City of Grass Valley

Development Impact Fee Study

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EXECUTIVE SUMMARY

This study analyzes the impacts of development on the City of Grass Valley's capital facilities, and calculates development impact fees based on that analysis. This report documents the data, methodology, and results of that impact fee study. The methods used to calculate impact fees in this study are intended to satisfy all legal requirements governing such fees, including provisions of the U. S. Constitution, the California Constitution, and the California Mitigation Fee Act (Government Code Sections 66000 et seq.).

ORGANIZATION OF THE REPORT

Section 1 of this report provides an overview of development impact fees. It discusses legal requirements for establishing and imposing such fees, as well as methods used in this study to calculate the fees. Section 2 contains information on existing and planned land uses and development in Grass Valley, and organizes that data in a form that can be used in the impact fee analysis. Sections 3 through 10 analyze the impacts of development on specific types of capital facilities and equipment owned by the City. Those sections identify facilities and equipment eligible for impact fee funding and calculate recommended impact fees for each type of facility. Section 11 discusses procedures and legal requirements for implementing an impact fee program under California law. It addresses adoption, administration, and training.

FACILITIES ADDRESSED IN THIS REPORT

The types of public facilities covered in this report are listed below, along with the report sections in which they are addressed.

Chapter 3	Fire Facilities	Chapter 7	Wastewater Facilities
Chapter 4	Police & Animal Control Facilities	Chapter 8	Drainage Facilities
Chapter 5	Parks	Chapter 9	City Hall Facilities
Chapter 6	Water Facilities	Chapter 10	Traffic and Circulation

DEVELOPMENT DATA

Forecasts of development used in this study are intended to represent future development within the City of Grass Valley and its sphere of influence from 2004 to 2020. The foundation of the forecasts are current housing estimates published by the California Department of Finance (DOF) and the 2020 housing projection found in the City of Grass

Valley 2020 General Plan. Population projections were derived from this housing data based on information from the 2000 Census, which provides information on the number of persons per household by dwelling unit type.

The housing and population data in Chapter 2 indicates that the number of housing units in the City will increase by nearly 4,300 units or 73 percent between 2004 and 2020. Most of these additional units, however, are existing dwelling units in the City's sphere of influence that will be annexed by the City over the course of the study period. It is estimated that approximately 47 percent of the increase in housing units or 2006 units will be new residential units constructed during the study period.

The development data also includes information on current and future employment in the City and in the City's sphere of influence. The overall employment figures were derived using the 2003 employment data and the jobs to housing methodology found in the Grass Valley Phase I Baseline Report, which was prepared by Applied Development Economics in July 2004. The report indicated that there were 9,644 jobs in the City in 2003, resulting in a jobs to housing ratio of 1.75 jobs per (occupied) housing unit. This jobs data was used to estimate 2004 employment and project future employment out to 2020. The baseline report was also used to ascertain employment within various industry sectors within the City. Based on these data, this study projects that employment will increase by 7,100 jobs between 2004 and 2020.

The housing and employment data were used by the consultant to estimate the amount of nonresidential floor space as well as vehicles trips in the City of Grass Valley. These estimates were prepared using trip generation and average employees per square foot multipliers that are published by the Institute of Transportation Engineers.

The development data used in the study is summarized in Table 2.1, with Appendix A providing more detailed information outlining the data and assumptions used in the study.

IMPACT FEE ANALYSIS

Each type of facility addressed in this report was analyzed individually. In each case, the relationship between development and the need for additional facilities was quantified in a way that allows impact fees to be calculated for various categories of development. For each type of facility, a specific, measurable attribute of development was used to represent the demand for additional capital facilities. Recommended impact fees are summarized in Tables S-1 through S-4 at the end of this summary. With some very minor exceptions, the impact fees calculated in this report cover only capital costs. By law, impact fees may not include costs for maintenance or operations. The following paragraphs briefly discuss factors considered in the analysis of each type of facility.

Section 3 – Fire Department Facilities and Equipment. Chapter 3 addresses impact fees to cover the cost of facilities and equipment for the Grass Valley Fire Department. Impact fees for Fire Department facilities and equipment involve the use of two of the three fee methodologies discussed in Chapter 1. A cost recovery or capacity based methodology is used for the City's two existing fire stations. While additional stations will ultimately be needed to serve projected 2020 demand for services, the study assumes that the capacity of the existing stations will meet the needs of the City to 2014. Therefore, the fee component for fire stations is based on the anticipated demand for services in 2014. A debt service credit per demand unit is included in the calculation to reflect the City's outstanding debt related to the construction of Station #2 and to prevent the double payment of debt service costs by future development.

Impact fees for the Fire Department's existing equipment is based on the incremental expansion cost approach, using existing level of service standards. Using this methodology, the current level of service is based on the existing ratio of equipment to service demand, where facilities and equipment are represented by the City's investment in the existing Fire Department equipment. The fundamental assumption using this methodology is that future development will demand the same level of service as current users.

