.

The total impact fees shown for each public facility category are drawn from that public facility category's chapter and reflects the reductions for any applicable credit based upon anticipated tax contributions from new development.

The 'Total Maximum Fee' shown in the last column is a summary of all of the maximum fees allowed in each public facility category. The totals include a fee for administration of the Impact Fee Program and to recover the cost of preparing the Capital Improvements Element, as authorized by the State Law. As discussed below, ***the City could not charge more than the maximum fee in any given public facility category; only less.***

To read the table, first find the land use you want to investigate. Land uses are listed on the left side of the table and are grouped into categories. For example, industrial and warehouse uses are grouped together, as are all retail uses. Next, find the 'Total Maximum Fee' figure on the right of the row. This is the total impact fee per unit of measure. Finally, find the unit of measure—it is the last column of the land use category. The information can be read as follows: *this land use has a maximum impact fee of $X per unit of measure*.

Table 2: Maximum Impact Fee Schedule

ITE Code	Land Use	Parks & Recreation*	Fire Protection	Law Enforcement	Road Improvements	Total Fee per Unit**	Unit of Measure
Residential (200-299)							
210	Single-Family Detached Housing	3,088.2490	1,217.8159	1,008.1062	231.0576	5,545.2287	per dwelling
215	Duplex or Townhouse 1-3 stories	3,088.2490	1,217.8159	1,008.1062	176.4173	5,490.5884	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	3,088.2490	1,217.8159	1,008.1062	116.3864	5,430.5575	per dwelling
Industrial (100-199)							
110	General Light Industrial	0.0856	0.8160	0.6755	0.1171	1.6942	per square foot
140	Manufacturing	0.1051	1.0015	0.8290	0.1164	2.0519	per square foot
150	Warehousing	0.0188	0.1792	0.1483	0.0419	0.3882	per square foot
154	High-Cube Warehouse, short term	0.0363	0.3458	0.2862	0.0343	0.7026	per square foot
155	High-Cube Warehouse, fulfillment center	0.0363	0.3458	0.2862	0.0443	0.7127	per square foot
156	High-Cube Hub Warehouse	0.0380	0.3619	0.2996	0.1134	0.8129	per square foot
180	Specialty Trade Contractor	0.1502	1.4316	1.1851	0.2406	3.0075	per square foot
Lodging (300-399)							
310	Hotel or Conference Motel	30.9313	294.8622	244.0864	195.7742	765.6541	per room
311	All Suites Hotel	51.3153	489.1783	404.9410	107.8106	1,053.2451	per room
320	Motel	7.3886	70.4341	58.3052	82.0830	218.2110	per room
Recreational (400-499)							
445	Movie Theater	0.0786	0.7497	0.6206	1.9134	3.3624	per square foot
480	Amusement Park	0.1234	1.1767	0.9741	1,308.6732	1,310.9474	per acre
491	Racquet/Tennis Club	0.0264	0.2513	0.2081	0.5319	1.0177	per square foot
495	Recreational Community Center	0.0587	0.5597	0.4633	0.7062	1.7879	per square foot
Institutional (500-599)							
520	Private Elementary School	1.2491	11.9070	9.8566	0.3781	23.3908	per employee
530	Private School (K-8)	1.2491	11.9070	9.8566	0.3781	23.3908	per employee
532	Private School (K-12)	0.9121	8.6948	7.1975	0.2761	17.0805	per employee
534	Private High School (K-8)	0.8394	8.0015	6.6237	0.2541	15.7186	per employee
560	Church/Place of Worship	0.0211	0.2009	0.1663	0.1862	0.5745	per square foot
565	Day Care Center	0.1236	1.1787	0.9757	1.1668	3.4449	per square foot
566	Cemetery	5.7869	55.1653	45.6657	147.5044	254.1224	per acre
Medical (600-699)							
610	Hospital	0.1586	1.5118	1.2515	0.2639	3.1858	per square foot
620	Nursing Home	0.1132	1.0792	0.8934	0.1654	2.2511	per square foot
630	Clinic	0.1502	1.4315	1.1850	0.9213	3.6880	per square foot
640	Veterinary Clinic	0.0941	0.8966	0.7422	0.5268	2.2597	per square foot

* Combines the 'Parks and Recreation Components' and 'Trail System' fees from the Parks and Recreation chapter.

** Total Fee per Unit includes administration and CIE preparation fees.

ITE Code	Land Use	Parks & Recreation*	Fire Protection	Law Enforcement	Road Improvements	Total Fee per Unit**	Unit of Measure
Office (700-799)							
710	General Office Building	0.1807	1.7227	1.4260	0.2656	3.5950	per square foot
712	Small Office Building	0.1016	0.9689	0.8020	0.3526	2.2251	per square foot
714	Corporate Headquarters Building	0.1911	1.8213	1.5077	0.1948	3.7148	per square foot
715	Single-Tenant Office Building	0.1885	1.7965	1.4872	0.3202	3.7924	per square foot
720	Medical-Dental Office Building	0.2294	2.1873	1.8106	0.8821	5.1095	per square foot
750	Office Park	0.1736	1.6549	1.3699	0.2712	3.4696	per square foot
760	Research and Development Center	0.1825	1.7399	1.4403	0.2715	3.6342	per square foot
770	Business Park	0.1709	1.6295	1.3489	0.3048	3.4542	per square foot
Retail (800-899)							
812	Building Materials and Lumber Store	0.0382	0.3643	0.3015	0.4178	1.1218	per square foot
814	Variety Store	0.0370	0.3524	0.2917	1.5598	2.2410	per square foot
815	Free-Standing Discount Store	0.1214	1.1575	0.9581	1.3199	3.5570	per square foot
816	Hardware/Paint Store	0.0162	0.1542	0.1277	0.1977	0.4958	per square foot
817	Nursery (Garden Center)	0.1732	1.6509	1.3666	1.6686	4.8593	per square foot
818	Nursery (Wholesale)	0.0925	0.8820	0.7301	0.9556	2.6602	per square foot
820	Shopping Center	0.1179	1.1243	0.9307	0.9068	3.0798	per square foot
822	Strip Retail Plaza	0.1179	1.1243	0.9307	1.3342	3.5071	per square foot
840	Automobile Sales (New)	0.1380	1.3154	1.0889	0.6821	3.2245	per square foot
841	Automobile Sales Used)	0.1204	1.1475	0.9499	0.6630	2.8807	per square foot
842	Recreation Vehicle Sales	0.0352	0.3358	0.2780	0.1225	0.7715	per square foot
843	Auto Parts Store	0.0533	0.5080	0.4205	1.3371	2.3190	per square foot
848	Tire Store	0.0711	0.6774	0.5607	0.6785	1.9876	per square foot
850	Supermarket	0.1188	1.1322	0.9373	2.2993	4.4876	per square foot
857	Discount Club	0.0732	0.6976	0.5775	1.0404	2.3886	per square foot
861	Sporting Goods Superstore	0.2973	2.8343	2.3463	0.5827	6.0606	per square foot
880	Pharmacy/Drugstore - no drive-through	0.0870	0.8293	0.6865	2.2072	3.8100	per square foot
881	Pharmacy/Drugstore w/drive-through	0.0927	0.8838	0.7316	2.6561	4.3641	per square foot
890	Furniture Store	0.0320	0.3050	0.2525	0.1544	0.7439	per square foot
Services (900-999)							
912	Drive-in Bank	0.1702	1.6225	1.3431	2.4588	5.5947	per square foot
930	Fast Casual Restaurant	0.2799	2.6684	2.2089	2.3802	7.5374	per square foot
931	Fine Dining Restaurant	0.2799	2.6684	2.2089	2.0543	7.2115	per square foot
932	High-Turnover (Sit-Down) Restauant	0.2799	2.6684	2.2089	2.6267	7.7839	per square foot
934	Fast-Food Restaurant	0.5829	5.5569	4.6000	11.4544	22.1941	per square foot
941	Quick Lubtication Vehicle Shop	0.2414	2.3010	1.9048	1.7046	6.1518	per square foot
943	Automobile Parts & Service	0.0806	0.7679	0.6357	0.4067	1.8909	per square foot
944	Gasoline/Service Station	9.3362	88.9999	73.6739	172.0100	344.0200	per pump
945	Convenience Store w/gas (< 5501 sf)	13.9562	133.0419	110.1319	257.1300	514.2600	per pump
945	Convenience Store w/gas (> 5500 sf)	18.7663	178.8949	148.0889	345.7500	691.5000	per pump
947	Self-Service Car Wash	5.8619	55.8804	46.2577	108.0000	216.0000	per stall
949	Car Wash & Detail Center	8.4781	80.8196	66.9023	156.2000	312.4000	per stall
950	Truck Stop	12.1580	115.9001	95.9419	224.0000	448.0000	per pump

* Combines the 'Parks and Recreation Components' and 'Trail System' fees from the Parks and Recreation chapter.

** Total Fee per Unit includes administration and CIE preparation fees.

Adoption of Impact Fees

As noted, the fee schedule on the preceding pages shows the **maximum** impact fees that could be adopted under State law. The City may adopt the maximum fee for any given public facility category, or could adopt a lower fee, as part of the Impact Fee Ordinance that is required in order for the City to collect impact fees.

In order to fulfill DIFA's requirement that new growth pay its fair, *proportionate* share, all fees in a particular public facility category could be reduced proportionally (that is, by the same percentage for all land uses in the category), but individual land use categories within a particular public facility category cannot be individually reduced or deleted as part of the Impact Fee Schedule. (For alternatives, see the Reductions in Impact Fee Assessments section later in this chapter.)

It must be remembered that any across-the-board reduction in the maximum allowable impact fee must be funded ultimately with other revenue—General Fund, for instance—to make up the shortfall in collections. An alternate approach to reduce the fees across the board in a particular public facility category is to determine that individual projects that are eligible to be funded with impact fees will, instead, be funded through other revenue sources (such as bonds, General Fund taxes, SPLOST revenue, or other income sources). It must be recognized that such reductions will have to be funded from sources that are primarily paid by the City's existing residents and businesses, while waiting for new development to occur.

Interpretation

Listed in the fee schedule are the most common land uses as identified in the *Trip Generation Manual,* 11th Edition, 2022, Institute of Transportation Engineers (ITE). Persons per land use for residential uses are determined based on average numbers of persons per household; for non-residential land uses the average number of employees per unit of measure is based on data provided in the ITE *Trip Generation Manual*. As it is impossible, and impractical, to list every possible land use type. Following is the methodology that will be used to determine employment for land uses that are not on the actual fee table.

The nomenclature used in the fee schedules may be different from that used by developers. For example, a developer may be building a 35,000 square foot grocery store but does not see a grocery store on the fee schedule. In this situation, the applicable fee would be found under 'supermarket.' Simply inquiring to the City should clarify any such uncertainty. However, reference to a source document, such as the *NAICS* (from the U.S. Office of Management and Budget; latest edition available on the U.S. Census Bureau website), may be helpful as an objective means of distinguishing among the types of land uses set out in the schedules.

For land uses not specified, a simple approach may be the most useful for most situations: an office type operation can be set at the same rate as a general office building, various retail uses not listed can be set at the same rate as for specialty retail uses, and unlisted industrial uses are assumed to be the same as general light industry. For example, a retail land use that does not appear on the impact fee schedule, such as a stained-glass shop, would be assessed the same fee as 'specialty retail'.

Two categories on the Maximum Fee Schedule—Shopping Center and Strip Retail Plaza—are treated differently. The impact fees for these uses are assessed on the building's gross floor area as a whole when the building permit is issued, without regard to the actual uses that will locate within these centers. The fee assumes a normal 'mix' of uses in such centers and avoids the need to assess a new fee for each occupant as turnover occurs in the future.

Reductions in Impact Fee Assessments

Because the state law provides that new growth and development cannot be charged more than their fair proportionate share of the costs of the capital improvements needed to serve it, this Methodology Report calculates the maximum that could be charged as an impact fee in order to establish the 'ceiling' above which the City cannot go. There are, however, several ways that a lower impact fee could be charged, either for a specific project, across the board for all projects, or for a group of specific uses that are of special benefit to the City. These are discussed below.

Adoption of Reduced Impact Fees

As noted, the fee schedule above shows the maximum impact fees that could be adopted under State law. The City may adopt the maximum fees for any given public facility category, or could adopt a lower fee, as part of the Impact Fee Ordinance. In order to fulfill DIFA's requirement that new growth pay its fair, *proportionate* share, all fees in a particular public facility category could be reduced proportionally (that is, by the same percentage), but individual land use categories within the particular public facility category cannot be individually reduced or deleted.

Individual Fee Assessment

A landowner or developer may request an individual assessment when the average figures used in this Methodology Report do not apply to the specific project being proposed. This individual assessment determination will be made preferentially on alternate data available regarding the number of housing units or employment characteristics of the specific project, as applicable. Under the appeal procedures of the Impact Fee Ordinance, special circumstances can be considered and approved in modifying the fee for a particular project demonstrably differing from the average values used in this report.

Individual Appeals

The Impact Fee Ordinance provides for the appeal by anyone assessed an impact fee, first to the Impact Fee Administrator and then, if not resolved, to the City Council.

Credits

The Impact Fee Ordinance will provide for credits against impact fees that can be applied for expenditures made by a development toward the construction or provision of facilities that are included for impact fee funding in the adopted Capital Improvements Element. These credits are established through a private contractual agreement between the City and the developer or builder (as regulated by the Impact Fee Ordinance).

Exemptions

Exemptions from the established impact fee amounts on the adopted Impact Fee Schedule can be adopted by the City Council for development that encourages affordable housing or represents "extraordinary economic or employment growth". Any exemptions granted must be made up in the applicable impact fee fund(s) from city revenue other than impact fees.

The exemptions must be spelled out as part of the Impact Fee Ordinance and can be applied by the City Council in whole or in part to specified uses based on standards subsequently adopted by the City Council.

Limitations on Impact Fees

There are several requirements placed on impact fees by the Georgia Development Impact Fee Act and the rules and regulations of the G

A landowner or developer may request an individual assessment when the average figures used in this Methodology Report do not apply to the specific project being proposed. This individual assessment determination will be made preferentially on alternate data available regarding the number of housing units or employment characteristics of the specific project, as applicable. Under the appeal procedures of the Impact Fee Ordinance eorgia Department of Community Affairs. These include:

- Impact fees must be spent in the same public facility category for which they were collected.
- Impact fees must be deposited into an interest-bearing account.
- Impact fees not spent or encumbered within six years must be refunded to the fee payer, with interest.
- The same Level of Service must be applied to both the existing population and to new growth.
- All calculations must be made in Net Present Value.
- Annual Financial Reporting and Community Work Program Update must be prepared and approved by DCA.

Periodic Review Recommended

A number of the factors that form the baseline assumptions in this report's impact cost calculations may change over time. The impact fee methodologies for the service areas should be reviewed from time-to-time, reflecting changes in the growth and development of the city. Also, the fiscal elements of the impact fee system should be brought up to current dollars as inflation occurs.

- The 'planning horizon' of this Methodology Report is 2045. When the *Comprehensive Plan* is updated in the future, this report (and impact fee methodologies) should be reviewed and updated as needed to meet any new 'planning horizon'.
- The amount of future tax revenue generated by future growth is directly related to the City's population and employment projections. These projections should be reviewed against other data, such as building permits and utility hook-ups, to confirm continuing validity or to modify the methodologies.
- Costs should be maintained in present value terms. The land costs for public safety facilities, parks, etc. as well as the various facility construction costs, should be reviewed periodically. The cost of collection materials also should be updated to then-current dollars.
- Any changes in funding strategy for the facilities included in the impact fee program should be reflected in the impact fee calculation.

Changes in the pace of development will affect the timing of service delivery but not, *per se*, the methodology used to calculate the impact costs. If more residential and business development is built than was projected, facilities will be needed sooner to meet the Level of Service standard. Tax revenues will increase faster than projected as growth accelerates and more impact fees will be collected. In this way, more funds are produced to provide the services demanded. If growth slows, the opposite occurs: reduced revenue and lowered demand for services.

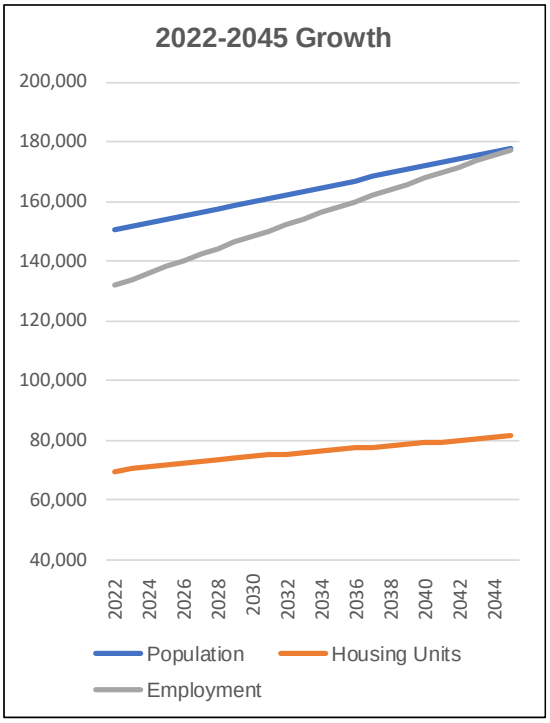
Forecasts

In order to accurately calculate the demand for future services in Savannah, new growth and development must be quantified in future projections. These projections include forecasts for population, households, housing units, and employment over the next 23 years to 2045. The projections provide the baseline conditions from which the current (2022) Level of Service calculations are produced. Also, projections are combined to produce what is known as 'day-night population'. This is a method that combines resident population and employees to produce an accurate picture of the total number of persons that rely on certain 24-hour services, such as fire protection. The projections used for each public facility category are specified in each public facility chapter.

This table below presents a summary of the forecasts that have been identified as the most likely for Savannah, based on an analysis of past trends. The specific methodologies are detailed in the attached Appendix A.

Table 3: Future Growth Projected in the City

	Population	Housing Units	Value-Added Employment	Day-Night Population
2022	151,335	69,752	131,923	283,258
2023	152,636	70,503	133,962	286,598
2024	153,936	71,218	136,002	289,938
2025	155,237	71,903	138,041	293,278
2026	156,538	72,563	140,084	296,622
2027	157,838	73,204	142,117	299,955
2028	159,139	73,827	144,157	303,296
2029	160,440	74,422	146,196	306,636
2030	161,741	74,994	148,234	309,975
2031	163,041	75,549	150,190	313,231
2032	164,342	76,085	152,147	316,489
2033	165,643	76,607	154,104	319,747
2034	166,943	77,119	156,061	323,004
2035	168,244	77,623	158,020	326,264
2036	169,545	78,123	159,969	329,514
2037	170,845	78,623	161,927	332,772
2038	172,146	79,116	163,883	336,029
2039	173,447	79,604	165,841	339,288
2040	174,748	80,092	167,796	342,544
2041	176,048	80,595	169,673	345,721
2042	177,349	81,119	171,552	348,901
2043	178,650	81,659	173,429	352,079
2044	179,950	82,206	175,308	355,258
2045	181,251	82,752	177,185	358,436
2022-2045 Increase	**29,916**	**13,000**	**45,262**	**75,178**



	Population	Housing Units	Value-Added Jobs
2022	151,335	69,752	131,923
2045	181,251	82,752	177,185
Increase	29,916	13,000	45,262
Percent	19.8%	18.6%	34.3%

* Day-Night Population is the total of all residents living in the city and all jobs located in business uses subject to impact fees (i.e., the total population served on a 24-hour basis).

Parks and Recreation

Parks and Recreation Components

Introduction

Public recreational opportunities are available in Savannah through a number of park and recreation facilities maintained by the City's Recreation and Leisure Services Department. Demand for these facilities is almost exclusively related to the city's resident population. Businesses and visitors make some incidental use of public recreation facilities, such as basketball courts, but the use is minimal compared to that of the families and individuals who live in the city. Thus, the impact fee for parks and recreation facilities is limited to future residential growth.

Conversely, the City's trail system (Tide to Town Trail) will provide connectivity between parks, neighborhoods and business centers. Since the trail system is for use by residents and local employees alike for walking, jogging, cycling and as access to parks and other destinations, its impact fee addresses the needs of both residential and nonresidential future growth. Because the 'service population' is different from that for public parks, the trail system is addressed later in this chapter under its own sub-heading.

The following sections focus on the City's active parks and recreation facilities and its passive neighborhood parks.

Service Area

The parks and recreation facilities maintained by the City are operated as a citywide system. Facilities are provided equally to all residents, and often used on the basis of the programs available, as opposed to proximity of the facility. For instance, children active in tennis play on courts at various locations, based on scheduling rather than geography. Other programs are located only at certain centralized facilities, to which any a resident can come. Thus, the entire city is considered a single service area for parks facilities and services.

Level of Service and Forecasts for Service Area

'Level of Service' (LOS) is the relationship between service capacity and service demand for public facilities. The determination of LOS standards for park acres and for recreational buildings and components begins with an inventory of existing City facilities, which is summarized on Table 4. Detailed listings of park acres and community centers are provided on Table 5.

Table 4 includes components the City does not currently have in its recreation system but plans to add in the future (i.e., splash pads). The table then provides LOS calculations based on the 'Current Inventory' divided by the number of housing units in the city (69,752), yielding the number of recreational components provided for each dwelling (since impact fees are assessed per housing unit when building permits are issued, not population).

The LOS calculations from Table 4 determine the existing demand for recreation components by today's population. This LOS standard (under 'Current LOS by Housing Unit') is then multiplied by the increase in housing units between 2022 and 2045 (13,000) to produce the future demand created by future growth, as shown under 'Future Demand' on Table 4.

Table 4: Level of Service and Forecasts for Service Area

Component Type	Current Inventory		Current LOS per Housing Unit*	Future Demand**	Total Needed (Rounded)	% Impact Fee Eligible
Park Acres	**539.77**	acres	0.007738387	100.60	0***	-
Recreation Buildings & Supporting Facilities						
Community Center/Gyms	**127,059**	sq. ft.	1.821582177	23,680.57	23,681	100.00%
Administrative Office Space	**4,500**	sq. ft.	0.064514279	838.69	839	99.96%
Concession Stands	**2**		0.000028673	0.37	1	37.00%
Restroom Buildings	**7**		0.000100356	1.30	2	65.00%
Park and Recreation Components						
Baseball Field	**15**		0.000215048	2.80	3	93.33%
Basketball Court, Outdoor	**47**		0.000673816	8.76	9	97.33%
Dog Park	**6**		0.000086019	1.12	2	56.00%
Fishing Pier	**1**		0.000014337	0.19	1	19.00%
Multi-Purpose Field	**16**		0.000229384	2.98	3	99.33%
Pavilion	**32**		0.000458768	5.96	6	99.33%
Playground	**59**		0.000845854	11.00	11	100.00%
Softball Field	**15**		0.000215048	2.80	3	93.33%
Splash Pad	**0**		n/a	3.00	3	15.71%
Spray Pool	**9**		0.000129029	1.68	2	84.00%
Swimming Pool	**9**		0.000129029	1.68	1	100.00%
Tennis Court	**35**		0.000501778	6.52	7	93.14%
Volleyball Court, Outdoor	**1**		0.000014337	0.19	1	19.00%
Park Trails	**7.82**	miles	0.000112169	1.46	1.46	100.00%

* LOS based on the current inventory divided by current housing units (69,752).

** Future Demand (2045) calculated by multiplying the LOS by the 2022-2045 increase in housing units (13,000).

*** The amount of undeveloped city-owned land (900+ acres) that is slated for future park use exceeds future demand.

For all components except park trails the 'Future Demand' column is rounded to whole numbers. This is because the City cannot build a portion of a facility; it must build entire facilities. As a result, the '% Impact Fee Eligible' column may reflect a percentage less than 100%.

For park acres, the 'Total Needed' is shown as '0' due to future demand being met through existing City-owned acreage that is undeveloped but is intended to be utilized for future park use. Over 900 acres have been acquired by the City in the New Hampstead and Highlands communities through donation, dedication, or parcel trade. The acreage will include opportunities for both active and passive recreation.

A component's impact fee eligibility ('% Impact Fee Eligible') is based on the extent to which future improvements are needed to specifically serve new growth and development, and only at the LOS applicable citywide.

For example, the City has 6 dog parks, but the adopted level of service indicates that 1.12 additional dog parks are needed to serve the future population. Since the City cannot build a very small portion of a dog park for it to serve its intended purpose, this number is rounded up to 2 new dog parks, of which 56% is the amount (the 1.12 portion) that new growth mathematically demands. This is therefore the percentage of future dog parks that is impact fee eligible.

