Capital Improvements Element

An Amendment to the

City of Canton Comprehensive Plan

FINAL – June 21, 2010

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urban planning & plan implementation

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Capital Improvements Element

An Amendment to the City of Canton Comprehensive Plan

Introduction

The purpose of a Capital Improvements Element (CIE) is to establish where and when certain new capital facilities will be provided within a jurisdiction and how they may be financed through an impact fee program. As required by the Development Impact Fee Act, and defined by the Department of Community Affairs in its *Development Impact Fee Compliance Requirements*, the CIE must include the following for each category of capital facility for which an impact fee will be charged:

- the designation of **service areas** - the geographic area in which a defined set of public facilities provide service to development within the area;
- a **projection of needs** for the planning period of the adopted Comprehensive Plan;
- 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 the first five years after plan adoption; and
- a description of **funding sources** proposed for each project during the first five years of scheduled system improvements.

System improvements expected to commence or be completed over the coming five years are also shown in the attached Short-Term Work Program (STWP) amendment. The STWP amendment affects new and previously planned capital projects for the upcoming five-year period, beginning with the current year.

Categories for Assessment of Impact Fees

To assist in paying for the high costs of expanding public facilities and services to meet the needs of projected growth and to ensure that new development pays a reasonable share of the costs of public facilities, the City of Canton has developed this CIE for the categories of parks, roads, and public safety facilities (police and fire).

Components of the Impact Fee System

The City of Canton Impact Fee System consists of several components:

- The currently adopted Comprehensive Plan, including future land use assumptions and projected future demands;
- Service area population forecasts, based on population, households, dwelling unit and employment forecasts of the Comprehensive Plan;
- Service area definition and designation;
- Appropriate level of service standards for each impact fee eligible facility category;
- A methodology report, which establishes the impact cost of new growth and development and thus the maximum impact fees that can be assessed;
- This Capital Improvements Element to implement the City's proposed improvements; and
- A Development Impact Fee Ordinance, including an impact fee schedule by land use category.

Forecasts

In order to accurately calculate the demand for expanded services for The City of Canton, new growth and development must be quantified in future projections. These projections include forecasts for population, housing or dwelling units, and employment to the year 2030. These projections provide the base-line conditions from which the 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 in the city to produce an accurate picture of the total number of persons that rely on certain services, such as law enforcement. The projections used for each public facility category are specified in each public facility chapter. These forecasts are based on the City's current *Comprehensive Plan Update*.

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

- Population data and forecasts are used to establish current and future demand for services standards where the Level of Service (LOS) is per capita based.

- Dwelling unit data and forecasts relate to certain service demands that are household based, such as libraries or parks, and are used to calculate impact costs in that the cost is assessed when a building permit is issued. The number of households—defined as *occupied* housing units—is always smaller than the supply of available housing 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 data is combined with population data to produce 'day/night population' figures. These figures represent the total number of persons receiving services, both in their homes and in their businesses, particularly from 24-hour operations such as fire protection and law enforcement.

Future Growth Projections

Table P-1 presents the forecasts for population, housing units, "value added" employment, and "day/night" population. "Value added" employment is the sub-set of total employment in the city, and represents the number of employees in non-transitory jobs. Basically "value added" employment excludes farming, mining and construction sector employment. The "day/night" population is a combination of the resident (population) projections and employment estimates, and is used to determine level of service standards for facilities that serve both the resident population and business employment. The fire department, for instance, protects one's house whether or not they are at home, and protects stores and offices whether or not they are open for business. Thus, this day/night population is a measure of the total services demanded of a 24-hour provider facility and a fair way to allocate the costs of such a facility among all of the beneficiaries.

Table P-1
Forecasts
City of Canton

	Population	Dwelling Units	"Value Added" Employment	Day/Night Population
2009	22,604	8,884	11,843	34,447
2010	23,723	9,346	12,199	35,922
2011	24,898	9,830	12,574	37,472
2012	26,131	10,336	12,965	39,096
2013	27,425	10,866	13,377	40,802
2014	28,783	11,421	13,808	42,591
2015	30,208	12,000	14,260	44,468
2016	31,704	12,606	14,735	46,439
2017	33,274	13,240	15,232	48,506
2018	34,922	13,902	15,748	50,670
2019	36,651	14,594	16,289	52,940
2020	38,466	15,316	16,857	55,323
2021	40,371	16,070	17,452	57,823
2022	42,370	16,857	18,077	60,447
2023	44,468	17,677	18,733	63,201
2024	46,670	18,532	19,422	66,092
2025	48,981	19,425	20,145	69,126
2026	51,407	20,356	20,903	72,310
2027	53,953	21,325	21,699	75,652
2028	56,625	22,335	22,534	79,159
2029	59,429	23,387	23,411	82,840
2030	62,372	24,481	24,998	87,370

Service Area Projections

In **Table P-2** the service area forecasts are presented for a single city-wide service area measured in two ways: city-wide dwelling units (which includes parks), and city-wide day/night population (fire, police, and roads). These are the figures that will be used in subsequent service category chapters to calculate impact costs and fees.

Table P-2
Service Area Forecasts
2009 - 2030

	City-wide Dwelling Units (Parks)	City-wide Day/Night Population (Fire Protection, Police, Roads)
2009	8,884	34,447
2010	9,346	35,922
2011	9,830	37,472
2012	10,336	39,096
2013	10,866	40,802
2014	11,421	42,591
2015	12,000	44,468
2016	12,606	46,439
2017	13,240	48,506
2018	13,902	50,670
2019	14,594	52,940
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2021	16,070	57,823
2022	16,857	60,447
2023	17,677	63,201
2024	18,532	66,092
2025	19,425	69,126
2026	20,356	72,310
2027	21,325	75,652
2028	22,335	79,159
2029	23,387	82,840
2030	24,481	87,370
Net Increase, 2009-2030:	**15,597**	**52,923**

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 credits for future revenue. 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 Section describes the methodologies used to make appropriate adjustments to project cost figures, both past and future, to convert such costs into current dollars, and to determine the present value of future revenue from new development that would be applied as a credit against impact fees.

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 using appropriate rates (an inflation rate for past expenditures and a deflator for future costs). In essence, the present value is considered in light of an alternate investment strategy – a determination of what the same amount of money would be worth if it were invested rather than spent.

Past Expenditures

Past expenditures are considered in impact fee calculations only for previous expenditures for projects that created excess 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 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.