Since both residential and nonresidential development benefit from fire protection and emergency medical services, demand for Fire Department facilities and equipment is represented by the City's population and employment. The allocation of costs between residential and nonresidential development is based on each type of development's proportional distribution of calls for service in 2004.

The cost per capita is converted to fees per dwelling unit by unit type for residential development based on household size. For nonresidential development, the cost per job is converted in most cases to a fee based on the number of employees per 1,000 square feet of floor area. Calculated impact fees by development type are summarized by development type in Table S-1.

Section 4 – Police Department and Animal Control Facilities and Equipment. Chapter 4 addresses impact fees to cover the cost of facilities and equipment that will be needed by the Grass Valley Police Department and the City's Animal Control Services to accommodate future growth.

Impact fees for Police Department facilities and equipment as well as Animal Control equipment are calculated using each of the three impact fee methodologies discussed in Chapter 1. The cost recovery or capacity based methodology is used to recover the cost allocated to future development of the 1996 construction of a new Police Department station. The capacity of the existing station is expected to meet the needs of the City to 2008. Since the station will be at capacity in 2008, the cost recovery component will be

based on the anticipated demand in 2008. A principal payment credit per demand unit is included in the calculation to reflect the City's outstanding debt related to the construction of the facility and to prevent the double payment of debt service costs by future development.

Animal Control facility costs that will be incurred to support future growth are based on planned improvements and estimated costs found in the City's 2004 Capital Improvement Plan (CIP) Summary. These costs include new growth's proportional share of constructing a new animal control facility. Since the City has identified specific future facility needs, a plan based methodology is used to calculate the impact fee for facilities.

Capital costs related to additional equipment that are needed to support new development are calculated using the incremental expansion method. Using this methodology, a current level of service is calculated based on the existing ratio of equipment to service demand, where equipment are represented by the City's investment in the existing police and animal control vehicles and equipment.

Costs for Police Department facilities and equipment are allocated between residential and nonresidential uses based on population's and employment's share of the current service population, which is the sum of the population and employment in the City. This cost allocation method was used because recent data on calls for service by land use type was not available.

For nonresidential development, costs for the Police Department are allocated based on a cost per vehicle trip. Vehicles trips are used as the nonresidential demand variable because the variation in trip generation rates between nonresidential uses better reflects the variation in demand for Police Department services among nonresidential uses than other possible variables, such as employees per square feet.

Costs for Animal Control facilities and equipment are allocated only to residential development. However, since Animal Control provides services to both Grass Valley and Nevada City, Animal Control costs are allocated between the two jurisdictions in proportion to their 2004 population. Costs allocated to Nevada City are not included in the impact fee.

Residential development's share of Police and Animal Control costs are expressed as a cost per capita and converted to fees per dwelling unit by unit type. For nonresidential development, the cost per nonresidential trip is converted in most cases to a fee per 1,000 square feet of nonresidential floor area. Calculated impact fees are summarized by development type in Table S-1.

Section 5 – Parks. Chapter 5 addresses fees for capital facilities related to the City's provision of parks and recreational amenities. These park and recreation assets include parkland and the various improvements to parkland (i.e. courts, fields, picnic facilities, restrooms, and community buildings).

The analysis in the report calculates two types of fees for park and recreation facilities. One is a parkland acquisition fee or fee in lieu of dedication to cover future development's share of the cost of expanding the City's park system due to demand created by that development. Fees in lieu of land dedication under the Quimby Act apply only to residential subdivisions and are based on the ratio of five acres per 1,000 population as specified in the Quimby Act.

The second fee is a park and recreation development impact fee to provide the additional park amenities that are needed to support future growth. This fee is based on the cost of maintaining the City's existing level of service in terms of park amenities and improvements. Appendix B provides an inventory and cost per unit of these improvements and amenities.

Because the two park fees are population driven, the fees only apply to residential development. Calculated impact fees by development type are summarized by development type in Table S-1.

Section 6 – Water System. Chapter 6 analyzes development related capital costs for the City's water treatment and distribution facilities. In this chapter, the cost of future improvements and a cost recovery component to account for previous capital projects that were oversized to support future development are divided by the projected system demand at build out within the system's service area (2.8 million gallons per day) to yield a capital cost per gallon. Financing costs related to the oversized facilities as well as equipment needed to operate the water system are also incorporated in the capital cost per gallon.

An impact fee is derived when the total per gallon capitol cost is multiplied by the peak demand used by various development types, as measured in gallons per day. Peak demand was based on 2003 water usage data provided by the City, which indicated August had the highest demand for the year. The fees have been converted to a capacity ratio, based on the peak daily usage of a single family dwelling unit in August 2003 (600 gallons per day) with a metered connection to the City's water system. Following current City practice, fees for nonresidential uses are calculated not by development type, but rather by meter size.