Table 5: Current Inventory of Park Lands and Community Buildings

Active Parks / Community Centers	Acres
38th Street	0.30
Alpine	1.00
Avondale	1.20
Bacon Park Forest	52.90
Bacon Park Tennis	7.50
Baldwin	1.50
Barjan Terrace	1.70
Blackshear	2.80
Boaen	1.20
Bryan, Charlie S.	1.00
Cann	2.50
Cedar Grove	2.00
Clark, Ben	1.60
Cloverdale*	5.00
Coffee Bluff Marina	2.10
Crossroad Villa	0.60
Crusader*	3.70
Cuyler	0.50
Daffin	77.00
Davant	0.60
Delaware*	1.20
Dixon	0.10
Edgemere/Sackville	0.40
Fairgrounds	30.00
Feiler	2.70
Fernwood/Parkwood	6.37
Flournoy, Mary C*	0.80
Ford, Bowles	16.50
Forrest Hills	7.20
Forsyth	19.00
Grant*	1.20
Gray, Rebecca (Hudson Hill)	5.70
Habersham	3.70
Harmon Creek	1.10
Hitch	2.30
Holly Heights	1.20
Hull	2.80
Jackson, Moses*	0.50
Jefferson Street	0.10
Kennedy (Carver Village)*	6.20
Lavida Property	1.20
Lamara Heights	1.02
Law, WW*	1.20
Liberty City*	7.30
Magnolia	2.20
Minick, Guy Complex	13.80
Mohawk	29.00
Ogeecheeton	0.50
Paulson, Allen Complex	24.60
Ridgewood	1.02
River's End	0.50
Ross, Willie C.	3.60
Robinson, Robbie	5.00
Savannah Gardens	1.49
Scarborough, William Complex	6.50
Soldiers Field	3.00
Staley Heights	3.20
Summerside	0.30
Sunset	3.90
Sylvan Terrace	1.46
Tatemville*	40.80
Thomas Square	1.30
Tompkins*	3.90
Treat	0.30
Tremont Center*	2.20
Tribble Lake	51.00
Victory Heights	1.00
Wells	1.40
Wessels, Fred	0.50
Westside	0.90
Wilshire	0.40
Windsor	5.00
Windsor Forest*	4.00
Woodville*	0.50
Active Park Acres	***499.76***

* Includes a community center

Neighborhood Passive Parks/ Greenspace	Acres
Adams Park	1.18
Ambush Park	1.13
Ashley Homes Park*	1.20
Ashley Homes Square	1.20
Atlantic Mall	2.64
Bee Road	3.50
Chesterfield Circle*	0.20
Dixon Park	1.18
Entleman Park	1.18
Floyd Adams Park	1.50
Gaudry Park	1.18
Guckenheimer Park	0.97
Jasper Springs	0.10
Kavanaugh Park	1.17
Lattimore Park	1.16
Lorraine Court*	0.26
Malibou Circle*	0.25
McCauley Park	0.98
Myers Park	1.51
Nathaniel Green Park	3.35
Pierpont Circle	0.52
Rockwell Park	0.96
Savannah Gardens	0.22
Solomon Park	0.98
Sunrise Park	0.22
Theus Park	0.65
Tiedeman Park	2.82
Twickenham Park	2.80
Vetsburg Park	1.10
Wessels Park	1.09
West Side Park	2.80
Passive Park Acres	***40.01***

* Greenspace

TOTAL PARK ACRES	***539.77***

Community Centers/Gymnasiums	Building Area
	square feet
Carver Village Neighborhood Center	7,100
Cloverdale Community Center	5,350
Crusader Neighborhood Center	6,800
Eastside Regional Center*	9,800
Grant Center Gymnasium	10,380
John S. Delaware Regional Center*	7,700
Liberty City Neighborhood Center*	10,800
Mary Flournoy Golden Age Center	6,100
Moses Jackson Neighborhood Center	16,100
Tatemville Neighborhood Center*	4,600
Tompkins Regional Center*	8,300
Tremont Neighborhood Center	3,000
W.W. Law Regional Center*	5,039
Windsor Forest Regional Center*	22,090
Woodville Neighborhood Center	3,900
Total Building Area	***127,059***

*Includes a gymnasium

Future Costs

The following table lists the future capital projects costs to provide the additional recreation components needed to attain the applicable Level of Service standards.

Table 6: Future Costs to Meet Future Demand for Parks and Recreation Components

Component Type	Total Needed	Estimated Cost Per Unit*	Gross Cost Per Unit**	Total Cost (2022)	% Impact Fee Eligible	New Growth Share (2022)	Net Present Value***
Park Acres	0	-	-	-	-	-	-
Recreation Buildings & Supporting Facilities							
Community Centers/Gyms (sq. ft.)	23,681	$500.00	$610.00	$14,445,410.00	100.00%	$14,445,147.70	$18,402,894.29
Administrative Office Space	839	$191	$232.41	$194,994.79	99.96%	$194,922.74	$248,328.56
Concession Stands	1	$35,000.00	$42,700.00	$42,700.00	37.00%	$15,799.00	$20,127.68
Restroom Buildings	2	$100,000.00	$122,000.00	$244,000.00	65.00%	$158,600.00	$202,053.94
Park and Recreation Components							
Baseball Field	3	$500,000.00	$610,000.00	$1,830,000.00	93.33%	$1,708,000.00	$2,007,563.85
Basketball Court, Outdoor	9	$100,000.00	$122,000.00	$1,098,000.00	97.33%	$1,068,720.00	$1,256,161.38
Dog Park	2	$125,000.00	$152,500.00	$305,000.00	56.00%	$170,800.00	$200,756.39
Fishing Pier	1	$1,000,000.00	$1,220,000.00	$1,220,000.00	19.00%	$231,800.00	$272,455.09
Multi-Purpose Field	3	$800,000.00	$976,000.00	$2,928,000.00	99.33%	$2,908,480.00	$3,418,594.44
Pavilion	6	$50,000.00	$61,000.00	$366,000.00	99.33%	$363,560.00	$427,324.31
Playground	11	$125,000.00	$152,500.00	$1,677,500.00	100.00%	$1,677,500.00	$1,971,714.50
Softball Field	3	$500,000.00	$610,000.00	$1,830,000.00	93.33%	$1,708,000.00	$2,007,563.85
Splash Pad	3	$150,000.00	$183,000.00	$549,000.00	15.71%	$86,245.65	$101,372.16
Spray Pool	2	$100,000.00	$122,000.00	$244,000.00	84.00%	$204,960.00	$240,907.66
Swimming Pool	1	$3,000,000.00	$3,660,000.00	$3,660,000.00	100.00%	$3,660,000.00	$4,301,922.54
Tennis Court	7	$80,000.00	$97,600.00	$683,200.00	93.14%	$636,352.00	$747,960.93
Volleyball Court, Outdoor	1	$30,000.00	$36,600.00	$36,600.00	19.00%	$6,954.00	$8,173.65
Park Trails (miles)	1.46	$300,000.00	$366,000.00	$534,360.00	100.00%	$534,360.00	$628,080.69
				$31,888,764.79		***$29,780,201.09***	***$36,463,955.90***

* Sources: City of Savannah (Recreation & Leisure Department, Sustainability Department); comparable facililties in Georgia communities; previous expenditures by the City.
** Includes 22% for contingency and A/E services, with the exception of park acres.
*** Actual implementation dates vary. NPV based on CPI for land, BCI for buildings and CCI for components, in an average construction year of 2032.

Estimated 2022 cost figures are increased to the gross cost by 22% to account for architectural and engineering services as well as contingencies. These 'Total Cost (2022)' figures in the table above are converted to 'New Growth Share (2022)' dollars based on the percentage that each improvement is impact fee eligible (from Table 4).

The Net Present Value of new growth's share of the cost for each component is calculated as follows:

Since the actual pace and timing of construction for the improvements proposed to meet future demand have not been programmed, an 'average' year of 2032 is used for Net Present Value calculations—some improvements will occur earlier for less money, and some later at greater cost. All will average out.

To calculate the Net Present Value (NPV) of the impact fee eligible cost estimate for the construction of the recreation components, the NPVs are calculated by increasing the current (2022) estimated costs using Engineering News Record's (ENR) 10-year average building cost inflation (BCI) rate for buildings (such as gymnasiums) and the 10-year average construction cost inflation (CCI) for all other projects. All project costs are then reduced to current NPV dollars using the Net Discount Rate.

Credit Calculation

There is a credit calculation that is carried out for this public facility category due to several recreation components not being fully impact fee eligible. The table below shows the anticipated property tax contribution from new residential growth towards the non-eligible costs for those new recreation components.

For this calculation, it is assumed that the City will meet its financial obligations towards the non-eligible project costs through general fund expenditures. For this reason, the credit calculated here is based on future property tax contributions into the general fund that will be generated by new growth and development to pay for the non-eligible costs. Because of the uncertainty when the projects will be implemented between now and 2045, the 'average' year 2032 was chosen in order to determine the 'average' future cost for the expenditure. This same approach is applied to the calculation of the tax credit that will result from double-taxation that impact fee payers would otherwise experience.

Table 7: New Growth Contribution from Property Taxes

Year	Ineligible Funding Required (NPV)*	Property Tax Credit	Contribution from New Growth
2032	$2,489,153.09	11.97%	$ 297,832.63
		Total New Residential Contribution	**$ 297,832.63**

The property tax information in the 'Property Tax Credit' column is taken from Appendix D: *Cost Adjustments and Credits*. It is the projected percentage of property tax revenue in 2032 that is expected to be generated specifically from new growth and development.

Impact Cost Calculation

In calculating the impact cost below, the total eligible cost of projects is reduced by the amount of the credit for future property tax contributions, as discussed above.

Table 8: Calculation of Housing Unit Fee

Description	Total
Eligible Cost of Park & Rec Projects	$36,463,955.90
minus Credit for Tax Contributions	$ (297,832.63)
= Net Eligible Parks & Rec Project Costs	$ 36,166,123.27
÷ Housing Unit Increase (2022-2045)	13,000
= Net Impact Cost per Housing Unit	**$ 2,782.01**
plus 3% Administration Fee	$ 83.46
plus CIE Preparation Fee	$ 41.73
= Maximum Impact Cost per Housing Unit	**$ 2,907.20**

To the resulting net cost per housing unit is added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged per housing unit. This figure will be used to calculate impact fees for all residential land uses.

Maximum Impact Fee Schedule – Parks and Recreation Components

The maximum net impact fees that could be charged in Savannah for the Parks and Recreation Components sub-category, based on the calculations carried out in this chapter, are shown on the following table.

Table 9: Maximum Impact Fee Schedule – Parks and Recreation Components

ITE Code	Land Use	Total Fee per Unit	Unit of Measure
Residential (200-299)			
210	Single-Family Detached Housing	$ 2,907.1999	per dwelling
215	Duplex or Townhouse 1-3 stories	$ 2,907.1999	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	$ 2,907.1999	per dwelling

Note: Total Fee per Unit includes administration and CIE preparation fees.

Trail System

Introduction

The City's Tide to Town trail system is intended to be major component of its overall recreation and parks services. The previous Chapter addressed the City's public parks, including the recreation facilities within the parks, which primarily serve Savannah's residents.

Tide to Town will link neighborhoods, parks, and business centers. Unlike parks and recreational components such as ball fields and community centers that are primarily viewed as 'residential' amenities, a comprehensive trail system is used by residents and local employees alike for walking, jogging, and as access to parks and other destinations. There is thus a clear benefit to businesses as residents access the shops and offices in the city using the walkways and employees take advantage of the walkways to walk or exercise on their time off, to walk to lunch or a shop nearby, or to access local parks or recreation facilities.

This section of the Parks and Recreation chapter focuses on the City's trail system that, by its very nature, will serve both the residential and employee populations.

Service Area

The trail system operates as an interrelated citywide system. Thus, the entire city is considered a single service area.

Level of Service and Forecasts for Service Area

The first phase of Tide to Town, the Truman Trial, is underway. Three miles have been installed, leaving 27 additional miles of the planned Tide to Town system to be installed. This is the length remaining to complete the system for the city's residents and businesses today and for future growth over the coming 20+ years.

Table 10 shows the calculation of the Level of Service (LOS) for the trail system. For these system improvements, the LOS is based on the total day-night population forecasted for 2045 since the entire trail system, as it exists today and is proposed to be expanded, will serve all of the city's residents and businesses collectively by that target year.

Table 10: Level of Service and Forecasts for Service Area

Facilities	Service Population	Level of Service		Service Area Growth	New Growth Demand
Planned Miles	**Day-Night Population (2045)**	**Miles Per Person**		**Day-Night Pop Increase to 2045**	**Total Miles for New Growth**
27	358,436	0.0001		75,178	5.6630

To determine the Level of Service, the total length (in miles) of the future system is divided by the day-night population expected to live or work in the city by 2035, resulting in the number of miles per person—resident or employee—that will benefit from the total path system when it is completed.

Applying the City's LOS standard to the increase in the day-night population that is projected for the city by 2045 results in a figure that establishes the maximum number of trail miles that could be included in an impact fee program.

The 'total miles for new growth' figure in Table 10 is determined by multiplying the LOS standard times the day-night population anticipated to be added to the city between 2022 and 2045. The resulting number of miles, 5.66, represents 20.97% of the total 27 miles that are planned to be added to the trail system.

Future Costs

As stated above, 5.66 is the total number of miles that is technically needed to serve new growth and development. While these miles are therefore 100% impact fee eligible, there are 27 total additional miles that are planned to complete the citywide Tide to Town trail system. As such, the '% Impact Fee Eligible' figure below is based on new growth's 'proportional share' of the entire future system (5.66 miles of the total 27 miles to be constructed), which is 20.97% of the length and therefore 20.97% of the cost of the system expansion.

Table 11: Future Costs to Meet Future Demand for Trail Facilities

Faciity	Total Planned Miles	Estimated Cost Per Unit*	Total Cost (2022)**	% Impact Fee Eligible***	New Growth Share (2022)	Net Present Value****
Linear Park System (Tide to Town Trail)	27	$3,000,000.00	$16,200,000.00	20.97%	$3,397,771.43	$3,993,702.04

* Source: City of Savannah Sustainability Department.
** Represents the City's ancitipated share (20%) of the overall project cost.
*** Based on the number of impact fee eligible miles (5.663) divided by the total number of planned miles.
**** NPV based on CCI in an average construction year of 2032.

The Net Present Value of new growth's share of the cost for each component is calculated as follows:

Since the actual pace and timing of construction for the entire trail system proposed to meet future demand have not been programmed, an 'average' year of 2032 is used for Net Present Value calculations—some portions of the trial will be constructed earlier for less money, and some later at greater cost. All will average out.

To calculate the Net Present Value (NPV) of the impact fee eligible cost estimate for the construction of the trail system, the NPV is calculated by increasing the current (2022) estimated costs using the 10-year average construction cost inflation (CCI). All project costs are then reduced to current NPV dollars using the Net Discount Rate.

Credit Calculation

There is a credit calculation that is carried out for this public facility category due to the citywide trail system not being fully impact fee eligible. The table below shows the anticipated property tax contribution from new growth towards the non-eligible costs.

For this calculation, it is assumed that the City will meet its financial obligations towards the non-eligible project costs through general fund expenditures. For this reason, the credit calculated here is based on future property tax contributions into the general fund that will be generated by new growth and development to pay for the non-eligible costs. Because of the uncertainty when the trail segments will be constructed between now and 2045, the 'average' year 2032 was chosen in order to determine the 'average' future cost for the expenditure. This same approach is applied to the calculation of the tax credit below.

Table 12: New Growth Contribution from Property Taxes

Year	Ineligible Funding Required (NPV)*	Property Tax Credit	Contribution from New Growth
2032	$15,047,594.43	11.07%	$ 1,666,224.25

* Net Present Value of amount to be paid from taxes to cover costs not eligible for impact fee funding, using 2032 as the 'average' year.

The property tax information in the 'Property Tax Credit' column is taken from Appendix D: *Cost Adjustments and Credits*. It is the projected percentage of property tax revenue in 2032 that is expected to be generated specifically from new growth and development.

Impact Cost Calculation

In calculating the impact cost on the next table, the credit for future property tax contributions (from the table above) is subtracted from the total impact fee eligible cost, as discussed above. Using the total net eligible cost figure, the 'net cost per person' is calculated, based on the increase in the day-night population between 2022 and 2045.

Table 13: Calculation to Serve New Growth – Per Person

Description		Total
Eligible Cost of Trail Projects		$3,993,702.04
minus Credit for Tax Contributions		1,666,224.25
= Total Net Eligible Fire Protection Costs		5,659,926.29
÷ Day-Night Pop Increase (2022-2045) in Service Area		75,178
= Net Cost per Person	**$**	**53.1233**
plus 3% Administration Fee	$	1.59
plus CIE Preparation Fee	$	0.80
= Maximum Impact Cost per Person	**$**	**55.5138**

To this net cost are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged per person. This figure will be used to calculate impact fees for all nonresidential land uses.

A final calculation, shown below, is necessary in order to fairly distribute the portion of project costs that are attributable to residential growth, because they are assessed impact fees per housing unit rather than per person.

Table 14: Calculation of Housing Unit Fee

Factor		Data
Residential Population Increase (2022-2045)		29,916
÷ Day/Night Population Increase (2022-2045)		75,178
= Residential Increase as % of Total Increase		39.79%
Total Project Costs		$5,659,926.29
× Residential % of Total Day/Night Increase =	$	2,252,285.97
÷ New Housing Units (2022-2045)		13,000
= Net Impact Fee per Housing Unit	**$**	**173.2527**
plus 3% Administration Fee	$	5.20
plus CIE Preparation Fee	$	2.60
= Maximum Impact Cost per Housing Unit	**$**	**181.0491**

The portion of the total project cost that is attributable to new residential growth is calculated based on the percentage of the total day-night population increase that is comprised of new residents.

This percentage is then applied to the 'Total Net Project Costs' figure to produce the cost attributable to new residential growth. This is the amount of investment that will be needed to serve future growth and development while maintaining the same level of service enjoyed by the city's residents today.

Finally, this total cost attributable to new residential growth is divided by the number of new housing units projected to 2045 to produce a 'Net Impact fee Per Housing Unit'.

To this net impact fee are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged for each new housing unit constructed in the service area in the future.

Maximum Impact Fee Schedule – Trail System

The maximum net impact fees that could be charged in Savannah for the Trails System, based on the calculations carried out in this chapter, are shown on the following table.

Table 15: Maximum Impact Fee Schedule – Trail System

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Residential (200-299)				
210	Single-Family Detached Housing	n/a	$ 181.0491	per dwelling
215	Duplex or Townhouse 1-3 stories	n/a	$ 181.0491	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	n/a	$ 181.0491	per dwelling
	Total Cost per Day-Night Person (Employee):		$ 55.51	
Industrial (100-199)				
110	General Light Industrial	0.001542	$ 0.0856	per square foot
140	Manufacturing	0.001892	$ 0.1051	per square foot
150	Warehousing	0.000339	$ 0.0188	per square foot
154	High-Cube Warehouse, short term	0.000653	$ 0.0363	per square foot
155	High-Cube Warehouse, fulfillment center	0.000653	$ 0.0363	per square foot
156	High-Cube Hub Warehouse	0.000684	$ 0.0380	per square foot
180	Specialty Trade Contractor	0.002705	$ 0.1502	per square foot
Lodging (300-399)				
310	Hotel or Conference Motel	0.557183	$ 30.9313	per room
311	All Suites Hotel	0.924370	$ 51.3153	per room
320	Motel	0.133095	$ 7.3886	per room
Recreational (400-499)				
445	Movie Theater	0.001417	$ 0.0786	per square foot
480	Amusement Park	0.002224	$ 0.1234	per acre
491	Racquet/Tennis Club	0.000475	$ 0.0264	per square foot
495	Recreational Community Center	0.001058	$ 0.0587	per square foot
Institutional (500-599)				
520	Private Elementary School	0.022500	$ 1.2491	per employee
530	Private School (K-8)	0.022500	$ 1.2491	per employee
532	Private School (K-12)	0.016430	$ 0.9121	per employee
534	Private High School (K-8)	0.015120	$ 0.8394	per employee
560	Church/Place of Worship	0.000380	$ 0.0211	per square foot
565	Day Care Center	0.002227	$ 0.1236	per square foot
566	Cemetery	0.104242	$ 5.7869	per acre
Medical (600-699)				
610	Hospital	0.002857	$ 0.1586	per square foot
620	Nursing Home	0.002039	$ 0.1132	per square foot
630	Clinic	0.002705	$ 0.1502	per square foot
640	Veterinary Clinic	0.001694	$ 0.0941	per square foot

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Office (700-799)				
710	General Office Building	0.003255	$ 0.1807	per square foot
712	Small Office Building	0.001831	$ 0.1016	per square foot
714	Corporate Headquarters Building	0.003442	$ 0.1911	per square foot
715	Single-Tenant Office Building	0.003395	$ 0.1885	per square foot
720	Medical-Dental Office Building	0.004133	$ 0.2294	per square foot
750	Office Park	0.003127	$ 0.1736	per square foot
760	Research and Development Center	0.003288	$ 0.1825	per square foot
770	Business Park	0.003079	$ 0.1709	per square foot
Retail (800-899)				
812	Building Materials and Lumber Store	0.000688	$ 0.0382	per square foot
814	Variety Store	0.000666	$ 0.0370	per square foot
815	Free-Standing Discount Store	0.002187	$ 0.1214	per square foot
816	Hardware/Paint Store	0.000291	$ 0.0162	per square foot
817	Nursery (Garden Center)	0.003120	$ 0.1732	per square foot
818	Nursery (Wholesale)	0.001667	$ 0.0925	per square foot
820	Shopping Center	0.002125	$ 0.1179	per square foot
822	Strip Retail Plaza	0.002125	$ 0.1179	per square foot
840	Automobile Sales (New)	0.002486	$ 0.1380	per square foot
841	Automobile Sales Used)	0.002168	$ 0.1204	per square foot
842	Recreation Vehicle Sales	0.000635	$ 0.0352	per square foot
843	Auto Parts Store	0.000960	$ 0.0533	per square foot
848	Tire Store	0.001280	$ 0.0711	per square foot
850	Supermarket	0.002140	$ 0.1188	per square foot
857	Discount Club	0.001318	$ 0.0732	per square foot
861	Sporting Goods Superstore	0.005356	$ 0.2973	per square foot
880	Pharmacy/Drugstore - no drive-through	0.001567	$ 0.0870	per square foot
881	Pharmacy/Drugstore w/drive-through	0.001670	$ 0.0927	per square foot
890	Furniture Store	0.000576	$ 0.0320	per square foot
Services (900-999)				
912	Drive-in Bank	0.003066	$ 0.1702	per square foot
930	Fast Casual Restaurant	0.005042	$ 0.2799	per square foot
931	Fine Dining Restaurant	0.005042	$ 0.2799	per square foot
932	High-Turnover (Sit-Down) Restauant	0.005042	$ 0.2799	per square foot
934	Fast-Food Restaurant	0.010500	$ 0.5829	per square foot
941	Quick Lubtication Vehicle Shop	0.004348	$ 0.2414	per square foot
943	Automobile Parts & Service	0.001451	$ 0.0806	per square foot
944	Gasoline/Service Station	n/a	$ 9.3362	per pump
945	Convenience Store w/gas (< 5501 sf)	n/a	$ 13.9562	per pump
945	Convenience Store w/gas (> 5500 sf)	n/a	$ 18.7663	per pump
947	Self-Service Car Wash	n/a	$ 5.8619	per stall
949	Car Wash & Detail Center	n/a	$ 8.4781	per stall
950	Truck Stop	n/a	$ 12.1580	per pump

Fire Protection

Introduction

Fire protection services are provided by the City through its Fire Rescue Department (more commonly known as the Savannah Fire Department or SFD). The SFD is organized into three primary divisions: Operations, Logistics and Emergency Management. Altogether, services provided by the SFD include fire suppression, hazardous material mitigation, technical rescues, Emergency Medical Services (EMS), fire education and prevention, fire investigations, emergency management preparedness, and mitigation, response and recovery operations.

Service Area

The city is considered a single service area for the provision of fire protection services because all residents and employees in Savannah have equal access to the benefits of the services provided.

Level of Service and Forecasts for Service Area

'Level of Service' (LOS) is the relationship between service capacity and service demand for public facilities. The LOS for fire protection services in Savannah is measured in terms of the number of square feet of building area (fire stations and training facilities) and the number of fire apparatus (heavy vehicles) and supporting vehicles that serve the day-night population in the service area. Day-night population is used as a measure in that fire protection is a 24-hour service provided continuously to both residences and businesses in the service area. The following table presents the current inventory of SFD facilities and vehicles.

Table 16: Inventory of Existing Building Area and Vehicles

Existing Fire Stations and Facilities		
Name	**Location**	**Floor Area**
Station 1 / Paulsen Street Station	535 E. 63rd Street	5,508
Station 2 / Lorwood Station	5 Skyline Drive	4,461
Station 3 / Headquarters	121 E. Oglethorpe Avenue	7,590
Station 4 / Augusta Avenue Station	2401 Augusta Avenue	5,625
Station 5 / Fire Investigations & Fire Marshal	10 West 33rd	16,786
Station 6 / Paulsen Street Station	3000 Liberty Parkway	9,474
Station 7 / Eisenhour Station	6902 Sallie Mood Drive	4,650
Station 8 / Bee Road Station	2824 Bee Road	4,576
Station 9 / Pine Gardens Station	2235 Capital Street	13,826
Station 10 / Coffee Bluff Station	13710 Coffee Bluff Road	2,840
Station 11 / Savannah Mall Station	11844 Apache Avenue	10,320
Station 12 / Bradley Point Station	1205 Bradley Blvd	9,600
Station 13 / Airport Station	11 McKenna Drive	9,600
Station 14 / Highlands Station	480 Highlands Blvd	9,680
Station 15 / Sweetwater Station	1751 Grove Point Road	9,600
Fire Training Academy	380 Agonic Road	9,100
Training Tower	380 Agonic Road	1,800
Burn Building	380 Agonic Road	1,800
Total Existing Square Footage		**136,836**

Existing Vehicles*	
Type and Number	
Fire Apparatus	
Pumper	24
Aerial	8
Rescue	4
Air/Light	1
Hazmat	1
IFE Truck	2
Marine	2
Total Existing Fire Apparatus	**42**
Support Fleet	
Arson Investigation	1
Brush Truck	2
Fire Chief SUV	6
Fire Marshal Truck	6
Service Support Center Van	1
Training Van	2
Specialized Support Truck	14
Total Existing Support Fleet	**32**

* Vehicles having a service life of 10 years or more.