Table C-1 shows the historic CPI figures going back to 1967. The approach to bring past expenditures up to current dollars (PV) is straight-forward – the year in which the expenditure is made is inflated to the

Table C-1

Consumer Price Index -- 1967-2008

	CPI* 1967=100%	Examples of Present Value in 2008		
1967	100.0	$ 100,000		
1968	104.2	104,200		
1969	109.8	109,800		
1970	116.3	116,300		
1971	121.3	121,300		
1972	125.3	125,300		
1973	133.1	133,100		
1974	147.7	147,700		
1975	161.2	161,200		
1976	170.5	170,500		
1977	181.5	181,500		
1978	195.4	195,400		
1979	217.4	217,400		
1980	246.8	246,800		
1981	272.4	272,400		
1982	289.1	289,100		
1983	298.4	298,400		
1984	311.1	311,100		
1985	322.2	322,200		
1986	328.4	328,400		
1987	340.4	340,400		
1988	354.3	354,300	$ 100,000	
1989	371.3	371,300	104,798	
1990	391.4	391,400	110,471	
1991	408.0	408,000	115,157	
1992	420.3	420,300	118,628	
1993	432.7	432,700	122,128	
1994	444.0	444,000	125,318	
1995	456.5	456,500	128,846	
1996	469.9	469,900	132,628	
1997	480.8	480,800	135,704	
1998	488.3	488,300	137,821	$ 100,000
1999	499.0	499,000	140,841	102,191
2000	515.8	515,800	145,583	105,632
2001	530.4	530,400	149,704	108,622
2002	538.8	538,800	152,075	110,342
2003	551.1	551,100	155,546	112,861
2004	565.8	565,800	159,695	115,871
2005	585.0	585,000	165,114	119,803
2006	603.9	603,900	170,449	123,674
2007	621.1	621,100	175,303	127,196
2008	645.0	$ 645,000	$ 182,049	$ 132,091

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

current year using the annual CPI figures. For instance, $100 spent in 1967 would require the expenditure of $645 in 2008 just to stay abreast of inflation; the PV of $100 in 1967, therefore, is $645. (Other examples are also shown on the table).

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 determine 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 section two important adjustments are discussed that are required to convert current costs into future cost figures, and then back into current dollars. First, a cost inflator is examined. 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, project construction or nonconstruction), current estimates can be used to predict future costs.

The second cost adjustment is a deflator – the Net Discount Rate – based on potential interest earnings. In essence, the Net Discount Rate represents the amount of money that, if invested instead of spent, would be put 'in the bank' now to grow with interest to pay for future costs when the money is needed. The discount rate is both 'net' of taxes and other administrative costs, and is the most risk-free investment available. For the calculations included in this report, an anticipated rate of 3.00% is used, based on the local government's current experience and anticipated conditions.

Cost Inflators

Three different cost inflators are used in the impact fee calculations, based on the type of project being considered. For infrastructure projects, such as roads or ball fields, a 'construction cost inflator' is used. 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 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

ENR publishes both a Construction Cost Index (CCI) and a Building Cost Index (BCI) for the Atlanta area that are widely used in the construction industry. Both indexes have a materials and labor component. The components that comprise the CCI are: 200 hours of common labor at the local average of common labor rates, plus 25 cwt of standard structural steel shapes at the fabricated local price, plus 1.128 tons of portland cement at the local price, plus 1,088 board-ft of 2 x 4 lumber at the local price. For calculation of the CCI, costs in 1913 are set at 100. The BCI uses a labor component of 68.38 hours of skilled labor at the average local wage rate, plus fringes, for carpenters, bricklayers and structural ironworkers. The materials component is the same as that used in the CCI, and the BCI is also set at 100 in 1913.

Construction Cost Inflator

Table C-2 uses the example of a calculation of the annual average rate of increase reflected in construction costs. For this analysis, the 1999-2008 period is used as a base time period for an estimate of future construction cost increases due to inflation in labor and materials costs.

Table C-2 shows a construction project that cost $100,000 in 1999, and how much the same project would cost in each subsequent year using the Construction Cost Index published by Engineering News Record for the Atlanta area. Setting the 1999 Construction Cost Index (CCI) at '1.0,' the increase in the CCI as a multiple of 1999 is also shown on the table. The equivalent cost of the same project in each subsequent year is calculated by multiplying the CCI multiplier times $100,000. When the total for all such projects is summed for the 1999-2008 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 analysis as the applicable inflator for future construction projects that will begin in years after 2008.

Table C-2

Construction Cost Inflator -- CCI

		CCI*		Effect of Inflation	
Year	Amount	1913=100	1998=1.0	CCI	Avg. Rate =
					3.879837%
1999	$ 100,000.00	3849.39	1.0000	$ 100,000.00	$ 100,000.00
2000		4105.86	1.0666	$ 106,662.61	$ 103,879.84
2001		4045.52	1.0510	$ 105,095.09	$ 107,910.21
2002		4189.12	1.0883	$ 108,825.55	$ 112,096.94
2003		4374.69	1.1365	$ 113,646.32	$ 116,446.12
2004		4611.31	1.1979	$ 119,793.27	$ 120,964.04
2005		4829.74	1.2547	$ 125,467.67	$ 125,657.25
2006		4893.35	1.2712	$ 127,120.14	$ 130,532.55
2007		5259.37	1.3663	$ 136,628.66	$ 135,597.00
2008		5801.13	1.5070	$ 150,702.58	$ 140,857.94
				$ 1,193,941.89	$ 1,193,941.89

* Construction Cost Index.
Source: *Engineering News Record* , Annual (December) Indices.

Building Cost Inflator

The inflator for future construction costs for buildings is based on ENR's Building Cost Index for each year from 1999 through 2008, and is calculated in the same manner as described above for the Construction Cost Inflator. Table C-3 shows the results.

Table C-3
Building Cost Inflator -- BCI

Year	Amount	BCI* 1913=100	BCI* 1998=1.0	Effect of Inflation BCI	Effect of Inflation Avg. Rate = 3.204070%
1999	$ 100,000.00	2,816.44	1.0000	$ 100,000.00	$ 100,000.00
2000		2,947.56	1.0466	$ 104,655.52	$ 103,204.07
2001		2,928.63	1.0398	$ 103,983.40	$ 106,510.80
2002		2,942.62	1.0448	$ 104,480.12	$ 109,923.48
2003		3,018.37	1.0717	$ 107,169.69	$ 113,445.51
2004		3,321.80	1.1794	$ 117,943.22	$ 117,080.38
2005		3,599.04	1.2779	$ 127,786.85	$ 120,831.71
2006		3,624.54	1.2869	$ 128,692.25	$ 124,703.25
2007		3,624.54	1.2869	$ 128,692.25	$ 128,698.83
2008		3,768.88	1.3382	$ 133,817.16	$ 132,822.43
				$ 1,157,220.46	$ 1,157,220.46

* Building Cost Index.
Source: *Engineering News Record* , Annual (December) 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.

Table C-4 shows the CPI figures for every year since 1967, with 1967 being 100%. In 2008 the CPI is 644.951% of the 1967 CPI. Thus, an amount of money saved in 1967 would be worth 6.45 times its 1967 face value in 2008, including interest earned and discounted for inflation. The first column under the CPI heading shows the annual CPI percentages. Using 2008 as the base (2008=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 year 2008 present value dollars.

Using an annual amount of $10,000 as an example, the multipliers yield the figures shown for the CPI on the table under the Present Value heading. Cumulatively, the $420,000 spent over the 1967-2008 period would have a total present value of just over a million dollars. Considering the present value figures for the $10,000

annual expenditures, an 'average' overall inflation rate of almost 4.08% yields the same total amount over the same period.