Calculated impact fees are summarized in Table S-2.

Section 7 – Wastewater System. Chapter 7 addresses wastewater collection and treatment facilities in the City of Grass Valley. The City's wastewater facilities include the collection system and a wastewater treatment plant located adjacent to Wolf Creek. The fee analysis examines three projects that were constructed to accommodate future development, calculating a cost per gallon for each facility based on the costs and projected capacity of each facility. The projects were (1) the "renewal and replacement" project at the wastewater treatment plant (WWTP) that sized certain components of the plant to accommodate a total average dry weather flow (ADWF) of 3.5 million gallons per day (MGD), which was 1.78 MGD greater then the overall design capacity at the time; (2) the 2001-2002 expansion project to increase overall treatment plant capacity from 1.72 MGD to 2.78 MGD (scaled back from the earlier target of 3.5 MGD); and (3) the Wolf Creek Interceptor project, which expanded pipeline capacity to serve future development.

A net capital cost per gallon is calculated to derive an impact fee based on average usage by development type. In addition to the project costs noted above, financing costs for the three projects, planned improvements, as well as equipment needed to operate the wastewater system are incorporated in the capital cost per gallon.

Residential impact fees are expressed in equivalent dwelling units (EDUs), which reflect a system capacity usage averaging 191 gallons per day. This capacity consideration for EDUs assumes that any additional analysis by the City Engineer does not conclude that additional capacity per unit is necessary to maintain appropriate wastewater quality. The fee for nonresidential development should vary based on applying the net capital cost per gallon to projected average daily usage. For this reason, the fee for nonresidential is expressed as the net capital cost per gallon. Calculated impact fees are summarized Table S-3.

Section 8 – Storm Drainage Improvements. Chapter 8 addresses local and regional drainage improvements required to serve future development in the City of Grass Valley. The analysis is based on the drainage improvement projects listed in the City's Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary).

The 2004 CIP Summary indicated that 13 of 26 projects were needed to serve existing users, but also to accommodate future development. Since the projects serve both existing and future development, an average project cost per acre of impervious surface area (ISA) is calculated based on the projected number of ISA acres at build out of the City and the City's sphere of influence. Total developed acres (rather than just development in 2020) is used in order to allocate costs to existing and future development in proportion to their share of the City's projected number of impervious surface area (ISA) acres. Costs attributable to existing development are excluded from the impact fee calculation.

Project costs attributable to future development were distributed to residential and nonresidential uses by multiplying the average cost per ISA acre by acres available for development by typical ISA ratios that reflect the amount of imperious surface area per acre of various development types. Impact fees per development unit (i.e. dwelling unit or acre) were calculated for each development type based on this allocation of project costs by development type. Calculated impact fees by development type are summarized by development type in Table S-4.

Section 9 – Administrative and General Government Facilities and Equipment. This chapter addresses impact fees for administrative and general government facilities and equipment needed to serve future development in Grass Valley. Administrative and general government facilities include City Hall and the City's Corporation Yard. These facilities house staff from most City departments and support most services provided by the City. All space in the current City Hall building is currently occupied.

Administrative and general government equipment includes vehicles used by the following City departments: City Hall; Fleet; Facility Maintenance, and Public Works.

The calculation of impact fees for general government facilities and equipment involve the use of each of the three impact fee methodologies discussed in Chapter 1. The cost recovery or capacity based methodology is used to recover the cost allocated to future development of a $1.15 million remodel/expansion of City Hall in 2000. This remodeling of City Hall provided expanded City Council chambers and conference space that will meet the City's need to 2020. Interest costs are also included in the cost recovery component in order to reflect financing costs and, therefore, a debt service credit per capita/per job is calculated to prevent the double payment of debt service costs by future development.

The second cost component of the general government impact fee addresses the cost of planned improvements to City Hall to provide the office space needed to meet the demand placed on the City's general government by future development. The City of Grass Valley Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary) indicates that a 6,000 square foot expansion to City Hall will be necessary to meet this demand. The plan-based methodology discussed in Chapter 1 is used to calculate this component of the fee based on dividing the projected $1.2 million cost of the expansion by projected population and job growth during the 2004 to 2020 period.

The demand created by future development on the City's Corporation Yard and maintenance facilities is derived using the incremental expansion cost approach, based on existing level of service standards. Using this methodology, the current level of service is based on the existing ratio of the Corporation Yard's site area and facilities to service demand, where facilities are represented by the City's investment in the existing

Corporation Yard and maintenance site area and facilities and demand is represented on a per capita or per job basis.

In addition to facility costs, the City also incurs capital costs for the vehicles and other equipment needed by the City's general government functions to meet the demand created by future development. Like the Corporation Yard, the capital cost for vehicles and equipment is also based on an incremental methodology, based on existing level of service standards. This impact methodology is used to address vehicles in other chapters in this study.