Currently, fire protection is provided by facilities with a combined square footage of 136,836, utilizing a total of 42 fire apparatus and an additional 32 vehicles that support the operations of the SFD. Future proposals to provide adequate fire protection services citywide include 6 new fire stations strategically located throughout the city. As the city grows, these stations will be needed to maintain and possibly increase service and decrease response times. The future system to be achieved by 2045, as currently envisioned, is summarized on the table below.

Table 17: Planned System Improvements

Additional Fire Station and Facility Space		Additional Fire Apparatus					Additional Support Fleet	
Name	Floor Area	Pumper	Aerial	Rescue	Marine	Total	Type and Number	
Palms Station	10,000	1				1	Responder Truck	1
Bush Road Station	10,000	1				1	Quick Response Vehicle (QRV)	6
New Hampstead Station*	14,000	1	1			2	Utility Task Vehicle (UTV)	4
Hutcheson Island Station*	14,000	1	1			2	Hazmat Container Hauler	2
Jimmy DeLoach Station*	14,000	1		1		2	Mobile Fuel Trailer	1
Chatham Parkway Station	10,000	1	1			2	Service Support Center Forklift	1
Training Tower Replacement**	7,200					0	**Total Additional Support Fleet**	**15**
Burn Building Replacement**	3,200					0		
					1	1		
Total Additional Square Footage	**82,400**	**Total Additional Fire Apparatus**				**11**		

* Proposed public safety building that will contain fire and police functions. The square footage reflects the portion of the total area (20,000 sq.ft.) in the building to be occupied by the Fire Department.

** The square footage shown is the increase in size between the existing and replacement structure. The training tower replacement project will be a total of 9,000 sq.ft, and the burn building replacement will be 5,000 sq.ft.

Table 17 includes the construction of 6 fire stations and the acquisition of fire apparatus for those stations. Three of the stations are proposed to occupy space (approximately 70%) in 'public safety buildings' that will also include space for police functions. In addition, enhancements to training facilities are identified as future needs. These include replacements of the existing fire training tower and burn building with larger structures. As noted in the table, the square footage reflects only the addition of building area relative to the existing structure size; the 'replacement' space (i.e., the existing square footage shown in Table 16) is excluded. Fifteen support vehicles are also proposed to be added to the Fire Department's fleet.

Table 18 presents the calculation of the Level of Service (LOS) for the system as proposed to fully serve the city over the next 23 years. These LOS figures are based on the future 2045 day-night population. This is because the existing building area and vehicles utilized by the Fire Department (see Table 16), combined with the proposed additional square footage and vehicles identified on Table 17, are expected to serve the current and future population to 2045. These combined figures are shown under the 'Facilities' column in Table 18, and they are divided by the 'Service Population' (the 2045 day-night population) to calculate the Level of Service for square feet and all vehicles.

Table 18: Level of Service and New Growth Demand

Facilities	Service Population	Level of Service		Future Service Population	New Growth Demand*
Existing & Planned Square Feet	**2045 Day-Night Population**	**Square Feet per 2045 Day-Night Population**		**Day-Night Population Increase (2022-45)**	**Net New Square Feet Demanded**
219,236	358,436	0.611646		75,178	45,982
Existing & Planned Fire Apparatus	**2045 Day-Night Population**	**Fire Apparatus per 2045 Day-Night Population**		**Day-Night Population Increase (2022-45)**	**Net New Apparatus Demanded**
53	358,436	0.000148		75,178	11.12
Existing & Planned Support Fleet	**2045 Day-Night Population**	**Support Fleet per 2045 Day-Night Population**		**Day-Night Population Increase (2022-45)**	**Net New Support Fleet Demanded**
47	358,436	0.000131		75,178	9.86

* 11 fire apparatus will be added to the inventory, all of which are 100% eligible for impact fee funding. 9 support vehicles will be added at 100% impact fee eligibility, and a tenth will be added that is only 86% impact fee eligible.

Table 18 also shows the fire protection facilities that are needed to serve new growth in 2045. These 'New Growth Demand' figures show the actual number of building area (square feet), fire apparatus, and support vehicles, that are 'demanded' by new growth. New growth is defined and quantified as the increase in population from 2022 to 2045, which is also known as the 'Future Service Population' above.

Using the future-system approach to determine new growth demand, only 45,982 square feet in additional building area is needed to serve future growth. This reveals a current shortfall in space serving the current day-night population. Thus, of the total 82,400 square feet in space proposed (see Table 17), only 45,982 square feet can be supported with impact fees (56% of the total proposed), leaving the remaining 36,418 square feet (44%) to be funded by the existing tax base.

This same principle applies to the fire apparatus and supporting fleet in Table 18. New growth only requires 11.12 and 9.86 vehicles, respectively. But since a portion of a vehicle cannot be acquired, the numbers are rounded to whole vehicles. As shown in the table, 11 new fire apparatus will be acquired. This number is slightly less than what is technically required to meet the demand for the future system and is therefore 100% impact fee eligible. In addition, 10 support vehicles will be added to the Fire Department's fleet, 9 of which are fully impact fee eligible. The 10th vehicle is 86% impact fee eligible, as that is technically the portion of the vehicle that is needed to meet future demand.

Future Costs

There are three categories of future costs: those for needed building area, those for fire apparatus, and those for support vehicles. The estimated improvement cost for needed building area (in 2022 dollars) are based on prevailing construction costs for fire stations. This per square foot dollar amount ($351) is applied to the 45,892 square feet for 'new building area'.

Should the City undertake the burn building or training tower replacement projects, it is important to note that the projects are not fully impact fee eligible. The impact fee eligible portion is the increase in size from the existing structure to the new replacement structure, since it is these additional square feet that are needed to meet future demand. Based on the existing and proposed sizes of the replacement buildings, the new burn building (5,000 square feet) would be 64% impact fee eligible (3,200 – see Table 17– divided by 5,000). The proposed 9,000 square feet training tower would be 80% impact fee eligible (7,200 square feet in additional square feet relative to the existing 1,800 square feet structure, divided by 9,000).

Vehicle costs are based on prevailing rates for similar vehicles equipped to local specifications.

Table 19: Facility Costs to Meet Future Demand

Description	Number	2022 Cost Each*	Total 2022 Cost	Estimated Cost 2032 (NPV)**	% Impact Fee Eligible	Total Impact Fee Eligible Cost
New Building Area (sq.ft.)	45,982	$ 351.00	$ 16,139,799.37	$ 20,561,854.25	100%	$ 20,561,854.25
New Fire Apparatus	11	$ 1,181,818.18	$ 13,000,000.00	$ 16,771,893.63	100%	$ 16,771,893.63
New Support Fleet	9	$ 58,066.67	$ 522,600.00	$ 674,230.12	100%	$ 674,230.12
New Support Vehicle	1	$ 58,066.67	$ 58,066.67	$ 74,914.46	86%	$ 64,426.43
	Totals	**$ 1,298,302.52**	**$ 29,720,466.04**	**$ 38,082,892.46**		**$ 38,072,404.43**

*Building cost estimates information provided by the Savannah Fire Department. Vehicle costs based on current prevailing rates for fire apparatus and supporting vehicles equipped to local specifications.

**2022 cost estimate inflated to 'average' year (2032) using the CPI or BCI, as applicable, reduced to NPV using the Discount Rate.

The Net Present Value (NPV) of new growth's share ('% Impact Fee Eligible') of the costs for future improvements is calculated as follows:

Since the actual pace and timing of construction for the additional square footage and the purchase of vehicles proposed to meet future demand have not been programmed, an 'average' year of 2032 is used for Net Present Value calculations—some improvements will occur earlier for less money, and some later at greater cost. All will average out.

To calculate the NPV of the impact fee eligible cost estimate for the construction of the new floor area, the NPV is calculated by increasing the current (2022) estimated cost using Engineering News Record's 10-year average building cost inflation (BCI) rate. The projected costs are then reduced to current NPV dollars using the Net Discount Rate (see Appendix D: *Cost Adjustments and Credits*).

The NPV of the cost for all vehicles is calculated by increasing the current (2022) estimated cost using the Consumer Price Index (CPI) rate. The projected costs are then reduced to current NPV dollars using the Net Discount Rate.

Credit Calculation

There is a credit calculation that is carried out for this public facility category due to a tenth support vehicle only being 86% impact fee eligible. For this calculation, it is assumed that the City will meet its financial obligations towards the non-eligible project cost (14% of the total cost) through general fund expenditures. For this reason, the credit calculated here is based on future property tax contributions into the general fund that will be generated by new growth and development to pay for the non-eligible costs. Because of the uncertainty when the vehicle will be acquired between now and 2045, the 'average' year 2032 was chosen in order to determine the 'average' future cost for the expenditure. This same approach is applied to the calculation of the tax credit that will result from double-taxation that impact fee payers would otherwise experience.

Table 20: Tax Credit – Fire Protection Services

Year	Ineligible Funding Required (NPV)*	Property Tax Credit	Contribution from New Growth
2032	$ 10,488.02	11.97%	$ 1,254.92

* Net Present Value of amount to be paid from taxes to cover costs not eligible for impact fee funding, using 2032 as the "average" year due to uncertainty.

The property tax information in the 'Property Tax Credit' column is taken from Appendix D: *Cost Adjustments and Credits*. It is the projected percentage of property tax revenue in 2032 that is expected to be generated specifically from new growth and development.

Impact Cost Calculation

In calculating the impact cost on the next table, the credit for future property tax contributions (from the table above) is subtracted from the total impact fee eligible cost, as discussed above. Using the total net eligible cost figure, the 'net cost per person' is calculated, based on the increase in the day-night population between 2022 and 2045.

Table 21: Cost to Serve New Growth – Per Person

Description	Total
Eligible Cost of Fire Projects	$ 38,072,404.43
minus Credit for Tax Contributions	$ (1,254.92)
= Total Net Eligible Fire Protection Costs	$ 38,071,149.52
÷ Day-Night Pop Increase (2022-2045) in Service Area	75,178
= Net Cost per Person	**$ 506.4134**
plus 3% Administration Fee	$ 15.19
plus CIE Preparation Fee	$ 7.60
= Maximum Impact Fee per Person	**$ 529.2020**

To this net cost are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged per person. This figure will be used to calculate impact fees for all nonresidential land uses.

A final calculation, shown below, is necessary in order to fairly distribute the portion of project costs that are attributable to residential growth, because they are assessed impact fees per housing unit rather than per person.

Table 22: Calculation of Housing Unit Fee

Factor	Data
Residential Population Increase (2022-2045)	29,916
÷ Day-Night Population Increase (2022-2045)	75,178
= Residential Increase as % of Total Increase	39.794%
Total Net Project Costs	$ 38,071,149.52
× Residential % of Total Day-Night Increase =	$ 15,149,864.44
÷ New Housing Units (2022-2045)	13,000
= Net Impact Fee per Housing Unit	**$ 1,165.3741**
plus 3% Administration Fee	$ 34.96
plus CIE Preparation Fee	$ 17.48
= Maximum Impact Fee per Housing Unit	**$ 1,217.8159**

The portion of the total project cost that is attributable to new residential growth is calculated based on the percentage of the total day-night population increase that is comprised of new residents.

This percentage is then applied to the 'Total Net Project Costs' figure to produce the cost attributable to new residential growth. This is the amount of investment that will be needed to serve future growth and development while maintaining the same level of service enjoyed by the city's residents today.

Finally, this total cost attributable to new residential growth is divided by the number of new housing units projected to 2045 in the Fire Protection service area to produce a 'Net Impact fee Per Housing Unit'.

To this net impact fee are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged for each new housing unit constructed in the service area in the future.

■ Maximum Impact Fee Schedule – Fire Protection

The maximum net impact fees that could be charged in Savannah for the Fire Protection category, based on the calculations carried out in this chapter, are shown on the table on the following page.

Table 23: Maximum Impact Fee Schedule – Fire Protection

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Residential (200-299)				
210	Single-Family Detached Housing	n/a	$ 1,217.8159	per dwelling
215	Duplex or Townhouse 1-3 stories	n/a	$ 1,217.8159	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	n/a	$ 1,217.8159	per dwelling
	Total Cost per Day-Night Person (Employee):		$ 529.20	
Industrial (100-199)				
110	General Light Industrial	0.001542	$ 0.8160	per square foot
140	Manufacturing	0.001892	$ 1.0015	per square foot
150	Warehousing	0.000339	$ 0.1792	per square foot
154	High-Cube Warehouse, short term	0.000653	$ 0.3458	per square foot
155	High-Cube Warehouse, fulfillment center	0.000653	$ 0.3458	per square foot
156	High-Cube Hub Warehouse	0.000684	$ 0.3619	per square foot
180	Specialty Trade Contractor	0.002705	$ 1.4316	per square foot
Lodging (300-399)				
310	Hotel or Conference Motel	0.557183	$ 294.8622	per room
311	All Suites Hotel	0.924370	$ 489.1783	per room
320	Motel	0.133095	$ 70.4341	per room
Recreational (400-499)				
445	Movie Theater	0.001417	$ 0.7497	per square foot
480	Amusement Park	0.002224	$ 1.1767	per acre
491	Racquet/Tennis Club	0.000475	$ 0.2513	per square foot
495	Recreational Community Center	0.001058	$ 0.5597	per square foot
Institutional (500-599)				
520	Private Elementary School	0.022500	$ 11.9070	per employee
530	Private School (K-8)	0.022500	$ 11.9070	per employee
532	Private School (K-12)	0.016430	$ 8.6948	per employee
534	Private High School (K-8)	0.015120	$ 8.0015	per employee
560	Church/Place of Worship	0.000380	$ 0.2009	per square foot
565	Day Care Center	0.002227	$ 1.1787	per square foot
566	Cemetery	0.104242	$ 55.1653	per acre
Medical (600-699)				
610	Hospital	0.002857	$ 1.5118	per square foot
620	Nursing Home	0.002039	$ 1.0792	per square foot
630	Clinic	0.002705	$ 1.4315	per square foot
640	Veterinary Clinic	0.001694	$ 0.8966	per square foot

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Office (700-799)				
710	General Office Building	0.003255	$ 1.7227	per square foot
712	Small Office Building	0.001831	$ 0.9689	per square foot
714	Corporate Headquarters Building	0.003442	$ 1.8213	per square foot
715	Single-Tenant Office Building	0.003395	$ 1.7965	per square foot
720	Medical-Dental Office Building	0.004133	$ 2.1873	per square foot
750	Office Park	0.003127	$ 1.6549	per square foot
760	Research and Development Center	0.003288	$ 1.7399	per square foot
770	Business Park	0.003079	$ 1.6295	per square foot
Retail (800-899)				
812	Building Materials and Lumber Store	0.000688	$ 0.3643	per square foot
814	Variety Store	0.000666	$ 0.3524	per square foot
815	Free-Standing Discount Store	0.002187	$ 1.1575	per square foot
816	Hardware/Paint Store	0.000291	$ 0.1542	per square foot
817	Nursery (Garden Center)	0.003120	$ 1.6509	per square foot
818	Nursery (Wholesale)	0.001667	$ 0.8820	per square foot
820	Shopping Center	0.002125	$ 1.1243	per square foot
822	Strip Retail Plaza	0.002125	$ 1.1243	per square foot
840	Automobile Sales (New)	0.002486	$ 1.3154	per square foot
841	Automobile Sales Used)	0.002168	$ 1.1475	per square foot
842	Recreation Vehicle Sales	0.000635	$ 0.3358	per square foot
843	Auto Parts Store	0.000960	$ 0.5080	per square foot
848	Tire Store	0.001280	$ 0.6774	per square foot
850	Supermarket	0.002140	$ 1.1322	per square foot
857	Discount Club	0.001318	$ 0.6976	per square foot
861	Sporting Goods Superstore	0.005356	$ 2.8343	per square foot
880	Pharmacy/Drugstore - no drive-through	0.001567	$ 0.8293	per square foot
881	Pharmacy/Drugstore w/drive-through	0.001670	$ 0.8838	per square foot
890	Furniture Store	0.000576	$ 0.3050	per square foot
Services (900-999)				
912	Drive-in Bank	0.003066	$ 1.6225	per square foot
930	Fast Casual Restaurant	0.005042	$ 2.6684	per square foot
931	Fine Dining Restaurant	0.005042	$ 2.6684	per square foot
932	High-Turnover (Sit-Down) Restauant	0.005042	$ 2.6684	per square foot
934	Fast-Food Restaurant	0.010500	$ 5.5569	per square foot
941	Quick Lubtication Vehicle Shop	0.004348	$ 2.3010	per square foot
943	Automobile Parts & Service	0.001451	$ 0.7679	per square foot
944	Gasoline/Service Station	n/a	$ 88.9999	per pump
945	Convenience Store w/gas (< 5501 sf)	n/a	$ 133.0419	per pump
945	Convenience Store w/gas (> 5500 sf)	n/a	$ 178.8949	per pump
947	Self-Service Car Wash	n/a	$ 55.8804	per stall
949	Car Wash & Detail Center	n/a	$ 80.8196	per stall
950	Truck Stop	n/a	$ 115.9001	per pump

Note: Total Fee per Unit includes administration and CIE preparation fees.

Law Enforcement

Introduction

Law enforcement services are provided by the City through the Savannah Police Department (SPD). The SPD is organized into three primary divisions (Field Operations, Criminal Investigations, and Administrative and Management Services) and consists of four precincts (Northwest, Southside, Eastside, and Central).

Service Area

The city is considered a single service area for the provision of law enforcement services because all residents and employees in Savannah have equal access to the benefits of the services provided.

Level of Service and Forecasts for Service Area

'Level of Service' (LOS) is the relationship between service capacity and service demand for public facilities. The LOS for law enforcement services in Savannah is measured in terms of the number of square feet of building area and the number of specialized vehicles that serve the day-night population in the service area. Day-night population is used as a measure in that fire protection is a 24-hour service provided continuously to both residences and businesses in the service area. The following table presents the current inventory of SPD facilities and vehicles.

Table 24: Inventory of Existing Building Area and Vehicles

Description	Location	Quantity
Building Area		*Square Feet*
Police Headquarters	201 Habersham	33,000
Central Precinct	1710 Martin Luther King Jr. Blvd.	13,300
Eastside Precinct	2250 Victory Drive	9,608
Southside Precinct	7804 Abercorn St.	5,100
Northwest Precinct	602 E. Lathrop Ave.	28,810
Northwest Substation	Armestead Ave. (Savannah Airport)	9,600
Property and Evidence Building	78 Ross Road	6,021
Vehicle Forensics Processing Garage	78 Ross Road	2,400
Garage for Specialized Vehicles	78 Ross Road	5,000
Professional Development Training	3401 Edwin Street	20,000
	Total Square Feet	**132,839**
Specialized Vehicles*		*Number*
Armored Vehicle		2
Equipment Vehicle		1
Casualty Evacuation Vehicle		1
	Total Specialized Vehicles	**4**

* Vehicles having a service life of 10 years or more.

Table 25 presents the calculation of the current Level of Service (LOS) standards for law enforcement system facilities (building area and specialized vehicles) in the city. The inventory of each category is divided by the current (2022) day-night population to obtain the LOS per person enjoyed throughout the city.

Table 25: Level of Service and New Growth Demand

Facilities	Service Population	Level of Service	Service Area Growth	New Growth Demand

Existing Square Feet	Day-Night Population (2022)	Square Feet of Floor Area per Person	Day-Night Pop Increase to 2045	Square Feet of New Floor Area Needed
132,839	283,258	0.4690	75,178	35,256

Existing Specialized Vehicles	Day-Night Population (2022)	Vehicle per Person	Day-Night Pop Increase to 2045	New Specialized Vehicles Needed*
4	283,258	0.000014	75,178	1.06

* Number of specialized vehicles will be rounded down to one vehicle that is 100% impact fee eligibile.

Table 25 also shows the law enforcement facilities that are needed to serve new growth in 2045. For the purposes of impact fee calculations, the City has determined that a Level of Service, based on the current LOS (i.e., the portions of existing building area and vehicles that serve one person today), would be appropriate to serve the future service area population.

In the table, the building area (square feet), and specialized vehicle LOS standards are next multiplied by the forecasted citywide day-night population increase to produce the expected demand that future growth and development will place on the city. This 'demand' equates to 35,256 square feet in additional building area and 1.06 additional specialized vehicles. Since only whole vehicles can be purchased, this number is rounded down and will result in the addition of one vehicle to cover expansion of the existing fleet. This additional vehicle is 100% impact fee eligible.

The building area required to meet the demands of new growth – 35,256 square feet – is also 100% impact fee eligible. The square footage may be allocated across future projects that add building area, as follows: expansion of an existing building, construction of a new building (such as a garage or an additional precinct or substation), and/or replacement of an existing building. It should be noted that building replacement projects are impact fee eligible to the extent that the new building adds square footage to the existing building footprint. By way of example, if the existing 2,400 square feet vehicle forensics processing garage is replaced by a 4,000 square feet garage, the difference between the two (1,600 square feet) is what is impact eligible. This results in the new garage being 40% (1,600 divided by 4,000) impact fee eligible. The other 60% percent of the project cost would

have to come from other funding sources. Building replacement projects that result in the same or smaller building size are not impact fee eligible.

Future Costs

There are two categories of future costs: those for needed building area and those for specialized vehicles. The estimated improvement cost for needed building area (in 2022 dollars) is based on recent police precinct construction in the city. This per square foot dollar amount ($632) is applied to the 35,256 square feet for 'new building area'. Vehicle costs are based on prevailing rates for similar vehicles equipped to local specifications.

Table 26: Facility Costs to Meet Future Demand

Description	Number	Unit Cost*	Total Cost	% Impact Fee Eligible	Total Impact Fee Eligible	Net Present Value**
Future Building Area (sq.ft.)	35,256	$ 631.58	$ 22,266,947.00	100%	$ 22,266,947.00	$ 31,252,911.18
Specialized Vehicle	1	$203,333.00	$ 203,333.00	100%	$ 203,333.00	$ 262,329.19
	Totals		**$ 22,470,280.00**		**$ 22,470,280.00**	**$ 31,515,240.37**

* Source: Savannah Police Department. Floor area cost estimates based on recent SPD police precinct construction costs. Vehicle costs are estimated using the average of current prevailing rates for existing specialized vehicles in the city's fleet.

** NPV for building area based on the 2018 construction costs of the Central Precinct. NPV for building area and vehicle based on 10-year average annual Building Cost Inflation (BCI) and Consumer Price Index (CPI), respectively, projected to an 'average' year of 2032.

The Net Present Value (NPV) of new growth's share ('% Impact Fee Eligible') of the costs for future improvements is calculated as follows:

Since the actual pace and timing of construction for the additional square footage and the purchase of vehicles proposed to meet future demand have not been programmed, an 'average' year of 2032 is used for Net Present Value calculations—some improvements will occur earlier for less money, and some later at greater cost. All will average out.

To calculate the NPV of the impact fee eligible cost estimate for the construction of the new floor area, the NPV is calculated by increasing the current (2022) estimated cost using Engineering News Record's 10-year average building cost inflation (BCI) rate. The projected costs are then reduced to current NPV dollars using the Net Discount Rate (see Appendix D: *Cost Adjustments and Credits*).

The NPV of the cost for all vehicles is calculated by increasing the current (2022) estimated cost using the Consumer Price Index (CPI) rate. The projected costs are then reduced to current NPV dollars using the Net Discount Rate.

Credit Calculation

There is no tax credit to be calculated in that all of the facilities to be funded with impact fees collectively fulfill the LOS standard totaling 35,256 square feet and 1 specialized vehicle.

Impact Cost Calculation

The following table calculates the 'net cost per person', based on the increase in the day-night population between 2022 and 2045.

Table 27: Cost to Serve New Growth – Per Person

Description	Total
Eligible Cost of Law Enforcement Projects	$ 31,515,240.37
÷ Day-Night Pop Increase (2022-2045) in Service Area	75,178
= Net Cost per Person	**$ 419.2082**
plus 3% Administration Fee	$ 12.58
plus CIE Preparation Fee	$ 6.29
= Maximum Impact Fee per Person	**$ 438.0725**

To this net impact cost are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged per person. This figure will be used to calculate impact fees for all nonresidential land uses.

A final calculation, shown below, is necessary in order to fairly distribute the portion of project costs that are attributable to residential growth, because they are assessed impact fees per housing unit rather than per person.

Table 28: Calculation of Housing Unit Fee

Factor	Data
Residential Population Increase (2022-2045)	29,916
÷ Day-Night Population Increase (2022-2045)	75,178
= Residential Increase as % of Total Increase	39.7936%
Total Project Costs	$ 31,515,240.37
× Residential % of Total Day-Night Increase =	$ 12,541,035.02
÷ New Housing Units (2022-2045)	13,000
= Net Impact Fee per Housing Unit	**$ 964.6950**
plus 3% Administration Fee	$ 28.94
plus CIE Preparation Fee	$ 14.47
= Maximum Impact Fee per Housing Unit	**$ 1,008.1062**

The portion of the total project cost that is attributable to new residential growth is calculated based on the percentage of the total day-night population increase that is comprised of new residents.

This percentage is then applied to the 'Total Project Costs' figure to produce the cost attributable to new residential growth. This is the amount of investment that will be needed to serve future growth and development while maintaining same level of service enjoyed by the city's residents today.

Finally, this total cost attributable to new residential growth is divided by the number of new housing units projected to 2045 in the Law Enforcement service area to produce a 'Net Impact fee Per Housing Unit'. To this net impact fee are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact fee that could be charged for each new housing unit constructed in the service area in the future.