The 42-year average of annual CPI change (the period of 1967-2008) shown on Table C-4 includes years of great variation, and may not be the best indicator of future change. While the historic CPI multipliers reflect major swings in interest and inflation in the past, these rates have moderated considerably in recent years as inflation has become a primary target of federal monetary policy. Looking only at the change in CPI from 1999 to 2008, an average annual inflation rate of about 3.02% best captures the change over that period. This lower inflation rate (compared to the 1967-2008 period) is assumed to be experienced 'on average' in future years, and is used for inflator calculations for future nonconstruction expenditures.

Table C-4

Non-Construction Cost Inflator -- CPI

Based on Historic Consumer Price Index

		CPI		Present Value		
Year	Amount	1967=100%*	2008.=1.0	CPI	Inflator =	
					4.07591%	
1967	$ 10,000.00	100.0	6.44951	$ 64,495.10	51,446.84	
1968	10,000.00	104.2	6.18955	61,895.49	49,432.04	
1969	10,000.00	109.8	5.87387	58,738.71	47,496.14	
1970	10,000.00	116.3	5.54558	55,455.80	45,636.05	
1971	10,000.00	121.3	5.31699	53,169.91	43,848.82	
1972	10,000.00	125.3	5.14725	51,472.55	42,131.57	
1973	10,000.00	133.1	4.84561	48,456.12	40,481.58	
1974	10,000.00	147.7	4.36663	43,666.28	38,896.21	
1975	10,000.00	161.2	4.00094	40,009.37	37,372.92	
1976	10,000.00	170.5	3.78270	37,827.04	35,909.29	
1977	10,000.00	181.5	3.55345	35,534.49	34,502.98	
1978	10,000.00	195.4	3.30067	33,006.70	33,151.74	
1979	10,000.00	217.4	2.96666	29,666.56	31,853.43	
1980	10,000.00	246.8	2.61325	26,132.54	30,605.96	
1981	10,000.00	272.4	2.36766	23,676.62	29,407.34	
1982	10,000.00	289.1	2.23089	22,308.92	28,255.66	
1983	10,000.00	298.4	2.16136	21,613.64	27,149.09	
1984	10,000.00	311.1	2.07313	20,731.31	26,085.86	
1985	10,000.00	322.2	2.00171	20,017.10	25,064.26	
1986	10,000.00	328.4	1.96392	19,639.19	24,082.67	
1987	10,000.00	340.4	1.89469	18,946.86	23,139.53	
1988	10,000.00	354.3	1.82035	18,203.53	22,233.32	
1989	10,000.00	371.3	1.73701	17,370.08	21,362.60	
1990	10,000.00	391.4	1.64781	16,478.05	20,525.98	
1991	10,000.00	408.0	1.58076	15,807.62	19,722.12	
1992	10,000.00	420.3	1.53450	15,345.02	18,949.75	
1993	10,000.00	432.7	1.49053	14,905.27	18,207.62	
1994	10,000.00	444.0	1.45259	14,525.92	17,494.56	
1995	10,000.00	456.5	1.41282	14,128.17	16,809.42	
1996	10,000.00	469.9	1.37253	13,725.28	16,151.12	Inflator =
1997	10,000.00	480.8	1.34141	13,414.12	15,518.59	**3.02086%**
1998	10,000.00	488.3	1.32081	13,208.09	14,910.84	
1999	10,000.00	499.0	1.29249	12,924.87	14,326.89	13,071.53
2000	10,000.00	515.8	1.25039	12,503.90	13,765.81	12,688.24
2001	10,000.00	530.4	1.21597	12,159.71	13,226.70	12,316.19
2002	10,000.00	538.8	1.19701	11,970.14	12,708.70	11,955.04
2003	10,000.00	551.1	1.17030	11,702.98	12,211.00	11,604.49
2004	10,000.00	565.8	1.13989	11,398.92	11,732.78	11,264.21
2005	10,000.00	585.0	1.10248	11,024.80	11,273.29	10,933.91
2006	10,000.00	603.9	1.06798	10,679.76	10,831.79	10,613.30
2007	10,000.00	621.1	1.03839	10,383.91	10,407.59	10,302.09
2008	10,000.00	645.0	1.00000	10,000.00	10,000.00	10,000.00
1967-08	$ 420,000.00			$1,068,320.44	$1,068,320.43	
1999-08	$ 100,000.00			$114,748.99		$114,748.99

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

NPV Net Discount Rate

The Consumer Price Index is also used in determining the current value of money that will be spent in the future, based on inflation (the Net Present Value). In essence, the approach compares the expenditure to placing the funds in a savings account. That is, if one planned to spend $10,000 in 2010, how much would need to be placed in a savings account now to have $10,000 at that time? Since impact fees deal in public dollars, no deduction for taxes is required in the calculations.

Fire Protection Facilities

Fire protection is provided by the City to the entire city by the Canton Fire Department. The capital value of this service is based upon fire stations, administrative office space, land, and apparatus. In 2009, fire protection services were provided by two facilities with a square footage of 15,064, utilizing a total of 7 heavy vehicles. **Table F-1** presents the summary 2009 inventory of facilities and heavy vehicles in the city.

Table F-1
Inventory of Fire Protection Facilities

Description	Existing Square Feet	Heavy Vehicles
Facilities		
Headquarters	10,000	
Station #2	5,064	
Heavy Vehicles		
Pumper		4
Ladder		1
Platform		1
Mobile Cascade		1
	15,064	7

Service Area

The Department, providing fire protection, operates from two fire stations. However, as new growth demands an increase in services, additional fire stations will be required. The Department will continue to operate a coordinated system, with each station backing up the other station in the system. The backing up of another station is not a rare event; it is the essence of good fire protection planning. All stations do not serve the same types of land uses, nor do they all have the same apparatus. It is the strategic placement of personnel and equipment that is the backbone of good fire protection. Any new station would relieve some of the demand on the other station. Since each station would continue to operate as “backup” to the other station, everyone in the city would benefit by the construction of the new station since it would reduce the “backup” times the station nearest to them would be less available. For these reasons the entire city is considered a single service area for the provision of the fire protection because all residents and employees within this area have equal access to the benefits of the City program.

Level of Service

The level of service for fire protection in the City of Canton is measured in terms of number of heavy vehicles (engines, tankers, etc.), and the number of square feet of fire station space, per 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. **Table F-2** presents the calculation of the year 2009 level of service.

Table F-2
Current Level of Service Calculation

Existing Square Feet	2009 day/night population	SF/day/night population
15,064	34,447	0.4373

Existing Heavy Vehicles	2009 day/night population	Heavy Vehicles/functional pop
7	34,447	0.000203

Forecasts for Service Area

For the purposes of impact fee calculations the City has determined that a level of service, based on the addition of three stations, a training tower, and 6 heavy vehicles, would be adequate to serve the future service area population then projected for the year 2030 (day/night population). **Table F-3** presents a calculation of the desired level of service, based on these additions. For both LOS categories—square footage and vehicles—the proposed additions are added to the current inventory figures to produce a total.[1] This total is then divided by the day/night population in the horizon year (2030) to produce the desired LOS figure. That figure is then applied to today's day/night population in order to forecast current demand and identify any existing deficiency or available excess capacity.