Since both residential and nonresidential development benefit from the City's general government service functions, demand for facilities and equipment is represented by the City's population and employment. The allocation of costs between residential and nonresidential development is based on population and employment's share proportional share of the total population and jobs in the City.

The cost per capita is converted to fees per dwelling unit by unit type for residential development based on household size. For nonresidential development, the cost per job is converted in most cases to a fee based on the number of employees per 1,000 square feet of floor area. Calculated impact fees by development type are summarized by development type in Table S-1.

Section 10 – Traffic and Circulation Improvements (Local Fee Projects). Chapter 10 addresses local transportation improvements required to serve future development in the City of Grass Valley. The analysis is based on traffic and circulation projects identified as "Local Fee Projects" in the City of Grass Valley Street System Master, adopted in October 2004. According to the Master Plan, the City proposes 14 Local Fee Projects totaling nearly $4 million that will be undertaken to expand capacity to accommodate future development.

The impact fee analysis allocates the costs by dividing total Local Fee Projects costs by the total number of peak hour trips created by future development, resulting in an average cost per peak hour trip. Additional peak hour trips are calculated by applying peak hour trip generation rates published by the Institute for Transportation Engineers to projected future development. The trip projection is then adjusted by development type to prevent the double of trips and to account for pass-by trips.

Impact fees are calculated by multiplying the number of adjusted peak hour trips per development type by the average cost per peak hour trip to arrive at the impact fee for each development type. Table S-1 shows that commercial and office development have the highest impact fee since such development has the highest adjusted peak hour trip rates.

SUMMARY OF IMPACT FEES

Tables S-1 through S-4 summarize the impact fees calculated in later sections of this report. Fees shown in the table are per dwelling unit by unit type for residential development. For nonresidential development, the fee is expressed, in most instances, in per 1,000 square feet of nonresidential floor area.

Table S-1 Summary Impact Fees - City of Grass Valley

Land Use Category	Dev Units [1]	Fire Dept.	Police Dept.	Animal Control	Park Land Acquisition	Park Land Develop	Gen. Goven. Facilities	Local Road Projects	Total Fee Per Unit*
Residential									
Single Family - Detached	D.U.	$544	$168	$49	$1,397	$3,203	$555	$380	$6,296
Single Family - Attached	D.U.	$436	$134	$40	$1,120	$2,568	$445	$194	$4,937
Multifamily	D.U.	$448	$138	$41	$1,149	$2,635	$456	$250	$5,117
Commercial / Shopping Center									
25K gross leasable area	1,000 Sq Ft	$483	$397				$823	$1,644	$3,347
50K gross leasable area	1,000 Sq Ft	$414	$368				$706	$1,534	$3,022
100K gross leasable area	1,000 Sq Ft	$362	$322				$617	$1,352	$2,653
200K gross leasable area	1,000 Sq Ft	$322	$279				$549	$1,180	$2,330
400K gross leasable area	1,000 Sq Ft	$290	$240				$494	$1,020	$2,044
General Office									
10K gross floor area	1,000 Sq Ft	$649	$185				$1,106	$3,353	$5,293
25K gross floor area	1,000 Sq Ft	$602	$150				$1,025	$1,591	$3,368
50K gross floor area	1,000 Sq Ft	$567	$128				$966	$1,006	$2,667
100K gross floor area	1,000 Sq Ft	$535	$109				$911	$711	$2,266
Industrial									
Business Park[6]	1,000 Sq Ft	$458	$104				$780	$481	$1,823
Mini-Warehouse	1,000 Sq Ft	$6	$20				$11	$108	$145
Warehousing	1,000 Sq Ft	$185	$41				$315	$227	$768
Manufacturing	1,000 Sq Ft	$260	$31				$443	$279	$1,013
Light Industrial	1,000 Sq Ft	$335	$57				$570	$402	$1,364
Other Nonresidential									
Medical-Dental Office	1,000 Sq Ft	$588	$296				$1,002	$1,658	$3,544
Hospital	1,000 Sq Ft	$490	$144				$835	$600	$2,069
Day Care	student	$23	$37				$39	$317	$416
Lodging	room	$103	$75				$176	$257	$611

[1] Units of development. D.U. equals dwelling unit

* Total fees per unit only sums the fees shown in Table S-1. Additional fees are shown in Tables S-2, S-3, and S-4

Table S-2: Impact Fee by Development Type / Capacity Demand - Water System Facilities and Equipment

Development Type	Meter Size [1]		Impact	Unit
Single-Family Residential		1.00	$2,628.17	Per Dwelling Unit
Duplex		0.45	$1,182.67	Per Dwelling Unit
Apartments		0.45	$1,182.67	Per Dwelling Unit
Mobile Home Park		0.45	$1,182.67	Per Trailer Pad
Nonresidential	0.58	1.00	$2,628.17	Per Meter
	0.75	1.50	$3,942.25	Per Meter
	1.00	2.50	$6,570.41	Per Meter
	1.50	5.00	$13,140.83	Per Meter
	2.00	8.00	$21,025.32	Per Meter
	3.00	16.00	$42,050.65	Per Meter
	4.00	25.00	$65,704.14	Per Meter
	6.00	50.00	$131,408.28	Per Meter