Maximum Impact Fee Schedule – Law Enforcement

The maximum net impact fees that could be charged in Savannah for the Law Enforcement category, based on the calculations carried out in this chapter, are shown on the table on the following page.

Table 29: Maximum Impact Fee Schedule – Law Enforcement

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Residential (200-299)				
210	Single-Family Detached Housing	n/a	$ 1,008.1062	per dwelling
215	Duplex or Townhouse 1-3 stories	n/a	$ 1,008.1062	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	n/a	$ 1,008.1062	per dwelling
	Total Cost per Day/Night Person (Employee):		$ 438.07	
Industrial (100-199)				
110	General Light Industrial	0.001542	$ 0.6755	per square foot
140	Manufacturing	0.001892	$ 0.8290	per square foot
150	Warehousing	0.000339	$ 0.1483	per square foot
154	High-Cube Warehouse, short term	0.000653	$ 0.2862	per square foot
155	High-Cube Warehouse, fulfillment center	0.000653	$ 0.2862	per square foot
156	High-Cube Hub Warehouse	0.000684	$ 0.2996	per square foot
180	Specialty Trade Contractor	0.002705	$ 1.1851	per square foot
Lodging (300-399)				
310	Hotel or Conference Motel	0.557183	$ 244.0864	per room
311	All Suites Hotel	0.924370	$ 404.9410	per room
320	Motel	0.133095	$ 58.3052	per room
Recreational (400-499)				
445	Movie Theater	0.001417	$ 0.6206	per square foot
480	Amusement Park	0.002224	$ 0.9741	per acre
491	Racquet/Tennis Club	0.000475	$ 0.2081	per square foot
495	Recreational Community Center	0.001058	$ 0.4633	per square foot
Institutional (500-599)				
520	Private Elementary School	0.022500	$ 9.8566	per employee
530	Private School (K-8)	0.022500	$ 9.8566	per employee
532	Private School (K-12)	0.016430	$ 7.1975	per employee
534	Private High School (K-8)	0.015120	$ 6.6237	per employee
560	Church/Place of Worship	0.000380	$ 0.1663	per square foot
565	Day Care Center	0.002227	$ 0.9757	per square foot
566	Cemetery	0.104242	$ 45.6657	per acre
Medical (600-699)				
610	Hospital	0.002857	$ 1.2515	per square foot
620	Nursing Home	0.002039	$ 0.8934	per square foot
630	Clinic	0.002705	$ 1.1850	per square foot
640	Veterinary Clinic	0.001694	$ 0.7422	per square foot

ITE Code	Land Use	Employees	Total Fee per Unit	Unit of Measure
Office (700-799)				
710	General Office Building	0.003255	$ 1.4260	per square foot
712	Small Office Building	0.001831	$ 0.8020	per square foot
714	Corporate Headquarters Building	0.003442	$ 1.5077	per square foot
715	Single-Tenant Office Building	0.003395	$ 1.4872	per square foot
720	Medical-Dental Office Building	0.004133	$ 1.8106	per square foot
750	Office Park	0.003127	$ 1.3699	per square foot
760	Research and Development Center	0.003288	$ 1.4403	per square foot
770	Business Park	0.003079	$ 1.3489	per square foot
Retail (800-899)				
812	Building Materials and Lumber Store	0.000688	$ 0.3015	per square foot
814	Variety Store	0.000666	$ 0.2917	per square foot
815	Free-Standing Discount Store	0.002187	$ 0.9581	per square foot
816	Hardware/Paint Store	0.000291	$ 0.1277	per square foot
817	Nursery (Garden Center)	0.003120	$ 1.3666	per square foot
818	Nursery (Wholesale)	0.001667	$ 0.7301	per square foot
820	Shopping Center	0.002125	$ 0.9307	per square foot
822	Strip Retail Plaza	0.002125	$ 0.9307	per square foot
840	Automobile Sales (New)	0.002486	$ 1.0889	per square foot
841	Automobile Sales Used)	0.002168	$ 0.9499	per square foot
842	Recreation Vehicle Sales	0.000635	$ 0.2780	per square foot
843	Auto Parts Store	0.000960	$ 0.4205	per square foot
848	Tire Store	0.001280	$ 0.5607	per square foot
850	Supermarket	0.002140	$ 0.9373	per square foot
857	Discount Club	0.001318	$ 0.5775	per square foot
861	Sporting Goods Superstore	0.005356	$ 2.3463	per square foot
880	Pharmacy/Drugstore - no drive-through	0.001567	$ 0.6865	per square foot
881	Pharmacy/Drugstore w/drive-through	0.001670	$ 0.7316	per square foot
890	Furniture Store	0.000576	$ 0.2525	per square foot
Services (900-999)				
912	Drive-in Bank	0.003066	$ 1.3431	per square foot
930	Fast Casual Restaurant	0.005042	$ 2.2089	per square foot
931	Fine Dining Restaurant	0.005042	$ 2.2089	per square foot
932	High-Turnover (Sit-Down) Restauant	0.005042	$ 2.2089	per square foot
934	Fast-Food Restaurant	0.010500	$ 4.6000	per square foot
941	Quick Lubtication Vehicle Shop	0.004348	$ 1.9048	per square foot
943	Automobile Parts & Service	0.001451	$ 0.6357	per square foot
944	Gasoline/Service Station	n/a	$ 73.6739	per pump
945	Convenience Store w/gas (< 5501 sf)	n/a	$ 110.1319	per pump
945	Convenience Store w/gas (> 5500 sf)	n/a	$ 148.0889	per pump
947	Self-Service Car Wash	n/a	$ 46.2577	per stall
949	Car Wash & Detail Center	n/a	$ 66.9023	per stall
950	Truck Stop	n/a	$ 95.9419	per pump

Note: Total Fee per Unit includes administration and CIE preparation fees.

Road Improvements

Introduction

The information in this chapter is derived from road project information reflecting proposed road improvement projects that create new capacity.

Service Area

The service area for these road projects is defined as the entire city, in that these projects are recognized as providing primary access to all properties within the city as part of the citywide network of principal streets and thoroughfares. All new development within the city will be served by this citywide network, such that improvements to any part of this network to relieve congestion or to otherwise improve capacity will positively affect capacity and reduce congestion throughout the city.

Level of Service

For impact fee purposes, the City has set its Level of Service for road improvements at LOS "D", a level below which some roads in the city operate. Using this LOS maximizes roadway capacity before traffic conditions actually break down (LOS "F"). See the Level of Service Standards section below for a description of these levels.

All road improvement projects benefit existing and future traffic proportionally to the extent that relief from over-capacity conditions eases traffic problems for everyone. For example, since new growth by 2045 will represent a certain portion of all 2045 traffic, new growth would be responsible for that portions' cost of the road improvements.

It is noted that the cost-impact of non-Savannah generated traffic on the roads traversing the city ('through' traffic) is off-set by state and federal assistance. The net cost of the road projects that accrues to Savannah reasonably represents (i.e., is 'roughly proportional' to) the impact on the roads by Savannah residents driving to and from their homes, commuters that come in to work in the city, and those coming into Savannah to shop, do business or recreate.

The basis for the road impact fee would therefore be Savannah's cost for the improvements divided by all traffic generated within the city in 2045 (existing today plus new growth)—i.e., the cost per trip—times the traffic generated by new growth alone. For an individual land use, when a building permit is issued, the cost per trip would be applied to the number of trips that will be generated by the new development, assuring that new growth would only pay its 'fair share' of the road improvements that serve it.

Level of Service Standards

Level of Service (LOS) for roadways and intersections is measured on a 'letter grade' system that rates a road within a range of service from A to F. Level of Service A is the best rating, representing roads operating with unencumbered travel; Level of Service F is the worst rating, representing operational conditions of heavy congestion and long delays. This system is a means of relating the connection between speed and travel time, freedom to maneuver, traffic interruption, comfort, convenience and safety to the capacity that exists in a roadway. This refers to both a quantitative measure expressed as a service flow rate and an assigned qualitative measure describing parameters. The *Highway Capacity Manual, Special Report 209*, Transportation Research Board (1985), defines operational design Level of Service A through F as having the following characteristics:

1. LOS A: free flow, excellent level of freedom and comfort;
2. LOS B: stable flow, decline in freedom to maneuver, desired speed is relatively unaffected;
3. LOS C: stable flow, but marks the beginning of users becoming affected by others, selection of speed and maneuvering becomes difficult, comfort declines at this level;
4. LOS D: high density, but stable flow, speed and freedom to maneuver are severely restricted, poor level of comfort, small increases in traffic flow will cause operational problems;
5. LOS E: at or near capacity level, speeds reduced to low but uniform level, maneuvering is extremely difficult, comfort level poor, frustration high, level unstable; and
6. LOS F: forced/breakdown of flow. The amount of traffic approaching a point exceeds the amount that can transverse the point. Queues form, stop & go. Arrival flow exceeds discharge flow.

The traffic volume that produces different Level of Service grades differs according to road type, size, signalization, topography, condition and access.

Forecasts for Service Area

Projects that provide road capacity that will serve new growth have been identified by the City and are shown on the following table. This is not a list of all City road projects. These projects were selected for inclusion in the City's impact fee program because the specific improvements proposed will increase traffic capacity and reduce congestion to some extent, whether through road widening, improved intersection operations or upgraded signalization.

Table 30: Road Projects and Eligible Costs

Project Description	Total City Cost*	Year of Completion	Net Present Value**	% Impact Fee Eligible***	New Growth Cost (NPV)
Stiles Ave. Widening Phase 2	$ 5,000,000.00	2023	$ 5,081,455.82	25.2%	$ 1,301,372.00
Louisville / MLK Intersection Improvement	$ 270,000.00	2024	$ 278,868.89	25.2%	$ 70,274.09
Benton Blvd. Widening Phase 1	$ 12,500,000.00	2028	$ 13,772,694.47	25.2%	$ 3,470,675.96
Benton Blvd. Widening Phase 2	$ 14,000,000.00	2028	$ 15,425,417.81	25.2%	$ 3,887,157.08
Skidaway Rd. Widening	$ 15,000,000.00	2028	$ 16,527,233.36	25.2%	$ 4,164,811.16
Highlands Blvd. Widening	$ 10,000,000.00	2028	$ 11,018,155.58	25.2%	$ 2,776,540.77
Gwinnett Street EB & SB Lanes & Signal Upgrade @I-16	$ 1,600,000.00	2032	$ 1,880,621.87	25.2%	$ 473,910.83
Gwinnett Street NB Lane Extension/ Additional Left & Right Turn lanes @ I-16	$ 2,000,000.00	2032	$ 2,350,777.34	25.2%	$ 592,388.54
Gwinnett Street NB Turn Lane & Traffic Signal @ I-516	$ 1,000,000.00	2032	$ 1,175,388.67	25.2%	$ 59,239.15
Jimmy DeLoach Pkwy. Widening	$ 5,000,000.00	2032	$ 5,876,943.36	25.2%	$ 1,480,971.36
Louisville Rd. Widening	$ 8,000,000.00	2032	$ 9,403,109.37	25.2%	$ 2,369,554.17
Louisville Rd. @ US 17 NB Off-Ramp & Traffic Signal	$ 1,000,000.00	2032	$ 1,175,388.67	25.2%	$ 296,194.27
Derenne Ave. Operational Improvements & New Roadway	$ 11,937,951.00	2034	$ 14,492,642.94	25.2%	$ 3,652,100.73
Total	**$ 87,307,951.00**		**$ 98,458,698.15**		**$ 24,595,190.11**

* Total estimated cost of project in 2022 dollars less non-City assistance.
** Net Present Value = current cost inflated to target year using the ENR Construction Cost Index, (CCI) reduced to NPV using the Discount Rate.
*** See the *Trip Generation* section in the Appendix. Actual % of trips: 25.2%

The cost figures shown in Table 30 above are in current (2022) dollars and are then calculated in Net Present Value (as discussed in Appendix D: *Cost Adjustments and Credits*) and shown in the 'Net Present Value' column, based on the anticipated year of project expenditure.

As discussed thoroughly in Appendix C: *Traffic Demand*, new growth and development will represent 25.2% of the traffic on Savannah's road network in 2045. To that extent, new growth's fair share of the road project costs that are attributed to new growth are shown in the last two columns of Table 30 on the previous page.

Credit Calculation

There is a credit calculation that is carried out for this public facility category. For this calculation, it is assumed that the City will meet its financial obligations towards non-eligible road project costs through general fund expenditures. For this reason, the credit calculated here is based on future property tax contributions into the general fund that will be generated by new growth and development. In order to calculate an applicable credit, the total non-eligible project costs are shown in the year of their anticipated expenditure.

Table 31: Tax Credit – Road Improvements

Year	Ineligible Funding Required (NPV)*	Property Tax Credit	Contribution from New Growth
2022		1.23%	$ -
2023	$ 3,862,866.66	2.39%	$ 92,283.54
2024	$ 208,594.80	3.50%	$ 7,303.86
2025		4.57%	$ -
2026		5.60%	$ -
2027		6.60%	$ -
2028	$ 42,444,316.24	7.57%	$ 3,211,193.78
2029		8.50%	$ -
2030		9.40%	$ -
2031		10.25%	$ -
2032	$ 15,649,661.20	11.07%	$ 1,732,891.27
2033		11.88%	$ -
2034	$ 10,840,542.21	12.66%	$ 1,372,349.76
2035		13.43%	$ -
2036		14.17%	$ -
2037		14.91%	$ -
2038		15.63%	$ -
2039		16.34%	$ -
2040		17.04%	$ -
2041		17.71%	$ -
2042		18.38%	$ -
2043		19.05%	$ -
2044		19.70%	$ -
2045		20.35%	$ -
	Total New Growth Contribution		**$ 6,416,022.20**

* Net Present Value of amount to be paid from taxes to cover costs not eligible for impact fee funding.

The property tax information in the 'Property Tax Credit' column at left is taken from Appendix D: *Cost Adjustments and Credits*. These figures are the projected percentage of property tax revenue that is expected to be generated specifically from new growth and development in the years of anticipated project expenditures.

Impact Cost Calculation

The net impact cost per primary trip end is calculated in the table below.

In calculating the impact cost, the credit for future property tax contributions (from Table 31) is subtracted from the total impact fee eligible cost to produce a 'net eligible road project cost' amount. This figure, divided by the future increase in primary trip ends generated by new growth and development, results in a 'net impact cost per trip end'.

To this net impact cost are added an administration fee of 3% and a fee for preparation of the Capital Improvements Element of the impact fee program (1.5%). These additions result in the maximum impact cost per trip end. This figure will be used to calculate impact fees for all land uses.

Table 32: Net Cost to Serve New Growth

Description	Total
Eligible Cost of Road Projects	$ 24,595,190.11
minus Credit for Tax Contributions	$ (6,416,022.20)
= Net Eligible Road Project Cost	$ 18,179,167.91
÷ New Growth Primary Trip Ends*	775,320
= Net Impact Cost per Trip End	**$ 23.4473**
plus 3% Administration Fee	$ 0.7034
plus CIE Preparation Fee	$ 0.3517
= Maxium Impact Cost per Trip End	**$ 24.5024**

* Primary trip ends attributed to new growth. See the *Trip Generation* section in the Appendix.

Maximum Fee Schedule - Road Improvements

The maximum impact fees that could be charged in Savannah for the road improvements category, based on the calculations carried out in this chapter, are shown on the following table. These fees are based on the average trip ends reported by the Institute of Transportation Engineers in their most recently published *Trip Generation* Manual, 11th Edition, for an average weekday.

Table 33: Maximum Impact Fee Schedule – Road Improvements

ITE Code	Land Use	Trip Ends	Total Fee per Unit	Unit of Measure
		Total Cost per Trip End:	$ 24.50	
Residential (200-299)				
210	Single-Family Detached Housing	9.43	$ 231.0576	per dwelling
215	Duplex or Townhouse 1-3 stories	7.20	$ 176.4173	per dwelling
221	Mid-Rise Multi-Family 4-10 stories	4.75	$ 116.3864	per dwelling
Industrial (100-199)				
110	General Light Industrial	0.004780	$ 0.1171	per square foot
140	Manufacturing	0.004750	$ 0.1164	per square foot
150	Warehousing	0.001710	$ 0.0419	per square foot
154	High-Cube Warehouse, short term	0.001400	$ 0.0343	per square foot
155	High-Cube Warehouse, fulfillment center	0.001810	$ 0.0443	per square foot
156	High-Cube Hub Warehouse	0.004630	$ 0.1134	per square foot
180	Specialty Trade Contractor	0.009820	$ 0.2406	per square foot
Lodging (300-399)				
310	Hotel or Conference Motel	7.990000	$ 195.7742	per room
311	All Suites Hotel	4.400000	$ 107.8106	per room
320	Motel	3.350000	$ 82.0830	per room
Recreational (400-499)				
445	Movie Theater	0.078090	$ 1.9134	per square foot
480	Amusement Park	53.410000	$ 1,308.6732	per acre
491	Racquet/Tennis Club	0.021710	$ 0.5319	per square foot
495	Recreational Community Center	0.028820	$ 0.7062	per square foot
Institutional (500-599)				
520	Private Elementary School	0.015430	$ 0.3781	per employee
530	Private School (K-8)	0.015430	$ 0.3781	per employee
532	Private School (K-12)	0.011267	$ 0.2761	per employee
534	Private High School (K-8)	0.010369	$ 0.2541	per employee
560	Church/Place of Worship	0.007600	$ 0.1862	per square foot
565	Day Care Center	0.047620	$ 1.1668	per square foot
566	Cemetery	6.020000	$ 147.5044	per acre
Medical (600-699)				
610	Hospital	0.010770	$ 0.2639	per square foot
620	Nursing Home	0.006750	$ 0.1654	per square foot
630	Clinic	0.037600	$ 0.9213	per square foot
640	Veternary Clinic	0.021500	$ 0.5268	per square foot

ITE Code	Land Use	Trip Ends	Total Fee per Unit	Unit of Measure
Office (700-799)				
710	General Office Building	0.010840	$ 0.2656	per square foot
712	Small Office Building	0.014390	$ 0.3526	per square foot
714	Corporate Headquarters Building	0.007950	$ 0.1948	per square foot
715	Single-Tenant Office Building	0.013070	$ 0.3202	per square foot
720	Medical-Dental Office Building	0.036000	$ 0.8821	per square foot
750	Office Park	0.011070	$ 0.2712	per square foot
760	Research and Development Center	0.011080	$ 0.2715	per square foot
770	Business Park	0.012440	$ 0.3048	per square foot
Retail (800-899)				
812	Building Materials and Lumber Store	0.017050	$ 0.4178	per square foot
814	Variety Store	0.063660	$ 1.5598	per square foot
815	Free-Standing Discount Store	0.053870	$ 1.3199	per square foot
816	Hardware/Paint Store	0.008070	$ 0.1977	per square foot
817	Nursery (Garden Center)	0.068100	$ 1.6686	per square foot
818	Nursery (Wholesale)	0.039000	$ 0.9556	per square foot
820	Shopping Center	0.037010	$ 0.9068	per square foot
822	Strip Retail Plaza	0.054450	$ 1.3342	per square foot
840	Automobile Sales (New)	0.027840	$ 0.6821	per square foot
841	Automobile Sales Used)	0.027060	$ 0.6630	per square foot
842	Recreation Vehicle Sales	0.005000	$ 0.1225	per square foot
843	Auto Parts Store	0.054570	$ 1.3371	per square foot
848	Tire Store	0.027690	$ 0.6785	per square foot
850	Supermarket	0.093840	$ 2.2993	per square foot
857	Discount Club	0.042460	$ 1.0404	per square foot
861	Sporting Goods Superstore	0.023780	$ 0.5827	per square foot
880	Pharmacy/Drugstore - no drive-through	0.090080	$ 2.2072	per square foot
881	Pharmacy/Drugstore w/drive-through	0.108400	$ 2.6561	per square foot
890	Furniture Store	0.006300	$ 0.1544	per square foot
Services (900-999)				
912	Drive-in Bank	0.100350	$ 2.4588	per square foot
930	Fast Casual Restaurant	0.097140	$ 2.3802	per square foot
931	Fine Dining Restaurant	0.083840	$ 2.0543	per square foot
932	High-Turnover (Sit-Down) Restauant	0.107200	$ 2.6267	per square foot
934	Fast-Food Restaurant	0.467480	$ 11.4544	per square foot
941	Quick Lubtication Vehicle Shop	0.069570	$ 1.7046	per square foot
943	Automobile Parts & Service	0.016600	$ 0.4067	per square foot
944	Gasoline/Service Station	n/a	$ 172.0100	per pump
945	Convenience Store w/gas (< 5501 sf)	n/a	$ 257.1300	per pump
945	Convenience Store w/gas (> 5500 sf)	n/a	$ 345.7500	per pump
947	Self-Service Car Wash	n/a	$ 108.0000	per stall
949	Car Wash & Detail Center	n/a	$ 156.2000	per stall
950	Truck Stop	n/a	$ 224.0000	per pump

Note: Total Fee per Unit includes administration and CIE preparation fees.

Glossary

The following terms are used in this and other impact fee reports. Where possible, the definitions are taken directly from the Development Impact Fee Act.

Definitions

Capital improvement: an improvement with a useful life of ten years or more, by new construction or other action, which increases the service capacity of a public facility.

Capital Improvements Element: a component of a comprehensive plan adopted pursuant to Chapter 70 of the Development Impact Fee Act which sets out projected needs for system improvements during a planning horizon established in the comprehensive plan, a schedule of capital improvements that will meet the anticipated need for system improvements, and a description of anticipated funding sources for each required improvement.

DCA: The Georgia Department of Community Affairs.

Development: any construction or expansion of a building, structure, or use, any change in use of a building or structure, or any change in the use of land, any of which creates additional demand and need for public facilities.

Development impact fee: a payment of money imposed upon development as a condition of development approval to pay for a proportionate share of the cost of system improvements needed to serve new growth and development.

Eligible facilities: capital improvements in one of the following categories:

(A) Water supply production, treatment, and distribution facilities;

(B) Waste-water collection, treatment, and disposal facilities;

(C) Roads, streets, and bridges, including rights of way, traffic signals, landscaping, and any local components of state or federal highways;

(D) Storm-water collection, retention, detention, treatment, and disposal facilities, flood control facilities, and bank and shore protection and enhancement improvements;

(E) Parks, open space, and recreation areas and related facilities;

(F) Public safety facilities, including police, fire, emergency medical, and rescue facilities; and

(G) Libraries and related facilities.

Impact cost: the proportionate share of capital improvements costs to provide service to new growth, less any applicable credits.

Impact fee: the impact cost plus surcharges for program administration and recoupment of the cost to prepare the Capital Improvements Element.

Level of service: a measure of the relationship between service capacity and service demand for public facilities in terms of demand to capacity ratios or the comfort and convenience of use or service of public facilities or both.

Project improvements: site improvements and facilities that are planned and designed to provide service for a particular development project and that are necessary for the use and convenience of the occupants or users of the project and are not system improvements. The character of the

improvement shall control a determination of whether an improvement is a project improvement or system improvement and the physical location of the improvement on site or off site shall not be considered determinative of whether an improvement is a project improvement or a system improvement. If an improvement or facility provides or will provide more than incidental service or facilities capacity to persons other than users or occupants of a particular project, the improvement or facility is a system improvement and shall not be considered a project improvement. No improvement or facility included in a plan for public facilities approved by the governing body of the municipality or county shall be considered a project improvement.

Proportionate share: means that portion of the cost of system improvements which is reasonably related to the service demands and needs of the project.

Rational nexus: the clear and fair relationship between fees charged and services provided.

Service area: a geographic area defined by a municipality, county, or intergovernmental agreement in which a defined set of public facilities provide service to development within the area. Service areas shall be designated on the basis of sound planning or engineering principles or both.

System improvement costs: costs incurred to provide additional public facilities capacity needed to serve new growth and development for planning, design and engineering related thereto, including the cost of constructing or reconstructing system improvements or facility expansions, including but not limited to the construction contract price, surveying and engineering fees, related land acquisition costs (including land purchases, court awards and costs, attorneys' fees, and expert witness fees), and expenses incurred for qualified staff or any qualified engineer, planner, architect, landscape architect, or financial consultant for preparing or updating the capital improvement element, and administrative costs, provided that such administrative costs shall not exceed 3 percent of the total amount of the costs. Projected interest charges and other finance costs may be included if the impact fees are to be used for the payment of principal and interest on bonds, notes, or other financial obligations issued by or on behalf of the municipality or county to finance the capital improvements element but such costs do not include routine and periodic maintenance expenditures, personnel training, and other operating costs.

System improvements: capital improvements that are public facilities and are designed to provide service to the community at large, in contrast to 'project improvements.'

Appendix A: Future Growth Forecasts

In order to accurately calculate the demand for future services for Savannah (and thus the public facilities needed to provide those services), new growth and development must be quantified in future projections. These projections include forecasts for population, households, housing units, and employment to the year 2045. These projections provide the base-line conditions from which the current (2022)[3] or future (2045) Level of Service calculations are produced.