Based on these calculations, there is an existing deficiency in facility space of 6,981 square feet, and an excess capacity of 2 heavy vehicles.

[1] Note that the square footages shown here are the fire department's portion of these stations; police precinct space is not included here.

Table F-3
Future Level of Service

Capital Project*	Estimated New Square Feet	New Heavy Vehicles
Station #4	5,152	2
Station #5	19,404	2
Station #3	7,294	2
Training Tower	9,000	
Totals	40,850	6

Existing SF of Station Space	15,064
SF Added	40,850
Total SF in 2030	55,914
Total SF in 2030	55,914
Service Population in 2030	87,370
SF/day/night population	**0.639968**
SF/day/night population	0.639968
Service Population in 2009	34,447
Current Demand in SF	22,045
Current Demand in SF	22,045
Existing SF of Station Space	15,064
Existing Deficiency (SF)	(6,981)

Existing Heavy Vehicles	7
Vehicles Added	6
Total Heavy Vehicles in 2030	13
Total Heavy Vehicles in 2030	13
Service Population in 2030	87,370
HV/day/night population	**0.000149**
HV/day/night population	0.000149
Service Population in 2009	34,447
Current Demand in Heavy Vehicles	5
Current Demand in Heavy Vehicles	5
Existing Heavy Vehicles	7
Excess Capacity (Vehicles)	2

*Capital projects based on information provided by the Fire Department.

These adopted LOS standards are next multiplied by the forecasted day/night population increase to produce the expected future demand in **Table F-4**. The 'day/night population increase' figure is taken from Table P-2. Because of the existing deficiency in facility space, a total of 40,850 square feet must be added (33,869 for new growth and 6,981 to meet the existing deficiency). Due to the current excess capacity in heavy vehicles, only 6 new vehicles will need to be added, since future growth demands 8 vehicles and 2 are available today as excess capacity. The City also plans to add a new communications tower, required by recent changes in public safety communications standards. The tower will serve both the existing and new development in the city, and a calculation just like that shown in Table F-3 is used to identify the new growth demand (0.6 of a tower) as well as the existing deficiency (0.4 of a tower).

Table F-4

Future Demand Calculation

New Growth

SF/day/night population	Day/night Pop Increase (2009-30)	SF Demanded by New Growth
0.6400	52,923	33,869
	Existing Deficiency	6,981
	Net New Demand	40,850

Heavy Vehicles/func-tional pop	Day/night Pop Increase (2009-30)	New Heavy Vehicles Demanded
0.000149	52,923	8
	Excess Capacity	(2)
	Net New Demand	6

Comm Tower/func-tional pop	Day/night Pop Increase (2009-30)	New Towers Demanded
0.000011	52,923	0.6
	Existing Deficiency	0.4
	Net New Demand	1.0

Tables F-5 and F-6 together provide an annual breakdown of the demand for stations and equipment following the adopted level of service standards. The facility projects shown in Table F-5 are based on the City's desire to increase the inventory of fire stations in a balanced way; the final projects could be reconfigured, with 33,869 square feet ultimately impact fee eligible.

Table F-5

Future Fire Protection Facility Projects

Year	Day/night Pop Increase	SF Demanded (annual)	Running Total: SF Demanded*	Project	Net New Square Footage*
2009	*0*	*0*	6,981		(6,981)
2010	1,475	944	7,925	Station #4	5,152
2011	1,550	992	8,917		
2012	1,624	1,039	9,956	Station #5	19,404
2013	1,706	1,092	11,048		
2014	1,789	1,145	12,193		
2015	1,877	1,201	13,394	Station #3	7,294
2016	1,971	1,261	14,655		
2017	2,067	1,323	15,978		
2018	2,164	1,385	17,363	Training Tower	9,000
2019	2,270	1,453	18,816		
2020	2,383	1,525	20,341		
2021	2,500	1,600	21,941		
2022	2,624	1,679	23,620		
2023	2,754	1,762	25,383		
2024	2,891	1,850	27,233		
2025	3,034	1,942	29,174		
2026	3,184	2,038	31,212		
2027	3,342	2,139	33,351		
2028	3,507	2,244	35,595		
2029	3,681	2,356	37,951		
2030	4,530	2,899	40,850		
				Net New Growth Total:	**33,869**

*Figures reflect existing deficiency.

Table F-6

Future Heavy Vehicles Demanded

Year	Day/night Pop Increase	New Vehicles Demanded (annual)*	Actual Net New Vehicles
2009	*0*	*(1.87)*	0
2010	1,475	0.22	2
2011	1,550	0.23	0
2012	1,624	0.24	2
2013	1,706	0.25	0
2014	1,789	0.27	0
2015	1,877	0.28	2
2016	1,971	0.29	0
2017	2,067	0.31	0
2018	2,164	0.32	0
2019	2,270	0.34	0
2020	2,383	0.35	0
2021	2,500	0.37	0
2022	2,624	0.39	0
2023	2,754	0.41	0
2024	2,891	0.43	0
2025	3,034	0.45	0
2026	3,184	0.47	0
2027	3,342	0.50	0
2028	3,507	0.52	0
2029	3,681	0.55	0
2030	4,530	0.67	0
		6.00	6

*Figures reflect current excess capacity.

Future Costs

The future facility and heavy vehicle plans of the Department are shown on the schedules in **Tables F-7** and **F-8**. The costs are shown in current dollars, and then adjusted to reflect the net present value. For facility construction (Table F-7), the cost of construction is adjusted to reflect the construction cost inflation factor, before conversion to net present value.[2] Note that a portion of the second project is not impact fee eligible. Because there is an existing deficiency in facility space, some square feet in the future will not be attributable to new growth. The second fire station project was selected here for the convenience of getting the existing deficiency met quickly; the first project is too far along in its funding process to make this change. The bottom line is that the existing deficiency in facility space could be met by any of the station projects, and does not have to be addressed by the specific project identified here. With the communications tower, however, there is no alternative method for addressing the existing deficiency; roughly 40% of the cost to construct the tower is not impact fee eligible.

Table F-7
Facility Costs to Meet Future Demand

Year	Project	Square Footage	Cost*	Adjusted Construction Cost**	Const. Cost - Net Present Value**	% for New Growth	New Growth Cost (NPV)
2010	Station #4	5,152	$1,250,000	$1,331,385	$1,254,958	100.00%	$1,254,958
2011	Comm Tower	n/a	$10,000	$10,992	$10,060	60.57%	$6,093
2012	Station #5	19,404	$1,250,000	$1,418,069	$1,259,936	64.02%	$806,649
2015	Station #3	7,294	$1,550,000	$1,932,900	$1,571,625	100.00%	$1,571,625
2018	Training Tower	9,000	$300,000	$411,234	$305,997	100.00%	$305,997
		40,850	$4,360,000	$5,104,581	$4,402,575		**$3,945,322**

*Estimated costs based on city estimates.