[1] Meter size standards based on City of Grass Valley Municipal Code 13.04.330 relating to water connection fees
[2] Capacity ratio is based on equivelant dwelling units (EDU). One EDU is equal to peak demand of 600.53 gallons per day

Table S-3: Impact Fee by Development Type - Wastewater System Impact Fee

Development Type	Unit		Impact
Residential Development			
Single-Family Residential	Per Dwelling Unit	1.00	$3,986.22
Boarding House	Bedroom	0.36	$1,435.04
Apartments	Apartment	0.71	$2,830.22
Duplex	Per Unit	0.71	$2,830.22
Mobile Home Parks	Trailer Pad	0.57	$2,272.15
Nonresidential Development			
Nonresidential[2]	Per Gallon Usage	NA	$20.87

[1] Capacity ratio is based on equivelant dwelling units (EDU). One EDU is equal average daily usage of 191 gallons per day
[2] Nonresidential wastewater fees are based on the net capital cost per gallon of capacity and the average daily wastewater flow of an individual development.

Table S-4: Impact Fee Per Unit of Development - Stormwater Drainage Facilities

General Plan Land Use Type	Development Units[1]	Impact Fee Per Unit
Single-Family Residential	DU	$222.14
Multi-Family Residential	DU	$65.41
Commercial	Acre	$1,240.71
Mixed Use/Business Park	Acre	$1,085.62
Manufacturing / Industrial	Acre	$1,240.71
Total		

[1] DU = dwelling units

IMPLEMENTATION

Implementation of an impact fee program raises both practical and policy issues. Section 11 of this report points out many practical and procedural issues related to the implementation of the City's impact fee program, and outlines administrative procedures mandated by the Government Code with respect to impact fees. Topics covered in that section include adoption and collection of fees, accountability for fee revenues, expenditure time limits, reporting and refunding requirements, updating of fees, and staff training.

From the point of view of the City Council, important policy choices must be made regarding the share of facility costs to be funded by impact fees, and other sources of funding to be used for those facilities not funded by the fees. The development impact fees calculated in this report are intended to represent the maximum impact fee amount justified by this analysis. Of course, the City Council may choose to adopt fees lower than those calculated in the study. In that event, it is important that the Council identify which facilities are to be funded by the reduced impact fees, and the share of total cost to be recovered through the fees.

It should also be emphasized that all costs used in this report are in current dollars. To the extent that costs for capital improvements escalate over time, the impact fees should be adjusted to keep pace with that inflation. We recommend annual adjustments based on changes in the *Engineering News Record* Construction Cost Index. If the fees are not escalated for inflation, the City could experience a significant shortfall in anticipated funding over several years.

RECOVERY OF STUDY COST

It is reasonable for the City to recover the cost of this study through the impact fee program. Once the City Council decides what impact fees to impose, it is a relatively simple matter to calculate an adjustment to cover the cost of the study.

Assuming the impact fee study will be updated every five years, the cost of this study can be divided by the amount of revenue projected over the next five years to determine the percentage by which fees should be increased to cover the cost of the study. If the City were to collect $500,000 in impact fees per year for five years as a result of this study, the total for that period would be $2,500,000. If this study costs $25,000, the fees shown in Table S-1 would be have to be increased by 1% to recover the cost of the study over five years [25,000 / (2,500,000) = 0.01]. That adjustment would equate to $1.00 per hundred dollars on the impact fees.

A NOTE ON ROUNDING

Calculations throughout this report are based on an analysis conducted using Excel software. Results are discussed in the report using one-and two-digit places (in most cases), which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown, not due to rounding in the analysis).

CHAPTER 1
INTRODUCTION

The City of Grass Valley has retained MAXIMUS to prepare this study to analyze the impacts of development on the City's capital facilities and to calculate development impact fees based on that analysis. This report documents the data, methodology, and results of the impact fee study. The methods used to calculate impact fees in this study are intended to satisfy all legal requirements governing such fees, including provisions of the U. S. Constitution, the California Constitution, and the California Mitigation Fee Act (Government Code Sections 66000 *et seq*.). Impact fees calculated in this report are intended to replace the City's existing impact fees.

LEGAL FRAMEWORK

U. S. Constitution. Like all land use regulations, development exactions, including impact fees, are subject to the Fifth Amendment prohibition on taking of private property for public use without just compensation. Both state and federal courts have recognized the imposition of impact fees on development as a legitimate form of land use regulation, provided the fees meet standards intended to protect against regulatory takings. To comply with the Fifth Amendment, development regulations must be shown to substantially advance a legitimate governmental interest. In the case of impact fees, that interest is in the protection of public health, safety, and welfare by ensuring that development is not detrimental to the quality of essential public services.