Types of Projections

Accurate projections of population, households, housing units, and employment are important in that:

- Population data and forecasts are used to establish current and future demand for services where the Level of Service (LOS) standards are per capita based.
- Household data and forecasts are used to forecast future growth in the number of housing units.
- Housing unit data and forecasts relate to certain service demands that are household based, such as parks. The number of households—defined as *occupied* housing units—is always smaller than the total number of housing units, which include vacant units. Over time, however, each housing unit is expected to become occupied by a household, even though the unit may become vacant during future re-sales or turnovers.
- Employment forecasts are refined to reflect 'value-added' employment figures. This reflects an exclusion of jobs considered to be transitory or non-site specific in nature, and thus not requiring building permits to operate (i.e., are not assessed impact fees), as well as governmental uses that are not subject to impact fees.
- 'Value-added' employment data is combined with population data to produce what is known as the 'day-night population.' These figures represent the total number of persons receiving services, both in their homes and in their businesses, to produce an accurate picture of the total number of persons that rely on certain 24-hour services, such as fire and police protection.
- The projections used for the parks & recreation and public safety (fire and police) categories are citywide forecasts because these public facility categories are delivered by the City throughout the city.

Note that, for the road improvements public facility category, vehicle trip data is used as the basis for impact fee calculations (presented in Appendix C), although some socioeconomic data from this Appendix are used in those calculations as well.

[3] It is anticipated that the City's impact fee program will be implemented in the Summer of 2022. All data in this Appendix are technically as of July 1 of each year shown, consistent with data reported by the Census Bureau.

Historic Population Growth

Every year, the US Census Bureau estimates the population in Savannah between decennial censuses (e.g., 2000 and 2010). After a decennial census, the Bureau revises the preceding annual estimates based on the actual Census count. Unlike the decennial censuses, which are 'as of' April 1, the annual estimates are 'as of' July 1 of each year. Those annual estimates are shown in Table A-1.

Table A-1: Annual Census Population Estimates

	Population Estimate (as of July 1 each year)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Savannah	132,895	132,388	132,332	131,391	131,812	131,126	132,259	133,452	133,651	135,734	
	2010*	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Savannah	137,424	140,443	142,377	142,683	143,991	145,312	146,053	146,048	146,132	144,839	143,632

* 2010 estimate revised by Census Bureau in 2020.
Note: All data as of July 1 of each year. 2000, 2010 and 2020 differ from Decennial Census counts, which are as of April 1.
Sources: For 2000 to 2009: *Intercensal Estimates 2000-2010* , US Bureau of the Census. For 2010 to 2020: *Census Annual Estimates Program* , US Bureau of the Census.

It should be noted that visitors to the city are not counted as part of the population forecasts, since they are either not staying in the city as residents or are possibly staying in hotels. On the other hand, their visits to the city on a daily basis are captured somewhat in the employment forecasts which address both employees, deliveries and customers as part of the calculations.

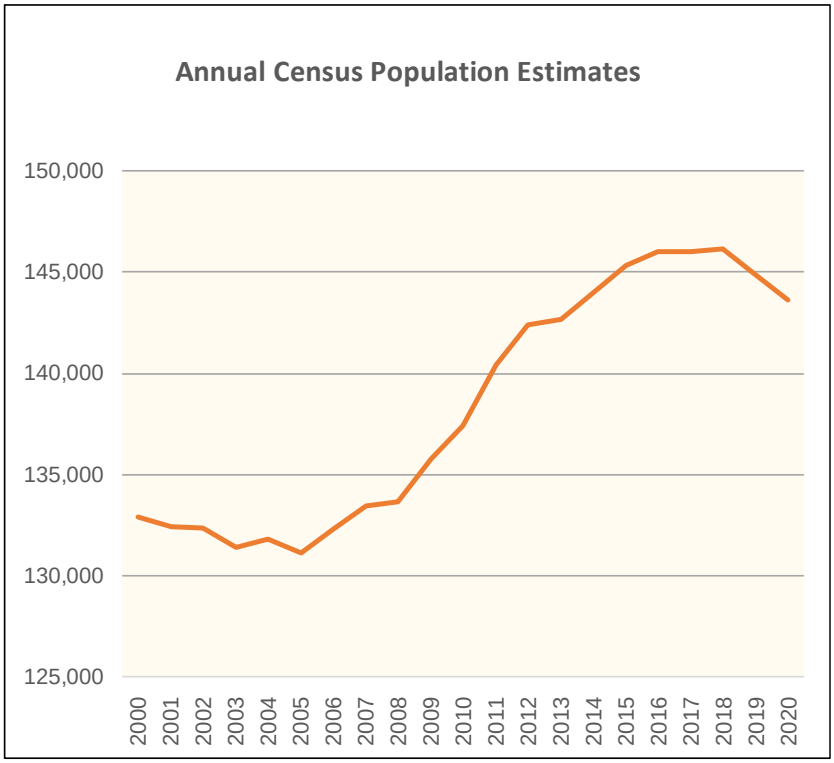
Ultimately, residential impact fees are based on the number of housing units in the city. It makes no difference in the impact fee calculations whether the unit is occupied by a permanent resident, a family that only comes to stay during a particular season, or the use of the unit for visitors staying only a week or so (like an Air B&B). The demand for public services, such as fire and police protection, does not vary by occupancy characteristics such as rental vs. ownership and full-time versus part-time residency.

A close look at the City's population growth year-by-year reveals an interesting trend over the past two decades. Table A-2, below, plots the Census Bureau's annual estimates from the 2000 Census year to 2020. After a minor 'slump' following the 2000 Census that persisted until 2005, the city's population increased every year but one since then until 2018.

Inexplicably, the Census Bureau's estimates for 2019 and 2020 show a loss in population. Inexplicable because the April 1 Census count showed a population of 147,780, while the July 1 estimate was only 143,632. The 'loss' of 4,148 people over a three month period strains belief. As a result, the 'inexplicable' population estimates for 2019 and 2020 are excluded from the population forecasts. Though some annual increases were slightly higher than other years, the 2005-2018 trend is clear.

Table A-2: Annual Census Estimated Population

	July 1 Population Estimates
2000	132,895
2001	132,388
2002	132,332
2003	131,391
2004	131,812
2005	131,126
2006	132,259
2007	133,452
2008	133,651
2009	135,734
2010	137,424
2011	140,443
2012	142,377
2013	142,683
2014	143,991
2015	145,312
2016	146,053
2017	146,048
2018	146,132
2019	144,839
2020	143,632



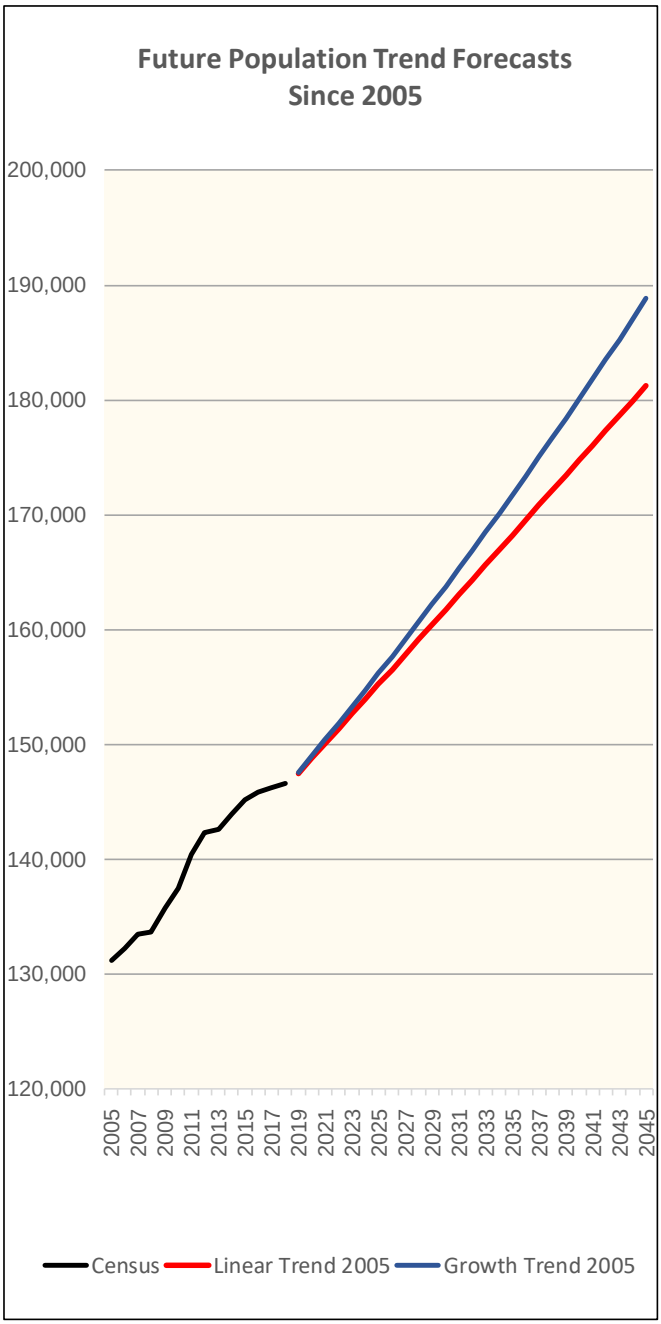
Population Forecasts

Two forecast methods were used to project the city's past population growth forward to 2045, one using a 'linear trend' (straight line) forecast algorithm and the other a 'growth trend' (curved line) forecast algorithm. Table A-3 shows the results based on the Census estimates for the city's historic growth period 2005-2018. The graph accompanying the table shows the 2005-2018 Census estimates and the results of the two projections.

The forecast algorithms 'fit' the data points to a smooth straight or curved line, including the 2005-2018 Census data points. 'Fitting' the projections to a specific curve also changes the data points for each year between 2005 and 2018. The projections, therefore, must be 'rectified' to the actual Census data for those years to produce the final projections.

Table A-3: Population Forecasts Reflecting Past Growth Period

	Linear Trend		Growth Trend	
	Raw Data Results	Rectified to Census	Raw Data Results	Rectified to Census
2005	131,181	131,126	131,301	131,126
2006	132,501	132,259	132,553	132,259
2007	133,821	133,452	133,817	133,452
2008	135,142	133,651	135,093	133,651
2009	136,462	135,734	136,382	135,734
2010	137,783	137,424	137,682	137,424
2011	139,103	140,443	138,995	140,443
2012	140,423	142,377	140,321	142,377
2013	141,744	142,683	141,659	142,683
2014	143,064	143,991	143,010	143,991
2015	144,385	145,312	144,374	145,312
2016	145,705	146,053	145,751	146,053
2017	147,025	146,048	147,141	146,048
2018	148,346	146,132	148,544	146,132
2019	149,666	**147,433**	149,961	147,526
2020	150,987	**148,733**	151,391	148,933
2021	152,307	**150,034**	152,835	150,353
2022	153,628	**151,335**	154,292	151,787
2023	154,948	**152,636**	155,764	153,234
2024	156,268	**153,936**	157,249	154,696
2025	157,589	**155,237**	158,749	156,171
2026	158,909	**156,538**	160,263	157,660
2027	160,230	**157,838**	161,791	159,164
2028	161,550	**159,139**	163,334	160,682
2029	162,870	**160,440**	164,892	162,214
2030	164,191	**161,741**	166,465	163,761
2031	165,511	**163,041**	168,052	165,323
2032	166,832	**164,342**	169,655	166,900
2033	168,152	**165,643**	171,273	168,491
2034	169,473	**166,943**	172,906	170,098
2035	170,793	**168,244**	174,555	171,720
2036	172,113	**169,545**	176,220	173,358
2037	173,434	**170,845**	177,900	175,011
2038	174,754	**172,146**	179,597	176,680
2039	176,075	**173,447**	181,310	178,365
2040	177,395	**174,748**	183,039	180,067
2041	178,715	**176,048**	184,784	181,784
2042	180,036	**177,349**	186,547	183,517
2043	181,356	**178,650**	188,326	185,268
2044	182,677	**179,950**	190,122	187,034
2045	183,997	**181,251**	191,935	188,818



The raw numbers of each projection method are shown in the left column for each forecast method (linear and growth). The two projections, as rectified to the actual Census figures for 2005-2018, are shown in the right-hand column under each forecast method.

The graph next to Table A-3 compares the two projections, each of which assuming that the past trend will be continued into the future.

A closer examination of the line describing the 2005-2018 Census estimates suggests that the city's population growth has proceeded more along a straight line than an ever-increasing rate of

expansion. It is therefore determined that the 'linear trend' algorithm more realistically describes future population growth as a continuation of the trend established by the past Census population estimates.

Housing Unit Forecasts

Projecting new growth and development in terms of housing units is important because residential impact fees are assessed when building permits are issued for new units. Thus, the housing unit is used as the basis for assessing impact fees rather than the number of residents that may occupy the housing unit. Since the number of people residing in a particular housing unit will most likely vary — both at the time of initial occupancy and in the years ahead as resident's lifestyles and family characteristics change, families grow, children grow up, occupants age, or the unit becomes occupied by a different household as the previous occupants move out— using average occupancies based on the size of the unit as the basis will vary widely as the years go by. In addition, for instance, many services by the Fire Department are not related to the size of one's house—kitchen fires occur in all sizes of houses with the same frequency, as well as medical emergencies. Basing impact fees on the number of residents living in a dwelling would result in a constant reassessment of the impact fees due because the demand for services would vary as the number of residents in the unit varies. Instead, using an average fee per housing unit based on average household sizes results in 'averaging' the demand for services which would otherwise vary as the population in the unit changes over the coming 20 years.

The future increase in the number of housing units in the city is based on the population forecasts for the linear trend algorithm presented in the previous section. The table on the next page shows how the housing projections were calculated. The approach is to determine the number of households each year (which equates to the number of occupied housing units) and then to expand that to the total number of housing units by adding in vacant units. As noted above regarding the population forecasts, the housing unit forms the basis for many of the impact fee calculations. The type of occupancy is not relevant, whether the housing unit is one's personal home, used by the owner seasonally, or available as a vacation rental or Air B&B, the demand for such City services as public safety remain essentially the same.

Household Projections

First, future population numbers for the linear trend projection from Table A-3 are converted into the number of households expected in future years. The results are shown on Table A-4, on the next page.

The left-hand section of the table shows the Woods & Poole[4] forecasts for population and households for the entire county. These figures are used only to allow a calculation of the average number of people per household countywide, and to reveal how W&P projects those averages to change in the future. Given the tightly knit sociometric model that W&P uses, the relationship between population and households relative to average ratios between them is considered viable as guides to such ratios for Savannah.

[4] Woods & Poole Economics is a nationally recognized source of annual economic and demographic projections for the country as a whole, individual states, regions and counties. See Appendix B for a description of their model categories and projection techniques.

Table A-4 shows the average population per household, countywide, based on the total population and the total number of households projected by Woods & Poole. The 'average population per household' figures are gross totals, absorbing persons living in group quarters, etc. Setting the 2020 average population per household at 100%, the percentage of the average population per household in each subsequent year is calculated. In 2021, for instance, the average is 99.59% of the figure in 2020, while by 2045, the average is 100.27% of the 2020 figure.

Table A-4: Housing Unit Forecasts: 2021-2045

	Chatham County (Woods & Poole)					Savannah				
	Population	House-holds	Avg Pop per HH*	Percent of 2020		Population	Avg Pop per HH	House-holds	Housing Units
2020	291,127	114,037	2.552917	100.0000%	2020	148,733	2.523079	58,949	68,089
2021	293,443	115,414	2.542525	99.5929%	2021	150,034	2.512809	59,708	68,966
2022	295,802	116,657	2.535656	99.3239%	2022	151,335	2.506020	60,389	69,752
2023	298,104	117,818	2.530208	99.1105%	2023	152,636	2.500635	61,039	70,503
2024	300,399	118,916	2.526145	98.9513%	2024	153,936	2.496620	61,658	71,218
2025	302,680	119,957	2.523237	98.8374%	2025	155,237	2.493747	62,251	71,903
2026	304,940	120,949	2.521228	98.7587%	2026	156,538	2.491761	62,822	72,563
2027	307,173	121,899	2.519898	98.7066%	2027	157,838	2.490446	63,377	73,204
2028	309,375	122,805	2.519238	98.6808%	2028	159,139	2.489794	63,917	73,827
2029	311,551	123,655	2.519518	98.6917%	2029	160,440	2.490071	64,432	74,422
2030	313,702	124,456	2.520586	98.7335%	2030	161,741	2.491126	64,927	74,994
2031	315,825	125,220	2.522161	98.7953%	2031	163,041	2.492683	65,408	75,549
2032	317,914	125,938	2.524369	98.8818%	2032	164,342	2.494865	65,872	76,085
2033	319,971	126,620	2.527018	98.9855%	2033	165,643	2.497483	66,324	76,607
2034	321,988	127,271	2.529940	99.1000%	2034	166,943	2.500371	66,767	77,119
2035	323,961	127,889	2.533142	99.2254%	2035	168,244	2.503535	67,203	77,623
2036	325,884	128,485	2.536358	99.3514%	2036	169,545	2.506714	67,636	78,123
2037	327,757	129,060	2.539571	99.4772%	2037	170,845	2.509889	68,069	78,623
2038	329,593	129,610	2.542960	99.6100%	2038	172,146	2.513238	68,496	79,116
2039	331,393	130,137	2.546493	99.7484%	2039	173,447	2.516731	68,918	79,604
2040	333,168	130,657	2.549944	99.8835%	2040	174,748	2.520141	69,341	80,092
2041	334,923	131,194	2.552884	99.9987%	2041	176,048	2.523046	69,776	80,595
2042	336,663	131,760	2.555123	100.0864%	2042	177,349	2.525259	70,230	81,119
2043	338,394	132,347	2.556869	100.1548%	2043	178,650	2.526985	70,697	81,659
2044	340,122	132,948	2.558309	100.2112%	2044	179,950	2.528408	71,171	82,206
2045	341,855	133,547	2.559810	100.2700%	2045	181,251	2.529892	71,644	82,752
					2022-2045	**29,916**		**11,255**	**13,000**

* Gross - Total households ÷ total population.

Source: Woods & Poole Economics, Inc., 2021 Georgia Data Book, Chatham County.

Vacancy rate based on 2020 Census data = 13.4%

Source: 2020-2045 City Population based on 2005-2018 Linear Trend forecast.

The assumption is that the average population-per-household sizes in Savannah will 'track' proportionally the trend projected by Woods & Poole countywide. For 2020, Woods & Poole figures show the average gross population per household in Chatham County to be a little more than 2.55. Woods & Poole population and household figures for each subsequent year also produce the average annual

gross population per household out to 2045. These countywide annual average population per household figures are then shown as percentages of the 2020 average figure to show the extent to which these ratios vary over time.

Dividing the 2020 population figure for Savannah of 148,733 people (from Table A-3) and the 58,949 households reported by the Census, yields an average gross population of slightly more than 2.52 people per household. For household population figures in the city in subsequent years, the 2020 average per household is varied in concert with the percentage changes countywide. For instance, the 2021 countywide average is 99.5929% of the 2020 figure. This percentage, multiplied times the city's 2020 figure yields an average population per household of 2.512809. By dividing the projected population in the city each year (from Table A-3) by the average population per household each year, the number of households is calculated.

Housing Units

Finally, the number of housing units (i.e., the number of households plus vacant units) is calculated.

The 2020 Census reported a total of 68,089 housing units in the city, of which 58,949 were occupied and 9,140 were vacant. Thus, the vacancy rate indicated by the Census figures was 13.4% of the total number of housing units. In order to convert the number of households into the number of housing units, however, each household total must be multiplied by 1.155049 (which is derived by dividing 68,089 housing units in 2020 by 58,949 households).

Over the forecast period, a net total of 13,000 new housing units are projected to be added to the city, a 18.64% increase over 2022 producing almost 16% of the total housing stock in 2045.

It is worth noting that more than the 13,000 units will most likely be constructed. However, replacing a housing unit with a new housing unit is not impact fee eligible because there is no net increase in the demand for public services. Thus, the net total increase will produce increased demands for public services and will therefore be eligible for impact fee assessments.

Employment Forecasts

For the employment projections, we looked first to the forecasts prepared by Woods & Poole Economics for Chatham County.

Woods & Poole Economics has proven to be a valuable resource for employment data at the county level, both in terms of the wide range of types of jobs and its long-range annual projections. Importantly, while the Census Bureau counts the number of employed people, Woods & Poole counts jobs, which captures people holding two or more jobs, self-employed sole proprietors and part-time workers, and vacant jobs available. This gives a more complete picture than Census figures as to the employment vitality and economic base of a community.

Table A-5 on the next page shows the forecasts for employment countywide in Chatham County for several benchmark years as well as the projected increase (or decrease) in the projected number of jobs between 2022 and 2045. The employment figures for the county are based on forecasts published by Woods & Poole Economics in their latest (2021) *Georgia Profile* for Chatham County.

Various individual employment categories are grouped together in Table A-5 to better understand broad types of employment in the county and to facilitate identification of those types of businesses that would come under an impact fee program.

- The first grouping is referred to as 'non-building' related jobs. These types of jobs are those that do not normally require issuance of a building permit, and thus would not be assessed

an impact fee. Such jobs include any employment that is considered to be transitory in nature, such as those working on construction sites, or are strictly land-based such as farming and other agricultural workers.

- The table also shows the number of workers employed by governmental entities (county, state and federal) as estimated by Woods & Poole for each year. Governments are exempt from impact fees, whether a building is to be constructed or not.
- The last grouping on the table shows what is called 'value-added' employment. This category encompasses private sector jobs, including nonprofits and institutions. Businesses employing these 'private sector' workers are the ones that would be most likely to be assessed an impact fee.

As can be seen on the table, notable changes are forecast for the non-building types of employment between 2022 and 2045. Construction jobs comprise the vast majority of all 'non-building' types of jobs (over 96%) and will drop the least overall by 2045.

Government jobs are expected to increase by only 5% overall, with gains at the state and local level tempered by a reduction in federal civilian jobs.

The greatest employment growth by 2045 is projected in the 'value-added' grouping—an increase of an additional 25.5% over the total number of such jobs today. The jobs in this category are grouped under two sub-categories: 'industrial' types of companies (most notable including manufacturing and transportation & warehousing), and 'commercial and services' types of companies.

Overall, jobs in the 'value-added' category will gain in prominence countywide and are projected to increase from 84.6% of all jobs in the county today to 87.7% of all jobs by 2045. Those 'value added' employment categories are projected to add almost 55,000 net new jobs to the county's employment base.

Table A-5: County-wide Employment Forecast (Jobs)

	2022	2025	2030	2035	2040	2045	2022-2045 Change	
							Number	Percent
Total Employment	**222,407**	**231,362**	**246,148**	**260,537**	**274,487**	**288,034**	**65,627**	**22.8%**
Farm Employment	54	52	50	48	46	44	-10	-22.7%
Forestry, Fishing	232	230	225	221	216	211	-21	-10.0%
Mining	86	81	73	65	57	50	-36	-72.0%
Construction	9,232	9,221	9,195	9,158	9,114	9,064	-168	-1.9%
Total Non-Building	**9,604**	**9,584**	**9,543**	**9,492**	**9,433**	**9,369**	**-235**	**-2.5%**
Federal Civilian	2,640	2,605	2,548	2,493	2,439	2,384	-256	-10.7%
Federal Military	5,234	5,238	5,246	5,254	5,262	5,270	36	0.7%
State & Local Government	16,760	17,001	17,374	17,710	18,014	18,285	1,525	8.3%
Total Government	**24,634**	**24,844**	**25,168**	**25,457**	**25,715**	**25,939**	**1,305**	**5.0%**
Utilities	401	387	363	337	311	285	-116	-40.7%
Manufacturing	16,899	16,965	17,009	16,990	16,897	16,720	-179	-1.1%
Wholesale Trade	6,547	6,573	6,600	6,581	6,499	6,358	-189	-3.0%
Transportation & Warehousing	18,919	20,213	22,390	24,592	26,815	29,059	10,140	34.9%
Subtotal: Industrial	***42,766***	***44,138***	***46,362***	***48,500***	***50,522***	***52,422***	***9,656***	***18.4%***
Retail Trade	22,320	22,602	23,050	23,425	23,693	23,861	1,541	6.5%
Information	2,647	2,640	2,628	2,616	2,602	2,587	-60	-2.3%
Finance & Insurance	7,096	7,397	7,727	7,866	7,851	7,724	628	8.1%
Real Estate	10,285	11,028	12,352	13,680	15,020	16,374	6,089	37.2%
Professional & Technical Services	10,068	10,776	11,928	13,052	14,159	15,256	5,188	34.0%
Management of Companies	982	935	855	773	691	613	-369	-60.2%
Administrative & Waste Services	19,062	20,525	23,083	25,814	28,744	31,902	12,840	40.2%
Educational Services	5,770	6,258	7,063	7,865	8,673	9,496	3,726	39.2%
Health Care & Social Assistance	23,781	24,921	26,846	28,667	30,289	31,635	7,854	24.8%
Arts, Entertainment & Recreation	5,047	5,465	6,192	6,960	7,774	8,638	3,591	41.6%
Accommodation & Food Services	25,560	27,086	29,609	32,118	34,629	37,157	11,597	31.2%
Other Private Services	12,785	13,163	13,742	14,252	14,692	15,061	2,276	15.1%
Subtotal: Commercial & Services	***145,403***	***152,796***	***165,075***	***177,088***	***188,817***	***200,304***	***54,901***	***27.4%***
Total Value-Added	**188,169**	**196,934**	**211,437**	**225,588**	**239,339**	**252,726**	**64,557**	**25.5%**

Source: Woods & Poole Economics, Inc., 2021 Georgia Data Book, Chatham County.

In order to isolate jobs data for Savannah itself, we turn first to the latest commuting data available, which was published as part of the 2010 Census. Table A-6 shows where in the region the vast majority (98%) of people working in Chatham County actually lived, with the final 2% (about 3,000 commuters) coming from much farther away.