**Adjusted cost is based on building construction cost estimate adjustment (Table C-3); net present value is based on anticipated interest earnings.

[2] For more information on the cost inflator factor and net present value, see the 'Cost Adjustments and Credits' section of this report.

Table F-8

Heavy Vehicle Costs to Meet Future Demand

Year	New Vehicles	Gross Cost*	Adjusted Cost (Inflation)**	Net Present Value (Adjusted Cost)**	% for New Growth	New Growth Cost (NPV)
2010	Pumper	$275,000	$291,866	$275,111	100.00%	$275,111
2010	Mini-Pumper	$150,000	$159,199	$150,061	100.00%	$150,061
2012	Pumper	$275,000	$309,766	$275,223	100.00%	$275,223
2012	Platform Truck	$900,000	$1,013,779	$900,729	100.00%	$900,729
2015	Pumper	$275,000	$338,695	$275,390	100.00%	$275,390
2015	Platform Truck	$900,000	$1,108,457	$901,277	100.00%	$901,277
		$2,775,000	$3,221,762	$2,777,791		**$2,777,791**

*Estimated costs based on city estimates.

**Adjusted cost is based on on CPI adjustment (Table C-4); net present value is based on anticipated interest earnings.

Police Department Facilities

The City Police Department provides primary law enforcement to the city. Impact fee calculations for the Police Department functions will be based on a service area that includes the entire city.

Service Area

The entire city is considered a single service area for the provision of Police Department services because all residents and employees in the city have equal access to the benefits of the program.

Level of Service

The year 2009 level of service is determined by an inventory of the square footage used by the Police Department. Statistics are shown in **Table PD-1**.

Table PD-1
Inventory of Police Facilities

Facility	Square Feet
Police Department	9,964

The level of service for police services in the City of Canton is measured in terms of square footage per day/night population in the service area. Day/night population is used as a measure in that the Police Department is a set of law enforcement services provided to both residences and businesses in the service area. The year 2009 LOS is shown in **Table PD-2**.

Table PD-2
Current Level of Service Calculation

Current Square Feet	2009 day/night population	SF/day/night population
9,964	34,447	0.2893

Forecasts for Service Area

The City has determined that it would adopt a LOS based on the addition of precinct space in each of the three new fire stations to be built. This would add a total of 1,204 square feet to the police department's inventory of

facility space. In **Table PD-3** a calculation of the desired level of service is carried out. The new square footage is added to the current inventory to produce a total. This total is divided by the horizon year (2030) day/night population to produce a level of service figure. That figure is then applied to the current (2009) day/night population in order to determine whether there is any excess capacity or existing deficiency. Based on the desired LOS, there is currently excess capacity of 5,561 square feet.

Table PD-3
Adopted Level of Service Calculation

Existing Square Feet	9,964
Square Feet to Be Added	1,204
Total Square Feet (2030)	11,168
Total Square Feet (2030)	11,168
day/night population in 2030	87,370
Square Feet/day/night population	**0.127824**
Current Demand in Square Feet	4,403
Existing Square Feet	9,964
Excess Capacity (Square Feet)	5,561

In **Table PD-4** the adopted level of service, based on the LOS calculated in Table PD-3, is applied to future growth. The additional number of forecasted day/night population to the year 2030 is multiplied by the adopted level of service to produce the future demand figure. Since there is excess capacity, new growth's demand of 6,765 square feet can be met with 5,561 square feet in existing facility space and 1,204 new square feet (the amount to be added in precinct space).

Table PD-4
Future Demand Calculation

SF/day/night population	Day/night Pop Increase (2009-30)	New Square Feet Demanded
0.1278	52,923	6,765
	Excess Capacity	(5,561)
	Net New Demand	1,204

A series of future police facility projects are contemplated to meet future demand. **Table PD-5** presents the annual forecasted square footage demand, accompanied by the proposed facility expansion projects. The projects could be reconfigured; 1,204 square feet are ultimately impact fee eligible.

Table PD-5
Future Facility Projects

Year	Day/night Pop Increase	SF Demanded (annual)	Running Total: SF Demanded*	Project	Net New Square Footage*
2009	*0*	*0*	*(5,561)*		5,561
2010	1,475	189	(5,372)	Station #3	494
2011	1,550	198	(5,174)		
2012	1,624	208	(4,967)	Station #4	216
2013	1,706	218	(4,749)		
2014	1,789	229	(4,520)		
2015	1,877	240	(4,280)	Station #5	494
2016	1,971	252	(4,028)		
2017	2,067	264	(3,764)		
2018	2,164	277	(3,487)		
2019	2,270	290	(3,197)		
2020	2,383	305	(2,892)		
2021	2,500	320	(2,573)		
2022	2,624	335	(2,237)		
2023	2,754	352	(1,885)		
2024	2,891	370	(1,516)		
2025	3,034	388	(1,128)		
2026	3,184	407	(721)		
2027	3,342	427	(294)		
2028	3,507	448	154		
2029	3,681	471	625		
2030	4,530	579	1,204		
				New Growth Total:	6,765

*Figures reflect current excess capacity.

Future Costs

Future costs to meet the square footage demanded by new growth to 2030 are shown in **Table PD-6**. Estimated project costs are based on City estimates. The costs are shown in current dollars, and then adjusted to reflect the net present value. For facility construction, the cost of construction is adjusted to reflect the construction cost inflation factor, before conversion to net present value.[3]

Table PD-6
Project Costs to Meet Future Demand

Year	Project	Square Footage	Cost*	Adjusted Construction Cost**	Const. Cost - Net Present Value**	% for New Growth	New Growth Cost (NPV)
2010	Station #3	494	$250,000	$266,277	$250,992	100.00%	$250,992
2012	Station #4	216	$500,000	$567,228	$503,974	100.00%	$503,974
2015	Station #5	494	$500,000	$623,516	$506,976	100.00%	$506,976
		1,204	$1,250,000	$1,457,021	$1,261,942		**$1,261,942**

*Estimated costs based on city estimates.

**Adjusted cost is based on building construction cost estimate adjustment (Table C-3); net present value is based on anticipated interest earnings.

[3] For more information on the construction cost inflator and net present value, see the 'Cost Adjustments and Credits' section of this report.

Parks and Recreation Facilities

Public recreational opportunities are available in the City of Canton through a number of parks facilities operated by the City. Demand for recreational facilities is almost exclusively related to the city's resident population. Businesses make some incidental use of public parks for office events, company softball leagues, etc., but the use is minimal compared to that of the families and individuals who live in the city. Thus, the parks and recreation impact fee is limited to future residential growth.

Service Area

The city park system operates as part of a city-wide system of parks. Parks and recreational facilities are made available to the city's population without regard to where in the city the resident lives. In addition, the 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 the little leagues play games at various locations throughout the city, based on scheduling rather than geography. Other programs are located only at certain centralized facilities, to which any Canton resident can come. As a general rule, parks facilities are located throughout the city, and future facilities will continue to be located around the city so that all residents will have recreational opportunities available on an equal basis. Thus, the entire city is considered a single service area for parks & recreation.