The U. S. Supreme Court has found that a government agency imposing exactions on development must demonstrate an "essential nexus" between the exaction and the interest being protected (See *Nollan v. California Coastal Commission,* 1987). In a more recent case (*Dolan v. City of Tigard,* 1994), the Court made clear that an agency also must show that an exaction is "roughly proportional" to the burden created by development. *Dolan* is less significant for impact fees than for some other types of exactions (e.g. mandatory dedication of land) because proportionality is inherent in the proper calculation of impact fees. In addition, the *Dolan* decision appeared to set a higher standard of review for mandatory dedications of land than for monetary exactions.

California Constitution. The California Constitution grants broad police power to local governments, including the authority to regulate land use and development. That police power is the source of authority for imposing impact fees on development to pay for infrastructure and capital facilities. Some impact fees have been challenged on grounds that they are special taxes imposed without voter approval in violation of Article XIIIA. That objection would be valid only if fees exceeded the cost of providing capital facilities needed to serve new development. If that were the case, then the fees would also run afoul of the U. S. Constitution and the Mitigation Fee Act. Articles XIIIC and XIIID, added by Proposition 218 in 1996, require voter approval for some "property-related

fees," but exempt "the imposition of fees or charges as a condition of property development."

The Mitigation Fee Act. California's impact fee statute originated in Assembly Bill 1600 during the 1987 session of the Legislature, and took effect in January, 1989. AB 1600 added several sections to the Government Code, beginning with Section 66000. Since that time the impact fee statute has been amended from time to time, and in 1997 was officially titled the "Mitigation Fee Act." Unless otherwise noted, code sections referenced in this report are from the Government Code.

The Act does not limit the types of capital improvements for which impact fees may be charged. It defines public facilities very broadly to include "public improvements, public services and community amenities." Although the issue is not specifically addressed in the Mitigation Fee Act, other provisions of the Government Code (see Section 65913.8) prohibit the use of impact fees for maintenance or operating costs. Consequently, the fees calculated in this report are based on capital costs only.

The Mitigation Fee Act does not use the term "mitigation fee" except in its recently added official title. Nor does it use the more common term "impact fee." The Act simply uses the word "fee," which is defined as "a monetary exaction, other than a tax or special assessment, that is charged by a local agency to the applicant in connection with approval of a development project for the purpose of defraying all or a portion of the cost of public facilities related to the development project …." To avoid confusion with other types of fees, this report uses the widely-accepted term "impact fee," which should be understood to mean "fee" as defined in the Mitigation Fee Act.

The Mitigation Fee Act contains requirements for establishing, increasing and imposing impact fees. They are summarized below. It also contains provisions that govern the collection and expenditure of fees, and require annual reports and periodic re-evaluation of impact fee programs. Those administrative requirements are discussed in the Implementation Chapter of this report. Certain fees or charges related to development are exempted from the requirements of the Mitigation Fee Act. Among them are fees in lieu of park land dedication as authorized by the Quimby Act (Section 66477), fees collected pursuant to a reimbursement agreement or developer agreement, and fees for processing development applications.

Required Findings. Section 66001 requires that an agency establishing, increasing or imposing impact fees, must make findings to:

1. Identify the purpose of the fee;

2. Identify the use of the fee; and,

3. Determine that there is a reasonable relationship between:

    a. The use of the fee and the development type on which it is imposed;

b. The need for the facility and the type of development on which the fee is imposed; and

c. The amount of the fee and the facility cost attributable to the development project. (Applies only upon imposition of fees.)

Each of those requirements is discussed in more detail below.

Identifying the Purpose of the Fees. The broad purpose of impact fees is to protect the public health, safety and general welfare by providing for adequate public facilities. The specific purpose of the fees calculated in this study is to fund the construction of certain capital improvements identified in this report. Those improvements are needed to mitigate the impacts of expected development in the City, and thereby prevent deterioration in public services that would result from additional development if impact fee revenues were not available to fund such improvements. Findings with respect to the purpose of a fee should state the purpose of the fees as financing development-related public facilities in a broad category, such as street improvements or water supply system improvements.

Identifying the Use of the Fees. According to Section 66001, if a fee is used to finance public facilities, those facilities must be identified. A capital improvement plan may be used for that purpose, but is not mandatory if the facilities are identified in the General Plan, a Specific Plan, or in other public documents. If a capital improvement plan is used to identify the use of the fees, it must be updated annually by resolution of the governing body at a noticed public hearing. Impact fees calculated in this study are based on specific capital facilities identified elsewhere in this report, which is intended to serve as the public document identifying the use of the fees.