The Census also reported the total number of people working in Savannah, comprising both residents of the city and commuters living outside of the city. While the data for the city did not include places

of origin, we know the total number of people working in the city. Using a rule-of-thumb correlation between the total workers in the city (102,266) compared to the total number of people working in Chatham County (145,888), it can be deduced that Savannah workers represented a bit over 70% of all of the workers in the county.

Table A-6: Commuting Patterns

Number of Commuters Working in Chatham County	Percent of all County Workers	Residence of Chatham County Workers
108,826	74.61%	Chatham County
13,142	9.01%	Effingham County
7,171	4.92%	Bryan County
4,113	2.82%	Liberty County
3,620	2.48%	Bulloch County
3,368	2.31%	South Carolina
1,608	1.10%	Beaufort County
1,040	0.71%	Jasper County
142,888	97.96%	Total from Region
145,867	100.00%	Total from All Counties

Total Workers in Savannah	102,266	Includes City Residents and Commuters
Percent of Chatham County	70.1091%	

Sources: Commuter-Adjusted Daytime Population for Cities and Counties, and Daytime Residence County to Chatham County Flows by Workplace, Bureau of the Census, 2010.

That percentage (70.1091%) is then applied to the 'value-added' jobs data on Table A-5 to estimate the number of jobs in Savannah in each 'value-added' category. The results are shown on Table A-7, which details an overall increase of 25.5%: an additional 45,262 jobs moving from a total of almost 132,000 jobs in 2022 to well over 177,000 by 2045.

Table A-7: Savannah Value-Added Employment Forecast (Jobs)

	2022	2025	2030	2035	2040	2045	2022-2045 Change	
							Number	Percent
Utilities	281	271	254	236	218	200	-81	-40.5%
Manufacturing	11,848	11,894	11,925	11,912	11,846	11,722	-126	-1.1%
Wholesale Trade	4,590	4,608	4,627	4,614	4,556	4,458	-132	-3.0%
Transportation & Warehousing	13,264	14,171	15,697	17,241	18,800	20,373	7,109	34.9%
Subtotal: Industrial	29,983	30,944	32,503	34,003	35,420	36,753	6,770	18.4%
Retail Trade	15,648	15,846	16,160	16,423	16,611	16,729	1,081	6.5%
Information	1,856	1,851	1,842	1,834	1,824	1,814	-42	-2.3%
Finance & Insurance	4,975	5,186	5,417	5,515	5,504	5,415	440	8.1%
Real Estate	7,211	7,732	8,660	9,591	10,530	11,480	4,269	37.2%
Professional & Technical Services	7,059	7,555	8,363	9,151	9,927	10,696	3,637	34.0%
Management of Companies	688	656	599	542	484	430	-258	-60.0%
Administrative & Waste Services	13,364	14,390	16,183	18,098	20,152	22,366	9,002	40.2%
Educational Services	4,045	4,387	4,952	5,514	6,081	6,658	2,613	39.2%
Health Care & Social Assistance	16,673	17,472	18,821	20,098	21,235	22,179	5,506	24.8%
Arts, Entertainment & Recreation	3,538	3,831	4,341	4,880	5,450	6,056	2,518	41.6%
Accommodation & Food Services	17,920	18,990	20,759	22,518	24,278	26,050	8,130	31.2%
Other Private Services	8,963	9,228	9,634	9,992	10,300	10,559	1,596	15.1%
Subtotal: Commercial & Services	101,940	107,124	115,731	124,156	132,376	140,432	38,492	27.4%
Total Value-Added	131,923	138,068	148,234	158,159	167,796	177,185	45,262	25.5%

Ratio of Savannah workers to County workers. 70.1091%

Table A-8 provides a more detailed look at the city's job projections from Table A-7, for every 'value-added' employment category for every year from 2022 to 2045. (The 'Industrial' and the 'Commercial' groupings are used in calculations regarding vehicle trip projections related to road improvements.)

Of the additional 45,262 jobs generated by 2045, two-thirds of all new jobs are projected to be created in only four business categories: Administrative jobs (20% of the total), followed closely by Accommodation & Food Services (18%) and Transportation & Warehousing (16%), and finally Health Care and Social Assistance (12%).

Table A-8: Savannah Value-Added Employment by Year

	INDUSTRIAL				COMMERCIAL												TOTAL
	Utilities	Manufac-turing	Wholesale Trade	Ware-housing	Retail Trade	Infor-mation	Finance & Insurance	Real Estate	Technical Services	Manage - ment	Admin Services	Education Services	Health & Social	Rec, Enter-tainment	Lodging & Food Svcs	Other Services	
2022	281	11,848	4,590	13,264	15,648	1,856	4,975	7,211	7,059	688	13,364	4,045	16,673	3,538	17,920	8,963	**131,923**
2023	278	11,858	4,595	13,568	15,712	1,854	5,030	7,392	7,222	677	13,716	4,158	16,942	3,638	18,275	9,047	**133,962**
2024	274	11,867	4,599	13,872	15,776	1,853	5,086	7,573	7,385	666	14,069	4,272	17,210	3,739	18,630	9,131	**136,002**
2025	271	11,877	4,604	14,176	15,840	1,851	5,141	7,754	7,548	655	14,421	4,385	17,479	3,839	18,985	9,215	**138,041**
2026	268	11,887	4,609	14,481	15,904	1,849	5,196	7,936	7,711	644	14,774	4,499	17,747	3,940	19,340	9,299	**140,084**
2027	264	11,896	4,613	14,785	15,968	1,847	5,251	8,117	7,874	632	15,126	4,612	18,016	4,040	19,694	9,382	**142,117**
2028	261	11,906	4,618	15,089	16,032	1,846	5,307	8,298	8,037	621	15,478	4,725	18,284	4,140	20,049	9,466	**144,157**
2029	257	11,915	4,622	15,393	16,096	1,844	5,362	8,479	8,200	610	15,831	4,839	18,553	4,241	20,404	9,550	**146,196**
2030	254	11,925	4,627	15,697	16,160	1,842	5,417	8,660	8,363	599	16,183	4,952	18,821	4,341	20,759	9,634	**148,234**
2031	250	11,917	4,620	16,007	16,205	1,840	5,426	8,847	8,519	588	16,580	5,065	19,062	4,452	21,111	9,701	**150,190**
2032	247	11,909	4,613	16,318	16,250	1,838	5,434	9,034	8,676	576	16,977	5,178	19,304	4,563	21,463	9,767	**152,147**
2033	243	11,901	4,606	16,628	16,295	1,837	5,443	9,221	8,832	565	17,374	5,291	19,545	4,674	21,815	9,834	**154,104**
2034	240	11,893	4,599	16,938	16,340	1,835	5,452	9,408	8,989	553	17,771	5,404	19,787	4,785	22,167	9,900	**156,061**
2035	236	11,886	4,592	17,249	16,386	1,833	5,461	9,595	9,145	542	18,168	5,517	20,028	4,896	22,519	9,967	**158,020**
2036	232	11,878	4,584	17,559	16,431	1,831	5,469	9,782	9,301	530	18,564	5,629	20,269	5,006	22,870	10,034	**159,969**
2037	229	11,870	4,577	17,869	16,476	1,829	5,478	9,969	9,458	519	18,961	5,742	20,511	5,117	23,222	10,100	**161,927**
2038	225	11,862	4,570	18,179	16,521	1,828	5,487	10,156	9,614	507	19,358	5,855	20,752	5,228	23,574	10,167	**163,883**
2039	222	11,854	4,563	18,490	16,566	1,826	5,495	10,343	9,771	496	19,755	5,968	20,994	5,339	23,926	10,233	**165,841**
2040	218	11,846	4,556	18,800	16,611	1,824	5,504	10,530	9,927	484	20,152	6,081	21,235	5,450	24,278	10,300	**167,796**
2041	214	11,821	4,536	19,115	16,635	1,822	5,486	10,720	10,081	473	20,595	6,196	21,424	5,571	24,632	10,352	**169,673**
2042	211	11,796	4,517	19,429	16,658	1,820	5,468	10,910	10,235	462	21,038	6,312	21,613	5,692	24,987	10,404	**171,552**
2043	207	11,772	4,497	19,744	16,682	1,818	5,451	11,100	10,388	452	21,480	6,427	21,801	5,814	25,341	10,455	**173,429**
2044	204	11,747	4,478	20,058	16,705	1,816	5,433	11,290	10,542	441	21,923	6,543	21,990	5,935	25,696	10,507	**175,308**
2045	200	11,722	4,458	20,373	16,729	1,814	5,415	11,480	10,696	430	22,366	6,658	22,179	6,056	26,050	10,559	**177,185**
Change 2022-2045	**(81)**	**(126)**	**(132)**	**7,109**	**1,081**	**(42)**	**440**	**4,269**	**3,637**	**(258)**	**9,002**	**2,613**	**5,506**	**2,518**	**8,130**	**1,596**	**45,262**

Appendix B: Woods & Poole Methodology

Selected data from Woods & Poole for the years 2012 to 2045 have been used as critical factors in the creation of population, household and employment estimates for Savannah. The following has been excerpted from the 2021 State Profile for Georgia, prepared by Woods & Poole Economics, Inc., Washington, D.C., in explanation of the methodology W&P uses in creating their estimates and projections, definitions of employment categories, and the interconnected nature of their econometric model approach.

Introduction

The Woods & Poole Economics, Inc. database contains more than 900 economic and demographic variables for every county in the United States for every year from 1970 to 2050. This comprehensive database includes detailed population data by age, sex, and race; employment and earnings by major industry; personal income by source of income; retail sales by kind of business; and data on the number of households, their size, and their income. All of these variables are projected for each year through 2050. In total, there are over 200 million statistics in the regional database. The regional model that produces the projection component of this database was developed by Woods & Poole. The regional projection methods are revised somewhat year to year to reflect new computational techniques and new sources of regional economic and demographic information. Each year, a new projection is produced based on an updated historical database and revised assumptions.

The fact that the proprietary Woods & Poole economic and demographic projections rely on a very detailed database, makes them one of the most comprehensive county-level projections available. A description of some characteristics of the database and projection methods is contained below.

Overview of the Projection Methods

The strength of Woods & Poole's economic and demographic projections stems from the comprehensive historical county database and the integrated nature of the projection model. The projection for each county in the United States is done simultaneously so that changes in one county will affect growth or decline in other counties. For example, growth in employment and population in Houston will affect growth in other metropolitan areas, such as Cleveland. This reflects the flow of economic activity around the country as new industries emerge or relocate in growing areas and as people migrate, in part because of job opportunities. The county projections are developed within the framework of the United States projection made by Woods & Poole. The U.S. projection is the control total for the 2021 regional projections and is described in the 'Overview of the 2021 Projections' chapter included in Woods & Poole publications.

The regional projection technique used by Woods & Poole—linking the counties together to capture regional flows and constraining the results to a previously determined United States total—avoids a common pitfall in regional projections. Regional projections are sometimes made for a city or county without regard for potential growth in surrounding areas or other areas in the country. Such projections may be simple extrapolations of recent historical trends and, as a result, may be too optimistic or pessimistic. If these county projections were added together, the total might differ considerably from any conceivable national forecast scenario; this is the result of each regional projection being generated independently without interactive procedures and without being integrated into a consistent national projection.

The methods used by Woods & Poole to generate the county projections proceed in four stages. First, forecasts to 2050 of total United States personal income, earnings by industry, employment by

industry, population, inflation, and other variables are made. Second, the country is divided into 179 Economic Areas (EAs) as defined by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). The EAs are aggregates of contiguous counties that attempt to measure cohesive economic regions in the United States; in the 2021 Woods & Poole model, EA definitions released by the BEA in May 2007 are used. For each EA, a projection is made for employment, using an 'export-base' approach; in some cases, the employment projections are adjusted to reflect the results of individual EA models or exogenous information about the EA economy. The employment projection for each EA is then used to estimate earnings in each EA. The employment and earnings projections then become the principal explanatory variables used to estimate population and number of households in each EA.

The third stage is to project population by age, sex, and race for each EA on the basis of net migration rates projected from employment opportunities. For stages two and three, the U.S. projection is the control total for the EA projections. The fourth stage replicates stages two and three except that it is performed at the county level, using the EAs as the control total for the county projections.

The 'Export-Base' Approach

The specific economic projection technique used by Woods & Poole to generate the employment, earnings, and income estimates for each county in the United States generally follow a standard economic 'export-base' approach. This relatively simple approach to regional employment projections is one that has been used by a number of researchers.

Certain industrial sectors at the regional level are considered 'basic.' This means that these sectors produce output that is not consumed locally but is 'exported' out of the region for national or international consumption. This assumption allows these sectors to be linked closely to the national economy, and hence follow national trends in productivity and output growth. Normally, the 'basic' sectors are mining, agriculture, manufacturing, and the Federal government. In contrast, 'non-basic' sectors are those such as retail trade, transportation, communication, and construction, the output of which is usually consumed locally. The growth of the 'non-basic' sectors depends largely on the growth of the 'basic' sectors that form the basis of the region's economy.

Intuitively, this approach has great appeal and there are numerous examples that seem to support the 'export-base' theory. Automobile production in Detroit, for instance, is obviously much more sensitive to national and international price and demand for transportation equipment than to local demand. In Texas, oil and natural gas exploration and production are tied closely to the worldwide demand and supply of petroleum resources and not tied primarily to energy consumption in Texas.

Although the theory is appealing, some shortcomings do exist in the 'export-base' approach. For example, some 'basic' commodities produced locally are consumed locally. Producers of durable equipment used in other manufacturing processes are often affected not by the national demand for their product but by the regional demand. Machine tool makers that supply the local automobile industry in Detroit will prosper to the extent Detroit's automobile producers prosper. In Houston, the strength of the local oil industry will affect the demand and production of equipment for oil and natural gas production and exploration. In both of these instances, some durable manufacturing industries exist to serve local, not national, markets.

However, despite the shortcomings, the availability of relatively clean data for sub-national geographic areas makes the 'export-base' approach very useful. The analytical framework for projections using the 'export-base' approach entails estimating either demand equations or calculating historical growth rate differentials for output by sector. The principal explanatory variable, or the comparative data series for growth rate differentials, is the national demand for the output of that sector.

Employment-by-sector data are often used as a surrogate variable since county output-by-sector data are not available; employment-by-sector data is used by Woods & Poole. Earnings projections are then obtained by using earnings-per-employee data either estimated as part of the model or imposed exogenously on the system. The complementary relationship could also be estimated, i.e., using earnings forecast to derive employment based on earnings-per-employee data; this procedure has been used previously in some Woods & Poole regional models.

A modification of the 'export-base' approach is used by Woods & Poole to account for regional variants to normal 'basic'/'non-basic' industry definitions. Some 'non-basic' sectors can be more appropriately modeled as 'basic' sectors in certain regional economies. The finance and insurance sector or wholesale trade sector in New York City, for example, and the accommodation and food services sector in Las Vegas, are cases in which traditionally 'non-basic' sectors are really 'basic.' New York is a world-wide financial and trade center and thus 'exports' these services outside of the region; Las Vegas, as a vacation and entertainment center, similarly 'exports' the output of its accommodation and food services sector to other parts of the country. Activity in these sectors, in these specific geographic areas, is therefore linked more closely to the performance of these same sectors in the surrounding regions and the nation as a whole than to the other 'basic' industries in the region.

The Demographic Model

The demographic portion of the regional model follows a traditional cohort-component analysis based on calculated fertility and mortality in each county or EA. The 'demand' for total population is estimated from the economic model: if the demand for labor is forecast to rise for a particular county or EA, then either the labor force participation rate will rise or population in-migration will be positive. The inverse is true for counties and EAs with projected declines in employment. Therefore, future EA and county migration patterns for population by age, sex, and race are based on employment opportunities. Individuals and families are assumed to migrate, at least in part, in response o employment opportunities with two exceptions: for population aged 65 and over and for college or military-aged population, migration patterns over the forecast period are based on historical net migration and not economic conditions. The integration of economic and demographic regional analysis is a significant strength of the Woods & Poole approach.

The age, sex, and race distribution of the population is projected by aging the population by single year of age by sex and by race for each year through 2050 based on county or EA specific mortality, fertility, and migration rates estimated from historical data. In the Woods & Poole model, projected net mortality and migration are estimated based on the historical net change in population by age, race, and sex for a particular county or EA. Similarly, projected net births and migration of age zero population by race are estimated based on the historical change in age zero population by race per female population age 15 to 44 by race for a particular county or EA.

The United States population by age, sex, and race projections, 2020 to 2050, are based on Bureau of the Census population estimates for 1990 through 2019. Woods & Poole forecasts these U.S. estimates with a cohort-component model based on the year to year change in U.S. population by single year of age, race, and sex. Forecast fertility, mortality, and international migration are estimated from the Census population estimates and are applied exogenously to the Woods & Poole U.S. projections. Woods & Poole produces only a 'middle' U.S. population forecast - this forecast is similar to the Census 'middle' forecast scenario for the U.S. population. The U.S. population by age, sex, and race forecast is the control total for the EA projections. Each EA projection serves as the control totals for the county projections.

The 2021 Woods & Poole U.S. population projections, 2020 to 2050, are higher than the 2020 Woods & Poole population projections because historical fertility and net migration 2010 through 2019, based on U.S. Census post-censal estimates, are higher than previously projected resulting in higher fertility and migration assumptions over the forecast period.

Population

Population is defined as July 1 residential population and includes: civilian population; military population except personnel stationed overseas; college residents; institutional populations, such as prison inmates and residents of mental institutions, nursing homes, and hospitals; and estimates of undocumented aliens. Excluded are persons residing in Puerto Rico, U.S. territories and possessions, and U.S. citizens living abroad.

For the years 1990 to 2050 the population data are broken down by five race/ethnic groups: White not including Hispanic or Latino (i.e. Non-Hispanic), Black Non-Hispanic, Native American or American Indian Non-Hispanic, Asian American and Pacific Islanders Non-Hispanic, and Hispanic or Latino. Population by race as defined by the Census Bureau is based on self-identification by respondents. ***White population*** includes people who identify themselves as White and people who do not identify themselves by any race but identify themselves by nationality, such as Canadian, German, Italian, Arab, Lebanese, Near Eastern, or Polish. ***Black population*** includes people who identify themselves as Black and people who do not identify themselves by any race but identify themselves by nationality, such as African American, Afro-American, Black Puerto Rican, Jamaican, Nigerian, West Indian, or Haitian. ***Native American population*** includes people who identify themselves as Alaska Native or American Indian by Indian tribe or classify themselves as Canadian Indian, French American Indian, Spanish-American Indian, Eskimos, Aleuts, and Alaska Indians. ***Asian American and Pacific Islander*** American Indian and Alaska Native population includes people who identify themselves as Alaska Native or American Indian by Indian tribe or identify themselves as Canadian Indian, French American Indian, Spanish-American Indian, Eskimos, Aleuts, and Alaska Indians.

Hispanic or Latino population includes people who identify themselves as having origins in Spain, the Spanish-speaking countries of Central or South America, the Dominican Republic, and who identify themselves generally as Spanish, Spanish-American, Hispanic, Hispano, or Latino. Hispanic population is not a race group but rather a description of ethnic origin. Although Hispanics are part of the other four race groups they are shown separately in the Woods & Poole database so that the four race groups plus Hispanic equals total population.

Households

Households are defined as occupied housing units. A housing unit is a house, an apartment, a group of rooms, or a single room occupied as separate living quarters. The occupants of a housing unit may be a single family, one person living alone, two or more families living together, or any group of related or unrelated persons who share living quarters. All people are part of a household except those who reside in group quarters. Group quarters include living arrangements such as prisons, homes for the aged, rooming houses, college dormitories, and military barracks. The average size of households is defined as total population less group quarters population divided by the number of households. Mean household income is defined as total personal income less estimated income of group quarters population divided by the number of households.

Employment

The employment data in the Woods & Poole database are a complete measure of the number of full- and part-time jobs by place of work. Historical data, 1969-2017, are from the U.S. Department of

Commerce, Bureau of Economic Analysis. Because part-time workers are included, a person holding two part-time jobs would be counted twice.

Data on proprietors include farm and non-farm proprietors by sector. Proprietors include not only those people who devote the majority of their time to their proprietorship, but people who devote any time at all to a proprietorship. Thus, a person who has a full-time wage and salary job and on nights and weekends runs a small business legally defined as a proprietorship would be counted twice. The employment data therefore include full- and part-time proprietors.

Private household employment data include persons employed by a household on the premises, such as full-time baby-sitters, housekeepers, gardeners, and butlers. Miscellaneous employment data include judges and all elected officials, persons working only on commission in sectors such as real estate and insurance, students employed by the colleges or universities in which they are enrolled, and unincorporated subcontractors in sectors such as construction.

The employment data used by Woods & Poole comprise the most complete definition of the number of jobs by county. Woods & Poole data may be higher than that from other sources because they measure more kinds of employment.

Employment by Sector

The employment data is by two-digit North American Industry Classification System (NAICS) industry. The two-digit industries are defined in the 2002 North American Industry Classification System Manual. The employment data in the Woods & Poole 2021 database are no longer based on the Standard Industrial Classification (SIC) system definitions. For the years 1969-2000 BEA provided employment industry data by SIC rather than by NAICS; Woods & Poole has estimated the NAICS industry data for 1969-2000 from the BEA SIC 1969-2000 employment industry data and the NAICS employment industry data for the years 2001-2019.

As a rule, employment is classified in a given industry depending on the primary activity of the establishment. For example, employees of a large oil company are classified in many different sectors depending on the specific establishment in which they worked, even though the company as a whole would be considered a mining company: employees at a refinery are in manufacturing; employees at the company headquarters are in services; pipeline operators are in transportation; and oil field workers are in mining. If a given establishment is engaged in activities in different sectors, all employees are classified according to the primary activity of the establishment regardless of their actual occupations; thus, a secretary for a trucking company is a transportation worker and an accountant at a small plumbing company is a construction worker. The main exception to this rule is the classification of government workers in the Woods & Poole database: all government employees are classified in Federal civilian, Federal military, or state and local government employment, regardless of the usual classification of the establishment in which they work. Definitions for each sector, based on NAICS industries, in the Woods & Poole database are as follows:

Farming includes establishments such as farms, orchards, greenhouses, and nurseries primarily engaged in the production of crops, plants, vines, trees (excluding forestry operations), and specialties such as Christmas trees, sod, bulbs, and flower seed. It also includes establishments such as ranches, dairies, feedlots, egg production facilities, and poultry hatcheries primarily engaged in the keeping, grazing, or feeding of cattle, hogs, sheep, goats, poultry of all kinds, and special animals such as horses, bees, pets, fish farming, and animals raised for fur.

Forestry, fishing, related activities, and other includes establishments primarily engaged in harvesting timber, and harvesting fish and other animals from their natural habitats. The sector also

includes agricultural support establishments that perform one or more activities associated with farm operation, such as soil preparation, planting, harvesting, and management, on a contract or fee basis. Excluded are establishments primarily engaged in agricultural research and establishments primarily engaged in administering programs for regulating and conserving land, mineral, wildlife, and forest use. Other consists of jobs held by U.S. residents who are employed by international organizations and by foreign embassies and consulates in the United States.

Mining includes establishments that extract naturally occurring mineral solids (e.g. coal and ores), liquid minerals (e.g. crude petroleum), and gases (e.g. natural gas.) Mining includes quarrying, well operations, beneficiating (e.g., crushing, screening, washing, and flotation), and other preparation customarily per-formed at the mine site, or as a part of mining activity.

Utilities includes establishments engaged in the provision of electric power, natural gas, steam supply, water supply, and sewage removal. Utilities include electric power generation, electric power transmission, electric power distribution, natural gas distribution, steam supply provision, steam supply distribution, water treatment, water distribution, sewage collection, sewage treatment, and disposal of waste through sewer systems and sewage treatment facilities. Excluded from this sector are establishments primarily engaged in waste management services that collect, treat, and dispose of waste materials but do not use sewer systems or sewage treatment facilities. Also excluded from this sector are federal or state or local government operated establishments.

Construction includes establishments primarily engaged in building new structures and roads, alterations, additions, reconstruction, installations, and repairs. It includes general contractors engaged in building residential and nonresidential structures; contractors engaged in heavy construction, such as abridges, roads, tunnels, and pipelines; and special trade contracting, such as plumbing, electrical work, masonry, and carpentry. Construction includes establishments primarily engaged in the preparation of sites for new construction, including demolition, and establishments primarily engaged in subdividing land for sale as building sites. Construction work done may include new work, additions, alterations, or maintenance and repairs.

Manufacturing includes establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing, except in cases where the component parts are associated with structures. Manufacturing establishments can be plants, factories, or mills as well as bakeries, candy stores, and custom tailors. Manufacturing establishments may either process materials or may contract with other establishments to process their materials for them. Broadly defined, manufacturing industries include the following: food processing, such as canning, baking, meat processing, and beverages; tobacco products; textile mill products, such as fabric, carpets and rugs; apparel; wood products, including logging, sawmills, prefabricated homes, and mobile homes; furniture; paper; printing; chemicals, such as plastics, paints, and drugs; petroleum refining; rubber and plastics; leather products; stone, clay, and glass; primary metals, such as steel, copper, aluminum, and including finished products such as wire, beams, and pipe; fabricated metals, such as cans, sheet metal, cutlery, and ordnance; industrial machinery, including computers, office equipment, and engines; electronics and electrical equipment; transportation equipment, such as cars, trucks, ships, and airplanes; instruments; and miscellaneous industries, such as jewelry, musical instruments, and toys. Excluded from manufacturing is publishing of printed materials.