Table PR-1
Inventory of Park Land

Facility	Park Acreage
Boling Park	28.0
Brown Park	2.0
Burge Park	2.0
Cannon Park	1.0
Etowah Greenway	58.0
Harmon Field	15.0
Heritage Park	35.0
McCanless Park	1.0
	142.0

Level of Service

Table PR-1 provides an inventory of the acreage of parks under the control of the City in 2009. This total acreage of developed parks is equivalent to 15.98 acres per 1,000 dwelling units. The calculation of year 2009 parks acreage and developed components levels of service is shown in **Table PR-2**.

Table PR-2
Current Level of Service Calculation

Total Park Acreage	2009 Dwelling Units	AC/1,000 Dwelling Units
142.0	8,884	15.98

Component Type	Current Inventory (2009)	LOS per 1,000 Dwelling Units
Ball Fields	5	0.563
Track/Trail*	3	0.338
Picnic Tables	19	2.139
Restroom	2	0.225
Pavilions	7	0.788
Tennis Courts	4	0.450
Basketball Courts	2	0.225
Soccer Fields	1	0.113
Playgrounds	2	0.225
Gazebo	2	0.225
Swings/Slide	8	0.900

*Inlcudes jogging or running track, walking trail and Vita Course.

In addition to the parks acreage level of service, a level of service can also be calculated for park facilities such as ball fields, football fields, etc. The current inventory of facilities is used to calculate the current LOS in these categories in Table PR-2. Note that other types of components may exist now or in the future in the city; this listing is not exhaustive, but includes all component types being included in the impact fee program.

Forecasts for Service Area

The City has adopted a level of service standard for parks acreage and developed components based on the year 2009 LOS (Table PR-2), with the addition of a golf course that does not currently appear in the inventory. Since this golf course will be a new item in the inventory it can be assumed that some portion of it will serve existing residents, and some portion will serve new growth. The determination of those portions is carried out in **Table PR-3**. The total number of golf courses in 2030 (one) is divided by the number of dwelling units in that year, producing a desired level of service figure. That figure is then applied to the current (2009) number of dwelling units in order to identify any existing deficiency or current excess capacity. Based on these calculations there is an existing deficiency of four-tenths of a golf course. This means that 40% of the golf course is attributable to current demand, and 60% to the future demand of new growth.

Table PR-3
Future Level of Service Determination

Existing Golf Courses	0
Golf Courses Added (2009-2030)	1
Total Golf Courses in 2030	1
Total Golf Courses in 2030	1
Dwelling Units in 2030	24,481
Courses/1,000 Dwelling Units	**0.040848**
Courses/1,000 Dwelling Units	0.040848
Dwelling Units in 2009	8,884
Current Demand for Golf Courses	0.4
Current Demand for Golf Courses	0.4
Existing Golf Courses	0.0
Existing Deficiency (Golf Courses)	(0.4)

Table PR-4 shows the future demand in parks acreage and components based on the adopted LOS standard for parks acreage, facility space and developed components, including the calculation for golf courses carried out in Table PR-3. The increase in dwelling units between 2009 and 2030 is multiplied by the level of service standards to produce the future demand. The 'new dwelling units' figure is taken from Table P-2.

Table PR-4

Future Demand Calculation

New Growth

AC/1,000 Dwelling Units	Number of New Dwelling Units (2007-24)	Acres Demanded
15.98	15,597	249

Adopted LOS per 1,000 Dwelling Units	New Components Demanded (2007-2024)	
0.563	8.8	Ball Fields
0.338	5.3	Track/Trail*
2.139	33.4	Picnic Tables
0.225	3.5	Restroom
0.788	12.3	Pavilions
0.450	7.0	Tennis Courts
0.225	3.5	Basketball Courts
0.113	1.8	Soccer Fields
0.225	3.5	Playgrounds
0.225	3.5	Gazebo
0.900	14.0	Swings/Slide
0.041	0.6	Golf Courses

*Inlcudes jogging or running track, walking trail and Vita Course.

Table PR-5 presents a schedule of future park acreage demand, and projects to meet that demand, based on the adopted LOS. While the specific land acquisition projects may be re-configured over time, 249 new acres are ultimately impact fee eligible.

Table PR-5
Future Park Land Acquisition

Year	New Dwelling Units	AC Demanded (annual)	Running Total: AC Demanded	Project	Net New Acres
2009	*0*	*0*	0		
2010	462	7.4	7		
2011	484	7.7	15		
2012	506	8.1	23		
2013	530	8.5	32		
2014	555	8.9	41		
2015	579	9.3	50		
2016	606	9.7	59		
2017	634	10.1	70		
2018	662	10.6	80	New Park A	124
2019	692	11.1	91		
2020	722	11.5	103		
2021	754	12.1	115		
2022	787	12.6	127		
2023	820	13.1	141		
2024	855	13.7	154		
2025	893	14.3	168		
2026	931	14.9	183	New Park B	125
2027	969	15.5	199		
2028	1,010	16.1	215		
2029	1,052	16.8	232		
2030	1,094	17.5	249		
				Net New Growth Total:	249

Future Costs

Table PR-6 is a listing of the future capital projects costs for the developed components required in order to maintain the adopted level of service standards. The 'units to be added' figures are drawn directly from Table PR-4, and rounded up to the next whole facility. As a result, some portions of these projects are not impact fee eligible since they provide excess capacity beyond that demanded by currently forecasted growth. This is because the City cannot construct a portion of a facility, but must provide developed components in 'whole' numbers. For example, new growth to 2030 requires 3.5 playgrounds in order to maintain the current LOS (see table PR-4). However, 4 playgrounds will have to be built, since 3 playgrounds is not enough, and there is no such thing as half a playground. So 4 playgrounds will be built, and 0.5 of one playground will be excess capacity that can be recouped through future impact fee collections from growth beyond 2030. Project years

have been selected for the most part to match the proposed projects from Table PR-5. Project cost estimates have been supplied by the City, or are based on comparable facility construction estimates; these gross costs have been converted to net present value figures.[4]