Reasonable Relationship Requirement. As discussed above, Section 66001 requires that, for fees subject to its provisions, a "reasonable relationship" must be demonstrated between:

1. the use of the fee and the type of development on which it is imposed;

2. the need for a public facility and the type of development on which a fee is imposed; and,

3. the amount of the fee and the facility cost attributable to the development on which the fee is imposed.

These three reasonable relationship requirements as defined in the statute parallel the three elements of the “rational nexus” standard which has evolved in the courts to test the validity of development exactions under the U. S. Constitution. Those elements are, "benefit," "impact," and "proportionality," respectively. The reasonable relationship language of the statute is considered less strict than the rational nexus standard used by the courts. Of course, the higher standard controls. We will use the nexus terminology in

this report for two reasons: because it is more concise and descriptive, and also to signify that the methods used to calculate impact fees in this study are intended to satisfy the more demanding constitutional standard. Individual elements of the nexus standard are discussed further in the following paragraphs.

Demonstrating an Impact. All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the supply of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Impact fees may be used to recover the cost of development-related facilities, but only to the extent that the need for facilities is a consequence of development that is subject to the fees. The *Nollan* decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle clearly applies to impact fees. In this study, the impact of development on improvement needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific facilities, based on applicable level-of-service standards. This report contains all information needed to demonstrate this element of the nexus.

Demonstrating a Benefit. A sufficient benefit relationship requires that impact fee revenues be segregated from other funds and expended only on the facilities for which the fees were charged. Fees must be expended in a timely manner and the facilities funded by the fees must serve the development paying the fees. Nothing in the U.S. Constitution or California law requires that facilities paid for with impact fee revenues be available *exclusively* to developments paying the fees.

Procedures for earmarking and expenditure of fee revenues are mandated by the Mitigation Fees Act, as are procedures to ensure that the fees are expended expeditiously or refunded. All of those requirements are intended to ensure that developments benefit from the impact fees they are required to pay. Thus, an adequate showing of benefit must address procedural as well as substantive issues.

Demonstrating Proportionality. The requirement that exactions be proportional to the impacts of development was clearly stated by the U.S. Supreme Court in the *Dolan* case and is logically necessary to establish a proper nexus. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate impact fees for various types of facilities and categories of development. In this study, the demand for facilities is measured in terms of relevant and measurable attributes of development. For example, the need for police facilities is measured by the number of police calls for service generated by a particular type and quantity of development.

In calculating impact fees, costs for development-related facilities are allocated in proportion to the service needs created by different types and quantities of development.

The following section describes methods used to allocate facility costs and calculate impact fees in ways that meet the proportionality standard.

Impact Fees for Existing Facilities. It is important to note that impact fees may be used to pay for existing facilities, provided that those facilities are needed to serve additional development and have the capacity to do so, given relevant level-of-service standards. In other words, it must be possible to show that the fees meet the need and benefit elements of the nexus.

IMPACT FEE CALCULATION METHODOLOGY

Any one of several legitimate methods may be used to calculate impact fees. The choice of a particular method depends primarily on the service characteristics and planning requirements for the facility type being addressed. Each method has advantages and disadvantages in a particular situation, and to some extent they are interchangeable, because they all allocate facility costs in proportion to the needs created by development.

Reduced to its simplest terms, the process of calculating impact fees involves only two steps: determining the cost of development-related capital improvements, and allocating those costs equitably to various types of development. In practice, though, the calculation of impact fees can become quite complicated because of the many variables involved in defining the relationship between development and the need for facilities. The following paragraphs discuss three methods for calculating impact fees and how those methods can be applied.

Plan-based Impact Fee Calculation. The plan-based method allocates costs for a specified set of improvements to a specified set of developments. The improvements are identified by a facility plan and the development is identified by a land use plan. Facility costs are allocated to various categories of development in proportion to the amount of development and the relative intensity of demand for each category. Demand is represented by an appropriate, quantifiable indicator. For example, demand for street improvements is typically measured by the number of vehicle trips generated by development.

In this method, the total cost of relevant facilities is divided by total demand to calculate a cost per unit of demand. Then, that cost per unit of demand is multiplied by the amount of demand per unit of development (e.g. dwelling units or square feet of building area) in each category to arrive at a cost per unit of development. This method implicitly assumes that the entire service capacity of the specified facilities will be absorbed by the planned development, or that any excess capacity is unavoidably related to serving that development. For example, it may be necessary to widen a street from two lanes to four lanes to serve planned development, but that development may not use all of the added capacity. Assuming that the improvements in question are needed only to serve the new development paying the fees, it is legitimate to recover the full cost of the improvements through impact fees.

The plan-based method is often the most workable approach where actual service usage is difficult to measure (as is the case with administrative facilities), or does not directly drive the need for added facilities (as is the case with fire stations). It is also useful for facilities, such as streets, where capacity cannot always be matched closely to demand. This method is relatively inflexible in the sense that it is based on the relationship between a particular facility plan and a particular land use plan. Consequently, if the land use plan changes significantly, the fees may have to be recalculated.