Wholesale trade includes establishments engaged in wholesaling merchandise, generally without trans-formation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries, such as publishing. Wholesale establishments are primarily engaged in selling

merchandise to retailers; or to industrial, commercial, institutional, farm, construction contractors; or to professional business users; or to other wholesalers or brokers. The merchandise sold by wholesalers includes all goods used by institutions, such as schools and hospitals, as well as virtually all goods sold at the retail level. Wholesalers can be merchant wholesalers who purchase goods from manufacturers or other wholesalers and sell them; sales branches of manufacturing, mining, or farm companies engaged in marketing the products of the company to retail establishments; or agents, merchandise or commodity brokers, and commission merchants.

Retail trade includes establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. Retail trade includes store retailers such as motor vehicle and parts dealers including automobile, motorcycle and boat dealers as well as tire and automobile parts stores; furniture and home furnishing stores; electronics and appliance stores; food and beverage stores, including supermarkets, convenience stores, butchers, and bakeries; health and personal care stores such as pharmacies and optical goods stores; gasoline stations; clothing and clothing accessory stores; sporting goods, hobby, book and music stores; department stores; and miscellaneous establishments, including office supply stores, mobile home dealers, thrift shops, florists, tobacco stores, and pet shops. Retail trade also includes nonstore retailers such as internet and catalog sellers, as well as home delivery establishments such as heating oil dealers. Retail trade excludes eating and drinking places, including restaurants, bars, and take-out stands.

Transportation and warehousing includes industries providing transportation of passengers and cargo and warehousing and storage for goods. Establishments in these industries use transportation equipment or transportation related facilities as a productive asset. Transportation includes railroads, highway passenger transportation, trucking, shipping, air transportation, pipelines, and transportation services. Transportation also includes private postal services, and courier services but excludes the U.S. Postal Service. Warehousing includes refrigerated storage and grain elevators.

Information includes establishments engaged in producing and distributing information and cultural products; providing the means to transmit or distribute these products as well as data or communications; and processing data. The main components of this sector are the publishing industries, including software publishing, and both traditional publishing and publishing exclusively on the Internet; the motion picture and sound recording industries; movie theaters; the broadcasting industries, including traditional broadcasting and those broadcasting exclusively over the Internet; the telecommunications industries; the industries known as internet service providers and web search portals; data processing industries; and the information services industries.

Finance and insurance includes establishments primarily either engaged in or facilitating financial transactions (e.g. transactions involving the creation, liquidation, or change in ownership of financial assets.) Establishments include depository institutions, such as commercial banks, credit unions savings and loans, and foreign banks; credit institutions; credit card processing; investment companies; brokers and dealers in securities and commodity contracts; security and commodity exchanges; carriers of all types of insurance; insurance agents and insurance brokers. Also included are central banks and monetary authorities charged with monetary control.

Real estate and rental and leasing includes establishments primarily engaged in renting, leasing, or otherwise allowing the use of tangible or intangible assets, and establishments providing related services. Real estate includes real estate leasing establishments, real estate agencies and brokerages, property management establishments, appraisals establishments, and escrow agencies. Rental and leasing includes car and truck rental, consumer goods rentals such as video stores and formal wear rental stores, and commercial equipment renting and leasing construction, transportation, office

and farm equipment. Also included are establishments that lease nonfinancial and noncopyrighted intangible assets such are patents and trademarks.

Professional and technical services includes establishments that specialize in performing professional, scientific, and technical activities for others. These activities include legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering, and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; veterinary services; and other professional, scientific, and technical services. Excluded are establishments primarily engaged in providing office administrative services, such as financial planning, billing and recordkeeping, personnel, and physical distribution and logistics.

Management of companies and enterprises includes bank holding establishments, other holding establishments, corporate management establishments as well as regional and subsidiary management establishments. Company or enterprise headquarters are included.

Administrative and waste management includes establishments engaged in office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services. Among many other establishments administrative includes call centers, tele-marketers, janitorial services, armored cars, temporary employment agencies, locksmiths, landscaping, and travel agencies. Waste management includes, among other establishments, solid waste collections and disposal, landfill operations and septic tank maintenance. Excluded from administrative and waste management are establishments involved in administering, overseeing, and managing other establishments of the company or enterprise. Also excluded are government establishments engaged in administering, overseeing, and managing governmental programs.

Educational services include private elementary schools, junior colleges, colleges, universities, and professional schools. Also included are trade and vocational schools, business and secretarial schools, computer training services, language schools, fine arts training, sports training establishments, driving schools, flight schools and establishments that provide test preparation and tutoring. Educational services may be provided in part in educational institutions, the workplace, or the home through correspondence, television, or other means. Public schools, including colleges and universities, are excluded from educational services.

Health care and social assistance includes establishments providing health care and social assistance for individuals. Health care establishments include ambulatory care services (e.g., physician offices, dentists, specialists, HMOs, dialysis centers, blood banks, ambulance services), hospitals, and nursing and residential care facilities. Social assistance establishments include individual and family services (e.g., adoption agencies and youth centers) and community services such as food banks and homeless shelters. Excluded from this sector are aerobic classes and nonmedical diet and weight reducing centers. Also excluded are public hospitals and clinics.

Arts, entertainment, and recreation includes establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure time interests. The sector includes establishments engaged in the performing arts, sporting events, museums, zoos, amusement and theme parks, golf courses, marinas, casinos, and gambling establishments. Excluded are movie theaters.

Accommodation and food services includes hotels, motels, casino hotels, bed and breakfasts, campgrounds and recreational vehicle parks and other lodging places as well as eating and drinking places, including restaurants, bars, and take-out stands. Also included are caterers and food service contractors.

Other services, except public administration includes churches and establishments engaged in equipment and machinery repairing, promoting or administering religious activities, grantmaking, advocacy, and establishments providing dry-cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. Private households that engage in employing workers on or about the premises in activities primarily concerned with the operation of the household are included in this sector.

Federal civilian includes all Federal government workers regardless of their establishment classification. Federal civilian employment includes executive offices and legislative bodies; courts; public order and safety; correctional institutions; taxation; administration and delivery of human resource programs, such as health, education, and public assistance services; housing and urban development programs; environmental programs; regulators, including air traffic controllers and public service commissions; the U.S. Postal Service; and other Federal government agencies.

Federal military includes Air Force, Army, Coast Guard, Marine Corps, Merchant Marine, National Guard, and Navy. Personnel deployed abroad are counted in their home base or port. Reserves who receive regular training are included. Civilians working on a military base are classified in the sector appropriate to their occupation.

State and local government is defined the same as Federal civilian except that the activities are run by state and local governments. At the local level, this includes all public schools as well as police and fire departments; at the state level, it includes all public junior colleges, colleges, and universities.

The Accuracy of the Projections

Unlike other sciences, economics and demographics cannot rely on experimentation to test theories and verify hypotheses. Rather, historical data are analyzed and theories are developed that explain the historical data. The resulting models are then used to make a projection. Woods & Poole projections, like all economic and demographic projections, utilize this approach: analyzing historical data to make estimates of future data. There are, of course, inherent limitations to projections, and the Woods & Poole projections should never be interpreted as an infallible prediction of the future; future data may differ significantly from Woods & Poole projections and Woods & Poole does not guarantee the accuracy of the projections. In all Woods & Poole publications, the word 'forecast' is used as a synonym for 'projection' and refers to Woods & Poole estimated data for any year from 2020 to 2050; in Woods & Poole publications 'projections,' or 'forecasts,' both mean estimates of future data (2020 to 2050).

One key limitation to all projections, and Woods & Poole projections in particular, is that the future is never known with any certainty. The model on which the projections are based may not accurately reflect future events. In addition, there is always the possibility of an unanticipated shock to the economy, or of some other event that was not foreseen based on an analysis of historical data. For instance, a local government may enact a new industrial policy that has an unexpected, beneficial effect on employment growth. Or an abrupt economic change, although anticipated, may occur with much greater intensity or in a shorter time period than expected. For example, the projection may assume an increase in the price of a commodity, such as oil, over a five-year period, but an embargo may raise the price to that level in only one year. In addition, the projections may not be accurate

because historical data is revised; or because the projection model does not accurately reflect demographic or economic phenomena; or because the projections contain errors; or because the smooth growth path of the long-term projections inaccurately reflects important variance in economic or demographic growth for particular regions; or because assumptions about national or regional growth, upon which the projections are based, turn out to be incorrect. There are many other types of economic and demographic events that could create outcomes far different from Woods & Poole's projections.

Another limitation results from doing forecasts for small geographic areas for small data series. Statistically, models are more reliable the larger the area and/or the series being studied. For example, a small area forecast for White men age 84 in the county would be subject to greater error because of the small sample size. This error can be reduced, although never eliminated, by constraining the small area forecasts to the forecast totals for a larger area or series; this is the method used by Woods & Poole.

Appendix C: Traffic Demand

In order to calculate new growth and development's fair share of the cost of road improvements, it is necessary to establish how much of the future traffic on Savannah's roads will be generated by new growth, over and above the traffic generated by the city's residents and businesses today. This Appendix describes the process through which this determination is made.

Summary

A Level of Service must be established for road improvements in order to assure that, ultimately, existing development and new growth are served equally. This Appendix also presents the process through which new growth and development's 'fair share' of road improvement costs is calculated, and tables summarizing the technical portions of this methodology are included.

Level of Service

For impact fee purposes, the City has set its Level of Service for road improvements at LOS "D", a level below which some roads in the city operate. Using this LOS maximizes roadway capacity before traffic conditions actually break down (LOS "F").

All road improvement projects benefit existing and future traffic proportionally to the extent that relief from over-capacity conditions eases traffic problems for everyone. For example, since new growth by 2045 will represent a certain portion of all 2045 traffic, new growth would be responsible for that portions' cost of the road improvements.

It is noted that the cost-impact of non-Savannah generated traffic on the roads traversing the city ('through' traffic) is off-set by state and federal assistance. The net cost of the road projects that accrues to Savannah reasonably represents (i.e., is 'roughly proportional' to) the impact on the roads by Savannah residents driving to and from their homes, commuters that come in to work in the city, and those coming in to Savannah to shop, do business or recreate.

The basis for the road impact fee would therefore be Savannah's cost for the improvements divided by all traffic generated within the city in 2045 (existing today plus new growth)—i.e., the cost per trip—times the traffic generated by new growth alone. For an individual land use, when a building permit is issued, the cost per trip would be applied to the number of trips that will be generated by the new development, assuring that new growth would only pay its 'fair share' of the road improvements that serve it.

Approach

This methodology proceeds along the following lines:

- Total traffic currently generated by Savannah residents and businesses in 2021 on the road system within the city is calculated from trip generation and commuting data. Various data sources are relied upon to determine current conditions, as explained in each appropriate section, below.
- Future Savannah-generated traffic from new growth in the city is calculated from housing unit and employment forecasts to 2045.
- The portion of total 2045 traffic that is generated by new housing units and employment in the city establishes the percentage of Savannah's cost of the future road improvements that can be included in an impact fee.

Summary Table

The table below shows how the portion of 2045 traffic generated by new growth is calculated. The figures represent all trips generated by land use, including pass-by and diverted trips.

Table C-1: Average Daily Trip Ends Generated by New Growth

	2022	2045	Increase	% New Growth Trip Ends
Residential Trips	589,876	699,813	109,937	
Nonresidential Trips	3,669,389	5,026,583	1,357,194	
Less: Internal Commutes*	(236,284)	(280,321)	(44,037)	
Net Trip Ends	**4,022,981**	**5,446,075**	**1,423,094**	**26.1%**

* Residents who work in Savannah. These trips to and from work are included in the residential trips.

The next table, below, calculates the Primary Trip Ends generated by existing and future traffic by deleting pass-by and diverted trips, as discussed below.

Table C-2: Primary Daily Trip Ends Generated by New Growth

	% Primary Trip Ends*	Primary Trip Ends			% New Growth Primary Trip Ends
		2022	2045	Increase	
Residential Trips	100%	589,876	699,813	109,937	
Commercial & Services	51%	1,776,348	2,447,059	670,710	
Industrial	92%	171,445	210,155	38,710	
Less: Internal Commutes	100%	(236,284)	(280,321)	(44,037)	
Net New Primary Trip Ends		**2,301,385**	**3,076,705**	**775,320**	**25.2%**

* Derived from'Trip Generation Handbook' chapter, *Trip Generation*, 11th Edition, Institute of Transportation Engineers.

Overall, new residents and businesses located within Savannah will generate 25.2% (more precisely, 25.1996875%) of all Savannah vehicles on its roads. Thus, new growth's 'fair share' of the cost to the City to provide road improvements to serve current and future traffic cannot exceed this figure.

Pass-by and Diverted Trips

The impact of new growth and development on Savannah's road network is the increased traffic added to the system, expressed by transportation engineers as 'trips'. Every 'trip' has two ends—a beginning at its origin and an end at its destination (known as 'trip ends'). There are three types of trips, defined as:

> A **Primary Trip** (and its trip ends)—a vehicle travelling from its original beginning to its intended final destination. Driving from one's home directly to one's place of work is an example of a primary trip.
>
> A **Pass-by Trip**—a vehicle travelling along its usual route from its origin to its final destination that stops off at an intermediate location for any reason. A trip from home to work that stops along the way for gas, dropping off a child at daycare, picking up coffee or dinner, or for any other reason, represents a 'pass-by' trip at the intermediate location.
>
> A **Diverted Trip** (previously called a diverted 'link' trip)—a vehicle that diverts from its normal primary route between its origin to its final destination, and takes a different route to stop off at an intermediate location for any reason. While a pass-by trip remains on its normal route, a diverted trip changes its route to other roads to arrive at the intermediate stop.

New primary trips add vehicles to the road network. Pass-by and diverted trips involve the same vehicles stopping off between their original beginnings and their final destinations, and therefore do not add new vehicles to the road network—the vehicles were already there on their way to their final destinations.

These different types of trips result in different types of 'trip ends'. On a home-to-daycare-to-work trip, for instance, there are two primary trip ends (home and work) and two pass-by or diverted trip ends: arriving at the daycare center and leaving from there to drive to work, for instance. The net impact on the road network, however, is created by the one vehicle and its two primary trip ends.

Impact fee calculations take note of these pass-by and diverted trip ends as not adding to the overall traffic on the road network and deletes them from the total trip ends reported in ITE's *Trip Generation* manual. While the table above uses overall average percentages of primary trip ends derived from ITE for broad land use categories, the actual percentage for each land use listed on the impact fee schedule for roads is applied to the total trip ends to determine the primary trip ends attributed to that particular land use.

The increase in primary trip ends shown on Table C-2 plays the most important role in calculating the per-trip road impact fee and defines new growth's share of traffic generated by residents and businesses located within the city.

Residential Trip Generation

Average trip generation rates published by the Institute of Transportation Engineers (ITE) differentiate between 'single-family detached housing' and 'apartments'. The closest correlations with the US Census definitions are 'single-family units' and 'multi-family units', which are shown on the following table.

Table C-3: Residential Units by Type: 2022 to 2045

	2019*	Percent**	Total in 2022***	Increase 2022-2045	Total in 2045
Single-Family Units	39,001	62.95%	43,911	8,184	52,095
Multi-Family Units	22,952	37.05%	25,841	4,816	30,657
Total	**61,953**	**100.00%**	**69,752**	**13,000**	**82,752**

* Based on most recent 5-Year American Community Survey 1-Year data report (Census Bureau).

** Percent of 2019 total housing units.

*** See Appendix A: Future Growth for housing unit projections.

The 2019 breakdown of housing units by type on the table above are taken from the most recent American Community Survey for Savannah (published by the Census Bureau). The 2019 percentage by housing type (single-family and multi-family) is calculated and applied to the total number of housing units projected in 2022 (taken from the Future Growth Appendix of this report). It is assumed that these percentages will persist into the future, producing a breakdown of the projected 13,000 new housing units forecast for the 2022-2045 period.

The next table, below, calculates the amount of traffic that is generated by the city's housing stock today, and the amount that will be generated in 2045.

Table C-4: Residential Trip Generation: 2021-2045 New Growth Increase

	ADT* Trip Ends	2022 Units	2022 ADT Trip Ends	2045 Units	2045 ADT Trip Ends	Increase 2021-2045	% New Growth Trip Ends
Single-Family Units	9.52	43,911	418,033	52,095	495,944	77,911	
Multi-Family Units	6.65	25,841	171,843	30,657	203,869	32,026	
Total		**69,752**	**589,876**	**82,752**	**699,813**	**109,937**	**15.7%**

* Average Daily Traffic (trip ends) on a weekday; Institute of Transportation Engineers *Trip Generation*, 11th Edition. Total includes trips to/from work.

The calculations are made on the basis of 'average daily traffic' on a normal weekday, using average trip generation rates derived from multiple traffic studies (350 for single-family and 86 for apartments) and published by ITE. The rates are expressed for 'trip ends'—that is, traffic both leaving and coming to a housing unit.

Comparing traffic in 2022 to 2045, the future increase in trip ends can be calculated, which will represent 15.7% of all residential trip ends generated in the city.

It should be noted that the traffic generated includes trips to and from work and, more particularly, residents who commute to work at a business within the city.

Nonresidential Trip Generation

Calculating traffic generated by businesses located in Savannah is more problematical than residential trips because there is no breakdown of types of businesses in the city that is readily available. In addition, while employment forecasts have been made in terms of the number of jobs, there is no data available for floor areas, much less by detailed type of use.

The alternative is to view nonresidential traffic generation on a broad 'average' basis. For this, there is data available from ITE for a number of individual uses relating to the total number of trips generated per employee. These trips, of course, include not only trips taken by the employees (to/from work, lunch, etc.) but also customers and others that are attracted to the use, serve it or are served by it in some way.

The Average Daily Traffic (ADT) numbers on the following table, therefore, are calculated by dividing all trips to a use—employees, customers, deliveries to or from, etc.—by the number of employees alone. Since there is more data available for the average number of employees per 1,000 square feet of floor area, it enables a determination of the average total trips generated by the use by the same floor area (and thus the number per '1' square foot of floor area for impact fee calculations).

The table on the following page shows the 'trips per employee' per 1,000 square feet of floor area for those uses for which impact fees are commonly collected and for which the data is available.

Overall, the average trip generation rate of all uses shown on the following table is 4.36 total trips per employee for 'industrial' uses and 23.95 for all 'commercial' uses. The 'industrial' category includes such uses as manufacturing and assembly, storage and transportation of goods; the 'commercial' category includes all sales and service uses such as stores, offices, motels, banks, amusements, and private institutions). The last column shows the average rate for all 'commercial' uses listed, as opposed to the 'industrial' uses shown in the column on its left.

Although the 'overall' averages are useful for projecting total traffic generation, impact fees for particular uses will reflect the actual average trip generation rate for the specific use.

Table C-5: ITE Trips-per-Employee Data

	ITE Code	Land Use	ADT Trip Ends per Employee	Average by Category	Average All Commercial
Industrial (100-199)	110	General Light Industrial	3.10	4.36	23.95
	140	Manufacturing	2.51		
	150	Warehousing	5.05		
	156	High-Cube Hub Warehouse	6.77		
	180	Specialty Trade Contractor	3.63		
Lodging (300-399)	310	Hotel or Conference Motel	14.34	13.58	
	320	Motel	12.81		
Recreational (400-499)	445	Movie Theater	55.12	38.03	
	480	Amusement Park	24.02		
	491	Racquet/Tennis Club	45.71		
	495	Recreational Community Center	27.25		
Institutional (500-599)	560	Church/Place of Worship	20.02	33.05	
	565	Day Care Center	21.38		
	566	Cemetery	57.75		
Medical (600-699)	610	Hospital	3.77	6.99	
	620	Nursing Home	3.31		
	630	Clinic	13.90		
Office (700-799)	710	General Office Building	3.33	4.27	
	714	Corporate Headquarters Building	2.31		
	715	Single-Tenant Office Building	3.85		
	720	Medical-Dental Office Building	8.71		
	760	Research and Development Center	3.37		
	770	Business Park	4.04		
Retail (800-899)	812	Building Materials and Lumber Store	24.77	30.35	
	814	Variety Store	95.59		
	815	Free-Standing Discount Store	24.63		
	816	Hardware/Paint Store	27.69		
	817	Nursery (Garden Center)	21.83		
	818	Nursery (Wholesale)	23.40		
	820	Shopping Center	17.42		
	826	Strip Retail Plaza	25.63		
	840	Automobile Sales (New)	11.20		
	843	Auto Parts Store	33.73		
	848	Tire Store	16.78		
	850	Supermarket	43.86		
	857	Discount Club	32.21		
	861	Sporting Goods Superstore	4.44		
	881	Pharmacy/Drugstore w/drive-through	69.17		
	890	Furniture Store	10.93		
Services (900-999)	912	Drive-in Bank	32.73	**25.19**	
	932	High-Turnover (Sit-Down) Restaurant	21.26		
	934	Fast-Food Restaurant	44.52		
	941	Quick Lubrication Vehicle Shop	16.00		
	943	Automobile Parts & Service	11.44		

Source: *Trip Generation*, 11th Edition, Institute of Transportation Engineers, where survey results given for key land uses.

The next table provides a breakdown between commercial and industrial employment in the city and calculates trip ends generated by each.

The number of employees in the city in 2022 and 2045 are summarized from the detailed employment forecasts presented in Appendix A for the two employment categories on the table.

Table C-6: Nonresidential Trip Generation: 2022-2045 New Growth Increase

	Avgerage ADT	2022 Employees	2022 Trip Ends	2045 Employees	2045 Trip Ends	2021-2045 Increase	% New Growth Trip Ends
Commercial & Services	23.95	145,403	3,483,036	200,304	4,798,154	1,315,118	
Industrial*	4.36	42,766	186,353	52,422	228,429	42,076	
Total		188,169	3,669,389	252,726	5,026,583	1,357,194	
Less: Internal Commutes at 40.06%			(236,284)		(280,321)	(44,037)	
Net Nonres Trip Ends			**3,433,105**		**4,746,262**	**1,313,157**	**27.7%**

* Industrial includes utilities, manufacturing, wholesale trade, and transportation & warehousing.

The table calculates the total number of trips using the average rates for commercial and industrial from the ITE Trips-per-Employee Data table on the previous page. From the total of all nonresidential trips is deducted the number of trips to/from work generated by city residents, since these trips have already been calculated as part of the residential trip generation rates (i.e., city residents driving to/from work at city establishments).

The results of the residential and nonresidential trip generation analyses are combined on the Summary table at the beginning of this Appendix Section for an overall calculation of new growth's share of future traffic generated by Savannah residents and businesses. From these figures, pass-by and diverted trip ends are then deleted to determine primary trip ends, which more closely relates to vehicles on the road and thus contribute to traffic congestion.

Terminology

This Traffic Demand Section uses the term 'average daily traffic' (ADT) for a weekday, which is defined by ITE as the 'average weekday vehicle trip ends', which are "the average 24-hour total of all vehicle trips counted from a study site from Monday through Friday."

Additionally, ITE defines a 'trip or trip end' as "a single or one-direction vehicle movement with either the origin or the destination (exiting or entering) inside a study site. For trip generation purposes, the total trip ends for a land use over a given period of time are the total of all trips entering plus all trips exiting a site during a designated time period".

Lastly, ITE defines 'average trip rate' as "the weighted average of the number of vehicle trips or trip ends per unit of independent variable (for example, trip ends per occupied dwelling unit or employee) using a site's driveway(s). The weighted average rate is calculated by dividing the sum of all independent variable units where paired data is available. The weighted average rate is used rather than

the average of the individual rates because of the variance within each data set or generating unit. Data sets with a large variance will over-influence the average rate if they are not weighted".

Appendix D: Cost Adjustments and Credits

Cost Adjustments

Calculations related to impact fees are made in terms of the 'present value' of past and future amounts of money, including project cost expenditures and future revenue credits.

The Georgia Development Impact Fee Act defines 'present value' as "the current value of past, present, or future payments, contributions or dedications of goods, services, materials, construction, or money." This Appendix describes the methodologies used to make appropriate adjustments to project cost figures, both past and future, to convert these costs into current dollars when such an adjustment is appropriate.

Calculations for present value (PV) differ when considering past expenditures versus future costs. In both cases, however, the concept is the same—the 'actual' expenditure made or to be made is adjusted to the current year (2021) using an inflation rate to bring past expenditures up to current values, and a deflator for future costs representing interest that would be added to funds being saved up until the expenditure is to be made. In essence, the present value is considered in light of the value of money as it changes over time.

Past Expenditures

Past expenditures are considered in impact fee calculations only for previous expenditures for projects that created capacity for new development and are being recouped. An expenditure that was made in the past is converted to PV using the inflation rate of money—in this case the Consumer Price Index (CPI). Although this approach ignores the value of technological innovation (i.e., better computers are available today for the same or lower historic prices) and evolving land prices (often accelerated beyond inflation by market pressures), the approach best captures the value of the money actually spent. For instance, it is not important that you can buy a better computer today for the same price that was paid 5 years ago; what is important is the money was spent 5 years ago and what that money would be worth today had it been saved instead of spent.