Table PR-6

Future Park Facility Costs

Year	Facility Type	Units to be Added	Cost per Unit*	Gross Cost	Adjusted Cost (Inflation)**	Net Present Value (Adjusted Cost)**	% for New Growth	Net Cost to New Growth
2018	Ball Fields	4	$250,000	$1,000,000	$1,463,230	$1,088,781	100.00%	$1,088,781
2026	Ball Fields	5	$250,000	$1,250,000	$2,480,120	$1,456,809	96.00%	$1,398,537
2011	Track/Trail	2	$480,000	$960,000	$1,076,131	$984,812	100.00%	$984,812
2015	Track/Trail	2	$480,000	$960,000	$1,253,112	$1,018,895	100.00%	$1,018,895
2020	Track/Trail	2	$480,000	$960,000	$1,515,815	$1,063,162	65.00%	$691,056
2011	Picnic Tables	7	$1,800	$12,600	$14,124	$12,926	100.00%	$12,926
2015	Picnic Tables	6	$1,800	$10,800	$14,098	$11,463	100.00%	$11,463
2018	Picnic Tables	7	$1,800	$12,600	$18,437	$13,719	100.00%	$13,719
2020	Picnic Tables	7	$1,800	$12,600	$19,895	$13,954	100.00%	$13,954
2026	Picnic Tables	7	$1,800	$12,600	$25,000	$14,685	91.43%	$13,426
2018	Restroom	2	$225,000	$450,000	$658,453	$489,951	100.00%	$489,951
2026	Restroom	2	$225,000	$450,000	$892,843	$524,451	75.00%	$393,338
2018	Pavilions	6	$30,000	$180,000	$263,381	$195,980	100.00%	$195,980
2026	Pavilions	7	$30,000	$210,000	$416,660	$244,744	90.00%	$220,270
2018	Tennis Courts	3	$60,000	$180,000	$263,381	$195,980	100.00%	$195,980
2026	Tennis Courts	4	$60,000	$240,000	$476,183	$279,707	100.00%	$279,707
2018	Basketball Courts	2	$45,000	$90,000	$131,691	$97,990	100.00%	$97,990
2026	Basketball Courts	2	$45,000	$90,000	$178,569	$104,890	75.00%	$78,668
2018	Soccer Fields	1	$200,000	$200,000	$292,646	$217,756	100.00%	$217,756
2026	Soccer Fields	1	$200,000	$200,000	$396,819	$233,089	80.00%	$186,472
2018	Playgrounds	2	$50,000	$100,000	$146,323	$108,878	100.00%	$108,878
2026	Playgrounds	2	$50,000	$100,000	$198,410	$116,545	75.00%	$87,409
2018	Gazebo	2	$25,000	$50,000	$73,161	$54,439	100.00%	$54,439
2026	Gazebo	2	$25,000	$50,000	$99,205	$58,272	75.00%	$43,704
2018	Swings/Slide	7	$22,000	$154,000	$225,337	$167,672	100.00%	$167,672
2026	Swings/Slide	7	$22,000	$154,000	$305,551	$179,479	100.00%	$179,479
2013	Golf Courses	1	$1,500,000	$1,500,000	$1,814,461	$1,565,170	60.00%	$939,102
				$9,589,200	$14,713,036	$10,514,200		**$9,184,363**

*Where available City cost estimates are shown; otherwise costs estimates are based on comparable facility costs.

**Adjusted cost is based on construction cost estimate adjustment (Table C-2); net present value is based on anticipated interest earnings.

[4] For more information on the cost inflator factor and net present value, see the 'Cost Adjustments and Credits' section of this report.

Table PR-7 presents the estimated costs for the land acquisition projects. The cost estimate for land acquisition has been provided by the City or is based on comparable land acquisition costs ($30,000 per acre). The costs are shown in current dollars, and then adjusted to reflect the net present value.[5]

Table PR-7
Land Acquisition Costs

Year	Project	Acres	Gross Cost*	Adjusted Cost (Inflation)**	Net Present Value (Adjusted Cost)**	% for New Growth	New Growth Cost
2018	New Park A	124	$3,720,000	$5,009,504	$3,727,541	100.00%	$3,727,541
2026	New Park B	125	$3,750,000	$6,407,438	$3,763,695	100.00%	$3,763,695
			$7,470,000	$11,416,942	$7,491,236		**$7,491,236**

*Estimated acquisition costs based on an average of $30,000 per acre.

**Adjusted cost is based on on CPI adjustment (Table C-4); net present value is based on anticipated interest earnings.

[5] For more information on the cost inflator factor and net present value, see the 'Cost Adjustments and Credits' section of this report.

Road Improvements

The information in this chapter is derived from, or taken directly from, the previous road improvements category methodology for the City of Canton impact fee program. Level of service calculations, cost estimates, and determination of need, are based on engineering carried out in the past by the City and its consultants. Timing of the projects and assignment of the projects to the impact fee program have been determined by the City.

Service Area

The service area for this road project is defined as the entire city. In that these road projects are recognized as providing primary capacity to properties within the city, the city has been adopted as the service area for the purpose of assessing impact fees. All new development within the city will be assessed the road impact fee, as calculated in this section. Improvements in any part of this portion of the network improve capacity, to some measurable extent, throughout the city.

Level of Service Standards

Level of service 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 unencumbered travel; level of service F is the worst rating, representing 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 level of service A through F as having the following characteristics:

- LOS A: free flow, excellent level of freedom and comfort;
- LOS B: stable flow, decline in freedom to maneuver, desired speed is relatively unaffected;
- 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;
- 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;
- 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
- 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. Post-improvement LOS conditions are based on the City's consultant's calculations.

Level of Service

The adopted level of service is based on Level of Service "D" for arterials and major collector roads within the service area.

Forecasts for Service Area

A series of projects that provide road capacity intended to serve new growth to the year 2030 by road widening, new road construction or other capacity improvements has been identified by the City for inclusion in its impact fee program, and are shown in **Table R-1**. This is not an inclusive list of all City road projects. Local share of the project cost as shown is estimated; final construction costs may vary.

Table R-1
Future Road Projects and Estimated Costs

Location	Project Type	Total Cost	Local Cost*
Commerce Boulevard		$8,000,000	$8,000,000
Bluffs Parkway		$2,249,777	$2,249,777
Hickory Flat/Marietta Road	Intersection	$943,200	$524,000
SR Business 5	Intersection	$1,647,000	$915,000
Marietta Road		$2,772,000	$1,540,000
Hickory Flat Road		$2,235,600	$1,242,000
Waleska Street		$2,788,200	$1,549,000
Main Street Connector		$2,286,000	$1,270,000
Reservoir Drive		$5,192,387	$5,192,387
Heard Road	Extension	$1,500,000	$1,500,000
Business Hwy. 5 - Marietta Hwy.		$10,000,000	$10,000,000
		$39,614,164	$33,982,164

*Local cost based on City estimates.

In order to determine what portion of the projects listed in Table R-1 add capacity to serve new growth a series of calculations is carried out to determine what proportion of trips will be made by new growth, versus the number of trips that are attributable to existing (year 2009) development. In **Table R-2** the current trip demand is calculated based on average trips generated by generalized land use. This data is taken from the Institute of Transportation Engineers *Trip Generation* manual. In **Table R-3** the same calculations are carried out for future trip generation, based on the ITE data and the forecasted increase in population and employment between 2009 and 2030.

Table R-2
Current Trip Demand

Category*	2009	Representative Land Use	Trips per DU or Employee**	% New Trips	Current Trips Demanded
Dwelling Units	8,884	Single-Family Detached Housing	9.47	100.00%	84,131
Manufacturing	1,794	Manufacturing	2.10	92.00%	3,466
T.C.U.	374	General Heavy Industrial	0.82	92.00%	282
Wholesale	281	Wholesale Market	8.21	92.00%	2,122
Retail Trade	2,398	Specialty Retail	22.36	75.00%	40,214
F.I.R.E.	857	General Office Building	3.32	92.00%	2,618
Services	3,494	General Office Building	3.32	92.00%	10,672
					143,506

*Employment figures from City of Canton *Comprehensive Plan* .
**Trips per dwelling unit or employee are derived from the ITE *Trip Generation* manual.

Table R-3
Future Trip Demand

Category*	2009	2030	Increase 2009-30	Representative Land Use	Trips per DU or Employee**	% New Trips	Future Trips Demanded
Dwelling Units	8,884	24,481	15,597	Single-Family Detached Housing	9.47	100.00%	147,704
Manufacturing	1,794	2,427	633	Manufacturing	2.10	92.00%	1,223
T.C.U.	374	787	413	General Heavy Industrial	0.82	92.00%	312
Wholesale	281	590	309	Wholesale Market	8.21	92.00%	2,334
Retail Trade	2,398	5,039	2,641	Specialty Retail	22.36	75.00%	44,290
F.I.R.E.	857	1,801	944	General Office Building	3.32	92.00%	2,883
Services	3,494	8,794	5,300	General Office Building	3.32	92.00%	16,188
							214,933

*Employment figures from City of Canton *Comprehensive Plan* .
**Trips per dwelling unit or employee are derived from the ITE Trip Generation manual.

The forecasted existing and future trip demand figures are brought together in **Table R-4** where the percentage split between current and future demand is calculated. Of all the trips expected to be on the road system in 2030, 214,933 (59.96% of the total) are attributable to new growth. In essence, 60% of the cost of any future project that adds trip capacity is impact fee eligible.

Table R-4
Future Trip Assignment

Category	Total Trips	% of
Current Demand	143,506	40.04%
Future Demand	214,933	59.96%
Total	358,440	

Future Costs

The total cost eligible for impact fee collection is calculated in **Table R-5**. The total project cost figure is from Table R-1; the percentage of these costs that are attributable to new growth is from Table R-4. This calculation results in a figure that represents the percentage of the total costs that can be paid for by new growth through the collection of impact fees. The local costs have been adjusted to reflect increasing construction costs, and converted to net present value figures, based on the estimated starting construction year.[6]

Table R-5
Impact Fee Eligible Project Costs

Year	Project Name	Local Cost	Adjusted Cost (Inflation)*	Net Present Value (Adjusted Cost)*	% Impact Fee Eligible	Impact Fee Eligible Project Costs	Non-eligible Project Costs
2010	Commerce Boulevard	$8,000,000	$8,632,816	$8,137,257	60.0%	$4,879,394	$3,257,864
2010	Bluffs Parkway	$2,249,777	$2,427,740	$2,288,377	60.0%	$1,372,194	$916,184
2012	Hickory Flat/Marietta Road	$524,000	$610,178	$542,135	60.0%	$325,084	$217,051
2010	SR Business 5	$915,000	$987,378	$930,699	60.0%	$558,081	$372,618
2012	Marietta Road	$1,540,000	$1,793,270	$1,593,297	60.0%	$955,399	$637,899
2010	Hickory Flat Road	$1,242,000	$1,340,245	$1,263,309	60.0%	$757,526	$505,783
2010	Waleska Street	$1,549,000	$1,671,529	$1,575,576	60.0%	$944,773	$630,804
2011	Main Street Connector	$1,270,000	$1,423,631	$1,302,824	60.0%	$781,220	$521,604
2010	Reservoir Drive	$5,192,387	$5,603,115	$5,281,474	60.0%	$3,166,962	$2,114,511
2010	Heard Road	$1,500,000	$1,618,653	$1,525,736	60.0%	$914,886	$610,849
2013	Business Hwy. 5 - Marietta Hwy.	$10,000,000	$12,096,404	$10,434,465	60.0%	$6,256,882	$4,177,583
		$33,982,164	$38,204,960	$34,875,150		$20,912,400	$13,962,750

*Adjusted cost is based on on construction cost adjustment (Table C-2); net present value is based on anticipated interest earnings.

[6] For more information on the cost inflator factor and net present value, see the 'Cost Adjustments and Credits' section of this report.

Exemption Policy

The City of Canton recognizes that certain office, retail trade and industrial development projects provide extraordinary benefit in support of the economic advancement of the city's citizens over and above the access to jobs, goods and services that such uses offer in general. To encourage such development projects, the City Council may consider granting a reduction in the impact fee for such development projects upon either the determination and relative to the extent that the business or project represents extraordinary economic development and employment growth of public benefit to City of Canton, in accordance with adopted exemption criteria. It is also recognized that the cost of system improvements otherwise foregone through exemption of any impact fee must be funded through revenue sources other than impact fees.

CITY OF CANTON COMPREHENSIVE PLAN

Short Term Work Program Amendment

Short Term Work Program Amendment (2009--2013)

Project	Start Year 2009	10	11	12	13	Responsible Party	Estimated Cost	Anticipated Funding Source(s)
Fire Station #4		X				City Council, Fire Department, Police Department	$1,254,958	100% Impact Fees
Communications Tower		X				City Council, Fire Department	$10,000	60% Impact Fees, General Fund
Fire Station #5				X		City Council, Fire Department, Police Department	$1,259,936	64% Impact Fees, General Fund
Pumper		X				City Council, Fire Department	$275,111	100% Impact Fees
Mini-Pumper		X				City Council, Fire Department	$150,061	100% Impact Fees
Pumper				X		City Council, Fire Department	$275,223	100% Impact Fees
Platform Truck				X		City Council, Fire Department	$900,729	100% Impact Fees
Track/trail (2)			X			City Council, Parks Department	$984,812	100% Impact Fees
Picnic tables (7)			X			City Council, Parks Department	$12,926	100% Impact Fees
Golf course					X	City Council, Parks Department	$1,565,170	60% Impact Fees, General Fund
Commerce Boulevard		X				City Council	$8,137,257	60% Impact Fees, General Fund, GDOT, SPLOST, Developer
Bluffs Parkway		X				City Council	$2,288,377	60% Impact Fees, General Fund, GDOT
Hickory Flat/Marietta Road				X		City Council	$975,843	33% Impact Fees, General Fund, GDOT
SR Business 5		X				City Council	$1,675,258	33% Impact Fees, General Fund, GDOT
Marietta Road				X		City Council	$2,867,935	33% Impact Fees, General Fund, GDOT
Hickory Flat Road		X				City Council	$2,273,957	33% Impact Fees, General Fund, GDOT
Waleska Street		X				City Council	$2,836,038	33% Impact Fees, General Fund, GDOT
Main Street Connector			X			City Council	$2,345,084	33% Impact Fees, General Fund, GDOT
Reservoir Drive		X				City Council	$5,281,474	60% Impact Fees, General Fund, GDOT
Heard Road		X				City Council	$1,525,736	60% Impact Fees, General Fund, GDOT