Future Project Costs

In order to determine the present value of a project expenditure that will be made in the future, the Net Present Value (NPV) of the expenditure is determined. To calculate the NPV of any project cost, two figures are needed—the future cost of the project anticipated in the year the expenditure will be made, and the Net Discount Rate. Given the current cost of a project, that cost is first inflated into the future to the target expenditure year to establish the estimated future cost. The future cost is then deflated to the present using the Net Discount Rate, which establishes the NPV for the project in current dollars. These two formulas are:

$$\text{Future Cost} = \text{Current Cost} \times (1 + \text{Inflation Rate})^{\text{Year of Expenditure} - \text{Current Year}}$$

$$\text{Net Present Value} = \text{Future Cost} \times (1 + \text{Net Discount Rate})^{\text{Current Year} - \text{Year of Expenditure}}$$

In this Appendix, two important adjustments are discussed that are required to convert current cost estimates into future cost figures, and then back into current dollars. First, an appropriate cost inflator is identified. This adjustment factor is important in determining the future cost of a project, based on current cost estimates. The cost inflator may be based on anticipated inflation in construction or building costs, or on anticipated inflation in the value of money (for capital projects that do not include a construction component). In essence, costs increase over time. By identifying the appropriate inflation rate that is related to the type of project (building construction, project

construction or non-construction), current 2021 estimates can be used to predict future costs in the year they are expected to occur.

The second cost adjustment is a deflator—the Net Discount Rate. In essence, the Net Discount Rate is the interest rate that accrues to monies being held in escrow. That is, as impact fees are collected and 'saved up' over the years for the future expenditure, they increase at the rate that the account is accruing interest. Having determined the inflated cost of a project at some future date, the cost in today's dollars can be reduced to the extent that interest will increase the funds on hand. In essence, the calculation determines how much money needs to be added to the account so that, with interest, it will grow to the amount needed for that future expenditure at that time. This is the Net Present Value of that future expenditure.

Cost Inflators

Three different cost inflators are used in the impact fee calculations, based on the type of project being considered.

For projects that require construction of a structure (such as a fire station), a 'building cost inflator' is used as the appropriate inflation rate.

For infrastructure projects, such as roads or ball fields, a 'construction cost inflator' is used.

For all non-construction types of projects (such as a fire truck or park land), an inflation rate is used that is based on the Consumer Price Index. These different types of inflators are discussed below.

Engineering News-Record's Cost Indexes

The Engineering News-Record (ENR)[5] publishes both a Building Cost Index (BCI) and a Construction Cost Index (CCI), both of which are widely used in the construction industry. The indexes are based on monthly and annual cost increases of various construction materials and applicable labor rates, and are calibrated regionally.

[5] Engineering News-Record is a magazine devoted to providing those in the construction business with up to date information concerning innovations and policy changes related to their field of work. This includes tracking monthly increases in the relative costs of construction and building projects, as well as features on the business and management aspects of construction

Building Cost Inflator

Table D-1 presents a calculation of the annual average rate of increase reflected in the construction costs of a building. For this analysis, the 2011-2021 ten-year period is used as a base time period for an estimate of average future construction cost increases due to inflation in labor and materials costs.

Table D-1: Building Cost Inflator - BCI

Year	Amount	BCI*		Effect of Inflation	
		1913=100	2010=1.0	BCI	Avg. Rate =
					2.4511014%
2011	$ 100,000.00	3,837.47	1.000000	$ 100,000.00	$ 100,000.00
2012		3,970.93	1.034779	$ 103,477.88	$ 102,451.10
2013		4,022.11	1.048115	$ 104,811.46	$ 104,962.28
2014		4,076.81	1.062369	$ 106,236.92	$ 107,535.01
2015		4,108.05	1.070509	$ 107,050.89	$ 110,170.81
2016		4,126.72	1.075375	$ 107,537.52	$ 112,871.20
2017		4,278.39	1.114899	$ 111,489.95	$ 115,637.79
2018		4,408.94	1.148918	$ 114,891.82	$ 118,472.19
2019		4,523.59	1.178795	$ 117,879.51	$ 121,376.06
2020		4,615.43	1.202727	$ 120,272.71	$ 124,351.12
2021		5,816.76	1.515780	$ 151,577.99	$ 127,399.09
				$ 1,245,226.65	$ 1,245,226.65

* Building Cost Index, Atlanta Region.
Source: *Engineering News Record* , Annual Average Indices.

Table D-1 assumes a building construction project that cost $100,000 in 2011, and how much the same project would cost in each subsequent year due to inflation using the Building Cost Index published by ENR for the Atlanta area.

Setting the 2011 Building Cost Index (BCI) at '1.0,' the increase in the BCI as a multiple of 2011 is also shown on the table. The equivalent cost of the same project in each subsequent year is calculated by multiplying the BCI multiplier times $100,000.

When the total for all such projects is summed for the 2011-2021 period, the equivalent average annual rate of increase is calculated as the percentage that would produce the same total. This percentage is used in the text of this report as the applicable inflator for building construction projects that will begin in future years.

Construction Cost Inflator

The inflator for future construction costs for other types of projects is based on ENR's Construction Cost Index.

Table D-2 presents a calculation of the annual average rate of increase reflected in the cost of construction of a capital project other than a building. (These would include such projects as road improvements, trails, baseball fields and other projects that do not involve buildings.) For this analysis, the 2011-2021 ten-year period is also used as a base time period for an estimate of average future construction cost increases due to inflation in labor and materials costs. The Construction Cost 10-year average inflation rate is calculated in the same manner as described above for the Building Cost Inflator.

Table D-2: Construction Cost Inflator - CCI

Year	Amount	CCI*		Effect of Inflation	
		1913=100	2010=1.0	CCI	Avg. Rate =
					1.6291673%
2011	$ 100,000.00	5,829.65	1.000000	$ 100,000.00	$ 100,000.00
2012		5,892.64	1.015118	$ 101,511.78	$ 101,629.17
2013		5,983.23	1.026087	$ 102,608.66	$ 103,284.88
2014		6,147.52	1.041861	$ 104,186.15	$ 104,967.56
2015		6,245.74	1.070469	$ 107,046.94	$ 106,677.66
2016		6,277.14	1.087572	$ 108,757.20	$ 108,415.61
2017		6,433.18	1.093039	$ 109,303.91	$ 110,181.89
2018		6,592.98	1.120212	$ 112,021.20	$ 111,976.93
2019		6,681.50	1.148037	$ 114,803.70	$ 113,801.23
2020		6,750.41	1.163450	$ 116,345.04	$ 115,655.24
2021		7,414.97	1.175450	$ 117,545.04	$ 117,539.45
				$ 1,194,129.62	$ 1,194,129.62

* Construction Cost Index, Atlanta Region.
Source: *Engineering News Record* , Annual Average Indices.

CPI Inflator

For projects that do not involve construction, only the future value of money needs to be considered (without regard to inflation in labor or materials costs). For this calculation, the Consumer Price Index (CPI) is used, assuming past experience will continue into the foreseeable future.

By 2021 the CPI had risen considerably over the 1982 CPI. The first column under the 'CPI' heading on Table D-3 shows the average annual CPI figures. Using 2021 as the base (2021=1.0), the second column under 'CPI' on the table shows the multipliers that would convert an amount of money spent in each year into current present value dollars.

Table D-3 shows the CPI figures for every year since 1982.

Table D-3: Non-Construction Cost Inflator - CPI

Year	Amount	CPI* 1982-84=100	CPI* 2020=1.0	Present Value: CPI	Long Term Inflator =	10-Year Inflator =
					2.49984150%	
1982	$ 10,000.00	96.50	2.88029	$ 28,802.90	$ 26,194.17	
1983	$ 10,000.00	99.60	2.79064	$ 27,906.43	$ 25,555.32	
1984	$ 10,000.00	103.90	2.67515	$ 26,751.49	$ 24,932.06	
1985	$ 10,000.00	107.60	2.58316	$ 25,831.60	$ 24,324.00	
1986	$ 10,000.00	109.60	2.53602	$ 25,360.22	$ 23,730.77	
1987	$ 10,000.00	113.60	2.44673	$ 24,467.25	$ 23,152.00	
1988	$ 10,000.00	118.30	2.34952	$ 23,495.18	$ 22,587.36	
1989	$ 10,000.00	124.00	2.24152	$ 22,415.16	$ 22,036.48	
1990	$ 10,000.00	130.70	2.12661	$ 21,266.11	$ 21,499.04	
1991	$ 10,000.00	136.20	2.04073	$ 20,407.34	$ 20,974.70	
1992	$ 10,000.00	140.30	1.98110	$ 19,810.98	$ 20,463.16	
1993	$ 10,000.00	144.50	1.92352	$ 19,235.16	$ 19,964.09	
1994	$ 10,000.00	148.20	1.87549	$ 18,754.93	$ 19,477.19	
1995	$ 10,000.00	152.40	1.82381	$ 18,238.06	$ 19,002.16	
1996	$ 10,000.00	156.90	1.77150	$ 17,714.98	$ 18,538.72	
1997	$ 10,000.00	160.50	1.73176	$ 17,317.63	$ 18,086.59	
1998	$ 10,000.00	163.00	1.70520	$ 17,052.02	$ 17,645.48	
1999	$ 10,000.00	166.60	1.66836	$ 16,683.55	$ 17,215.13	
2000	$ 10,000.00	172.20	1.61410	$ 16,141.00	$ 16,795.27	
2001	$ 10,000.00	177.10	1.56944	$ 15,694.41	$ 16,385.66	
2002	$ 10,000.00	179.90	1.54501	$ 15,450.14	$ 15,986.03	
2003	$ 10,000.00	184.00	1.51059	$ 15,105.87	$ 15,596.15	
2004	$ 10,000.00	188.90	1.47140	$ 14,714.03	$ 15,215.78	
2005	$ 10,000.00	195.30	1.42318	$ 14,231.85	$ 14,844.69	
2006	$ 10,000.00	201.60	1.37871	$ 13,787.10	$ 14,482.65	
2007	$ 10,000.00	207.34	1.34053	$ 13,405.29	$ 14,129.43	
2008	$ 10,000.00	215.30	1.29096	$ 12,909.62	$ 13,784.83	
2009	$ 10,000.00	214.54	1.29557	$ 12,955.71	$ 13,448.64	2.580330%
2010	$ 10,000.00	218.06	1.27466	$ 12,746.63	$ 13,120.64	
2011	$ 10,000.00	224.94	1.23566	$ 12,356.59	$ 12,800.65	$ 12,901.52
2012	$ 10,000.00	229.59	1.21061	$ 12,106.07	$ 12,488.46	$ 12,576.99
2013	$ 10,000.00	232.96	1.19313	$ 11,931.30	$ 12,183.88	$ 12,260.63
2014	$ 10,000.00	236.74	1.17408	$ 11,740.84	$ 11,886.73	$ 11,952.22
2015	$ 10,000.00	237.02	1.17269	$ 11,726.92	$ 11,596.83	$ 11,651.57
2016	$ 10,000.00	240.01	1.15808	$ 11,580.82	$ 11,313.99	$ 11,358.49
2017	$ 10,000.00	245.12	1.13393	$ 11,339.26	$ 11,038.06	$ 11,072.77
2018	$ 10,000.00	251.11	1.10689	$ 11,068.91	$ 10,768.86	$ 10,794.25
2019	$ 10,000.00	255.66	1.08719	$ 10,871.93	$ 10,506.22	$ 10,522.72
2020	$ 10,000.00	261.56	1.06265	$ 10,626.55	$ 10,249.98	$ 10,258.03
2021	$ 10,000.00	277.95	1.00000	$ 10,000.00	$ 10,000.00	$ 10,000.00
1982-21	$ 400,000.00			$ 674,001.84	$ 674,001.84	
2011-21	$ 110,000.00			**$ 125,349.20**	⟷	**$ 125,349.20**

*Consumer Price Index data is from the U. S. Department of Labor, Bureau of Labor Statistics.

Using an annual expenditure of $10,000 as an example, the multipliers on Table D-3 yield the figures shown for the CPI on the table under the 'present value' heading. Cumulatively, the $400,000 spent over the 1982-2021 period would have a total present value of $674,001.84 in today's dollars. Considering the present value figures for the $10,000 annual expenditures, an average annual inflation rate of almost 2.5% yields the same total amount over the 1982-2021 period.

The 39-year average of annual CPI change (the period of 1982-2021) shown on Table D-3 would be useful in estimating the present value (PV) of past expenditures, but would not be the best indicator of future change because of the long time-frame covered. Looking only at the change in CPI for the 10 years from 2011 to 2021, an average annual inflation rate of almost 2.6% best captures the change over that period. Even though this 10-year rate is somewhat skewed by the 2021 one-year rate influenced by the pandemic, this rate (compared to the 1982-2021 period) is assumed to be experienced 'on average' in future years, and is used for inflator calculations for future non-construction expenditures where the value of money is the issue.

Calculating Net Present Value

Determining the NPV of future project expenditures depends on the type of 'project' being funded, as discussed above. Specifically ….

- For a building construction project (such as a fire station), the current cost estimate for the project is inflated into the future using the average Building Cost Inflator (from Table D-1) applied to the number of years until the year planned for its construction. This future cost is then deflated back to the present using the Net Discount Rate (currently 0.00005%) since this reflects the present value of a future amount of money.
- For other construction projects (such as recreation facilities and roads), the current cost estimate for the project is inflated into the future using the average Construction Cost Inflator (from Table D-2) applied to the number of years until the year planned for its construction. Like building construction projects, this future cost is then deflated back to the present using the Net Discount Rate.
- For non-construction capital projects (such as fire truck purchases or land acquisition), the 10-year average CPI inflator is used to estimate the project expenditure in future dollars while, again, the Net Discount Rate is applied to deflate that future cost to present value.

Property Tax Credits

The Georgia Development Impact Fee Act is very clear that new growth and development cannot be charged more in impact fees than their 'fair share' of the cost of providing public faculties needed to serve that new growth. The calculation of that 'fair share' is intrinsic to the impact fee calculations carried out in the chapters addressing each public facility category.

Ineligible Impact Fee Project Amounts

In some cases, a project included in the impact fee program may not be 100% impact fee eligible. This is caused by projects that will also serve today's existing development, for which other revenue (such as property taxes) would be needed to cover the existing development's share of the project cost. Under normal circumstances, taxes generated by existing development would be used to cover existing development's 'fair share' of the project costs.

As new growth and development comes online in the future, however, it will also be generating tax revenue. To the extent that new growth will be contributing taxes for non-eligible portions of impact fee projects (for which they are not financially responsible), a credit must be applied reflecting the allocation of those tax collections in order to avoid new growth paying more than their 'fair share' of total costs.

Property Tax Base

Table D-4 shows the most recently available tax base figures for the city reported by the state. Land uses are taxed at 40% of their actual value, so the table also shows the actual values for each category.

Table D-4: Savannah Tax Digest - 2020

Category	Total Assessed Value (@40%)	Total Tax Valuation (100% value)
Residential	$ 2,721,799,885	$ 6,804,499,713
Agricultural	13,648,047	34,120,118
Conservation Use	3,572,960	8,932,400
Forest Conservation	1,514,800	3,787,000
Environmentally Sensitive	1,382,720	3,456,800
Commercial	3,039,613,697	7,599,034,243
Industrial	725,678,051	1,814,195,128
Utility	159,103,782	397,759,455
Motor Vehicles	35,074,430	87,686,075
Mobile Home	1,797,538	4,493,845
Timber 100%	434,200	1,085,500
Heavy Equipment	142,677	356,693
Brownfield	28,111,880	70,279,700
Exemptions (M&O)	(607,462,123)	(1,518,655,308)
Net M&O Digest	$ 6,124,412,544	$ 15,311,031,360

Source: Georgia Dept. of Revenue, Consolidated Savannah Tax Digest.

Tax Base Projections

In the following table, the total value added to the tax base by impact fee eligible new growth and development throughout the city is calculated out to 2045. Homestead and other exemptions are not considered, nor are employment increases in types of jobs that are not subjected to impact fees.

Table D-5: New Growth Added Value - City of Savannah

Year	Residential			Non-Residential			Total Annual Added Assessed Value
	Total Housing Units	New Housing Units*	Added Assessed Value	Total Employees	New Employees	Added Assessed Value**	
2021	68,910	821	$ 43,389,029	129,841	2,090	$ 45,012,330	$ 88,401,359
2022	69,641	731	$ 38,632,619	131,923	2,083	$ 44,861,571	$ 83,494,190
2023	70,337	696	$ 36,782,904	133,962	2,039	$ 43,913,943	$ 80,696,847
2024	70,996	659	$ 34,827,491	136,002	2,040	$ 43,935,480	$ 78,762,971
2025	71,625	629	$ 33,242,021	138,041	2,039	$ 43,913,943	$ 77,155,964
2026	72,229	604	$ 31,920,796	140,084	2,043	$ 44,000,091	$ 75,920,887
2027	72,815	586	$ 30,969,514	142,117	2,033	$ 43,784,721	$ 74,754,235
2028	73,383	568	$ 30,018,232	144,157	2,040	$ 43,935,480	$ 73,953,712
2029	73,922	539	$ 28,485,611	146,196	2,039	$ 43,913,943	$ 72,399,554
2030	74,438	516	$ 27,270,084	148,234	2,038	$ 43,892,406	$ 71,162,490
2031	74,938	500	$ 26,424,500	150,190	1,956	$ 42,126,372	$ 68,550,872
2032	75,420	482	$ 25,473,218	152,147	1,957	$ 42,147,909	$ 67,621,127
2033	75,887	467	$ 24,680,483	154,104	1,957	$ 42,147,909	$ 66,828,392
2034	76,345	458	$ 24,204,842	156,061	1,957	$ 42,147,909	$ 66,352,751
2035	76,793	448	$ 23,676,352	158,020	1,959	$ 42,190,983	$ 65,867,335
2036	77,240	447	$ 23,623,503	159,969	1,949	$ 41,975,613	$ 65,599,116
2037	77,686	446	$ 23,570,654	161,927	1,958	$ 42,169,446	$ 65,740,100
2038	78,125	439	$ 23,200,711	163,883	1,956	$ 42,126,372	$ 65,327,083
2039	78,558	433	$ 22,883,617	165,841	1,958	$ 42,169,446	$ 65,053,063
2040	78,994	436	$ 23,042,164	167,796	1,955	$ 42,104,835	$ 65,146,999
2041	79,443	449	$ 23,729,201	169,673	1,877	$ 40,424,949	$ 64,154,150
2042	79,914	471	$ 24,891,879	171,552	1,879	$ 40,468,023	$ 65,359,902
2043	80,398	484	$ 25,578,916	173,429	1,877	$ 40,424,949	$ 66,003,865
2044	80,894	496	$ 26,213,104	175,308	1,879	$ 40,468,023	$ 66,681,127
2045	81,385	491	$ 25,948,859	177,185	1,877	$ 40,424,949	$ 66,373,808

*New housing value is estimated at an assessed value per housing unit of: $52,849
**Nonresidential value is estimated at an assessed value per employee of: $21,537

New houses recently sold throughout the city[6] were going for an overall average sales price of $393,085, which would be a tax assessment value of $157,234 at 40%. Multifamily units issued building permits in 2021 totaled 1,249 units at a total construction cost of $149,623,894. Together, the 1,308 new housing units averaged $132,122 which, at 40%, represents a per-unit assessed value of $52,849.

[6] On December 30, 2021, Zillow reported that 59 new houses had been sold during 2021, all of which were new construction that had been built during 2021. Actual sales prices ranged from a high of $925,000 for a 3,376 sq. ft. 4-bedroom house to a 3-bedroom 1,400 sq. ft. house for $190,000.

Nonresidential value added on Table D-5 is calculated as the assessed value of all commercial, industrial, and utility property on the 2020 Digest divided by the current number of 'value-added' jobs in the city, resulting in a figure of $21,537 in assessed value per employee.

The value added is expressed in *assessed* value; as noted above, this is 40% of the market or appraised value. Millage rates are applied to assessed value, rather than appraised. These assessed values are applied to new growth (new housing units and new 'value-added' employment) to calculate the total increases each year in assessed value generated by new growth.

In Table D-6, the property tax base of the city as a whole is forecast to the year 2045. This is a combination of the tax digest base year from Table D-4 and the annual increase in assessed property value generated by new growth and development from Table D-5. Importantly, the figures shown on Table D-6 are 'current value' figures and do not account for future reassessments or the effects of inflation on future resales.

Table D-6: Savannah Tax Base Growth

Year	Total City Tax Base (Net 2020 M&O Digest)	Total Annual Assessed Value Added*	Net City Tax Digest (40% value)	Total Tax Base Generated by New Growth	Percent Generated by New Growth
2020	$ 6,124,412,544				
2021	$ 6,203,130,167				
2022	$ 6,278,002,175	$ 74,872,008	$ 6,278,002,175	$ 74,872,008	1.19%
2023		$ 72,487,492	$ 6,350,489,668	$ 147,359,501	2.32%
2024		$ 70,990,033	$ 6,421,479,701	$ 218,349,534	3.40%
2025		$ 69,736,878	$ 6,491,216,578	$ 288,086,411	4.44%
2026		$ 68,796,677	$ 6,560,013,255	$ 356,883,088	5.44%
2027		$ 67,842,336	$ 6,627,855,591	$ 424,725,424	6.41%
2028		$ 67,254,124	$ 6,695,109,714	$ 491,979,547	7.35%
2029		$ 66,042,022	$ 6,761,151,736	$ 558,021,569	8.25%
2030		$ 65,076,244	$ 6,826,227,981	$ 623,097,814	9.13%
2031		$ 62,653,347	$ 6,888,881,328	$ 685,751,161	9.95%
2032		$ 61,935,913	$ 6,950,817,240	$ 747,687,073	10.76%
2033		$ 61,320,104	$ 7,012,137,344	$ 809,007,177	11.54%
2034		$ 60,950,618	$ 7,073,087,962	$ 869,957,795	12.30%
2035		$ 60,583,153	$ 7,133,671,115	$ 930,540,948	13.04%
2036		$ 60,326,729	$ 7,193,997,843	$ 990,867,676	13.77%
2037		$ 60,479,508	$ 7,254,477,351	$ 1,051,347,184	14.49%
2038		$ 60,149,056	$ 7,314,626,407	$ 1,111,496,240	15.20%
2039		$ 59,945,806	$ 7,374,572,214	$ 1,171,442,047	15.88%
2040		$ 60,004,357	$ 7,434,576,571	$ 1,231,446,404	16.56%
2041		$ 58,858,173	$ 7,493,434,743	$ 1,290,304,576	17.22%
2042		$ 59,804,433	$ 7,553,239,177	$ 1,350,109,010	17.87%
2043		$ 60,295,061	$ 7,613,534,238	$ 1,410,404,071	18.52%
2044		$ 60,830,782	$ 7,674,365,020	$ 1,471,234,853	19.17%
2045		$ 60,582,438	$ 7,734,947,458	$ 1,531,817,291	19.80%

*Total nonresidential assessed value added plus non-exempt residential total.

Also shown on Table D-6 in the last two columns is the amount of the total tax base generated only by new growth and development. The percentage of the tax base contribution from new growth associated with each year are used in calculating the amount of a credit for taxes paid by new development for the portion of an impact fee project that is not eligible for impact fee funding, as discussed at the beginning of this Section. These percentages are used for credit calculations in the public safety (fire protection and law enforcement) and roads service calculations, since both residential and nonresidential development pay impact fees for those public facility categories.

Since parks & recreation impact fees are levied only on residential uses, Table D-7 has been prepared showing the net increase in taxable value for residential properties only.

Table D-7: Residential Tax Base Growth

Year	Residential Tax Base (Net Digest)*	Net Annual Added Residential Assessed Value**	Net Residential Tax Digest (40% value)	Residential Tax Base Generated by New Growth	Percent Generated by New Growth
2020	$ 2,114,337,762				
2021	$ 2,148,043,055				
2022	$ 2,178,053,492	$ 30,010,437	$ 2,178,053,492	$ 30,010,437	1.38%
2023		$ 28,573,549	$ 2,206,627,042	$ 58,583,987	2.65%
2024		$ 27,054,553	$ 2,233,681,595	$ 85,638,540	3.83%
2025		$ 25,822,935	$ 2,259,504,529	$ 111,461,474	4.93%
2026		$ 24,796,586	$ 2,284,301,115	$ 136,258,060	5.96%
2027		$ 24,057,615	$ 2,308,358,730	$ 160,315,675	6.95%
2028		$ 23,318,644	$ 2,331,677,373	$ 183,634,318	7.88%
2029		$ 22,128,079	$ 2,353,805,452	$ 205,762,397	8.74%
2030		$ 21,183,838	$ 2,374,989,291	$ 226,946,236	9.56%
2031		$ 20,526,975	$ 2,395,516,266	$ 247,473,211	10.33%
2032		$ 19,788,004	$ 2,415,304,269	$ 267,261,214	11.07%
2033		$ 19,172,195	$ 2,434,476,464	$ 286,433,409	11.77%
2034		$ 18,802,709	$ 2,453,279,173	$ 305,236,118	12.44%
2035		$ 18,392,170	$ 2,471,671,343	$ 323,628,288	13.09%
2036		$ 18,351,116	$ 2,490,022,458	$ 341,979,403	13.73%
2037		$ 18,310,062	$ 2,508,332,520	$ 360,289,465	14.36%
2038		$ 18,022,684	$ 2,526,355,204	$ 378,312,149	14.97%
2039		$ 17,776,360	$ 2,544,131,565	$ 396,088,510	15.57%
2040		$ 17,899,522	$ 2,562,031,087	$ 413,988,032	16.16%
2041		$ 18,433,224	$ 2,580,464,310	$ 432,421,255	16.76%
2042		$ 19,336,410	$ 2,599,800,721	$ 451,757,666	17.38%
2043		$ 19,870,112	$ 2,619,670,833	$ 471,627,778	18.00%
2044		$ 20,362,759	$ 2,640,033,592	$ 491,990,537	18.64%
2045		$ 20,157,489	$ 2,660,191,081	$ 512,148,026	19.25%

* Residential total, minus Homestead and related residential exemptions.
** Total added assessed value discounted for exemptions.