Capacity-based Impact Fee Calculation. This method can be used only where the capacity of a facility or system is known, and the amount of capacity used by a particular type and quantity of development can be measured or estimated. This method calculates a *rate,* or cost per unit of capacity based on the relationship between total cost and total capacity. It can be applied to any type or amount of development, provided the capacity demand created by that development can be estimated and the facility has adequate capacity available to serve the development. Since the fee calculation does not depend on the type or quantity of development to be served, this method is flexible with respect to changing development plans. Under this method, the cost of unused capacity is not allocated to development, so unused capacity would not be covered by impact fees if it is not absorbed by development. Capacity-based fees are most commonly used for water and wastewater systems.

To calculate a capacity-based impact fee rate, facility cost is divided by facility capacity to arrive at a cost per unit of service. To determine the fee for a particular development project, the cost per unit of capacity is multiplied by the amount of capacity needed by that project. To produce a schedule of impact fees based on standardized units of development (e.g. dwelling units or square feet of building area), the rate is multiplied by the amount of service needed, on average, by those units of development.

Incremental-based Impact Fee Calculation. The incremental-based method is related to the capacity-based approach in the sense that it is based on a rate, or cost per unit of service. The difference is that with this method, costs are defined from the outset on a generic unit-cost basis and then applied to development according to a standard that sets the amount of service or capacity to be provided for each unit of development.

The incremental-based method is useful where facility needs are defined directly by a service standard, and where unit costs can be determined without reference to the total size or capacity of a facility or system. Parks fit that description. It is common for cities or counties to establish a service standard for parks in terms of acres per thousand residents. In addition, the cost per acre for, say, neighborhood parks can usually be estimated without knowing the size of a particular park or the total acreage of parks in the system.

This approach is also useful for facilities such as libraries, where it is possible to estimate a generic cost per square foot before a building is actually designed. One advantage of the incremental-based method is that a fee can be established without committing to a

particular size of facility. Facility size can be adjusted based on the amount of development that actually occurs, thereby avoiding excess capacity.

FACILITIES ADDRESSED IN THIS STUDY

Impact fees for the following types of facilities and improvements will be addressed in this report:

- Fire Protection Facilities and Equipment
- Police Facilities and Equipment
- Parks and Recreation Facilities
- Water System Improvements
- Drainage Improvements
- Sewer System Improvements
- Administrative/General Facilities and Equipment
- Local Circulation Improvements

The impact fee analysis for each facility type is presented in a separate chapter of this report.

CHAPTER 2
DEVELOPMENT AND DEMAND DATA

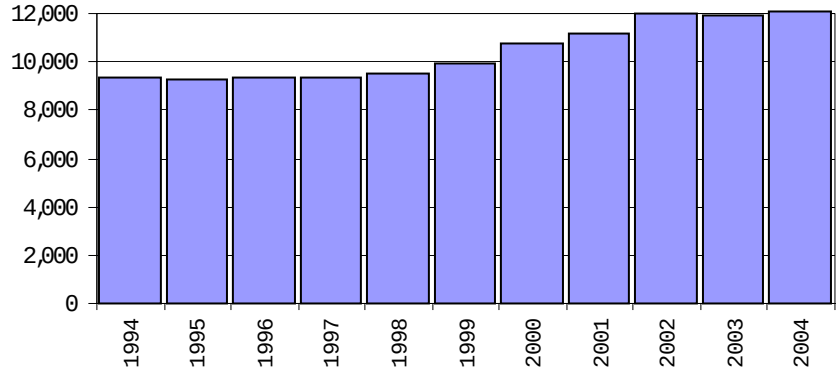
Both existing and planned development must be addressed as part of the nexus analysis required to support the establishment of impact fees. This chapter of the report organizes and correlates information on existing and planned development to provide a framework for the impact fee analysis contained in subsequent chapters. The information in this chapter forms a basis for establishing levels of service, analyzing facility needs, and allocating the cost of capital facilities between existing and future development and among various types of new development.

BACKGROUND AND SETTING

Grass Valley is located at the intersection of State Routes 49 and 20 in the Sierra Nevada foothills of western Nevada County. Grass Valley is rich in history, and despite its relatively small population, serves as the regional economic and cultural center for western Nevada County and portions of three other counties.

The chart in Figure 2-A depicts the City's estimated January 1 population year-by-year from 1994 through 2004. The January 1 2004, population was estimated at 12,060 by the California Department of Finance. As the chart shows, Grass Valley's population growth was flat through the mid-1990s, but increased sharply during the last 1990s. The outlook is for continued growth in the City. According to the General Plan, the total population of the City and its planning area is expected to increase to more than 23,000 by 2020. The 2020 population projection in this study is 21,692.

Figure 2A
City of Grass Valley Population (1994 - 2004)



STUDY AREA AND TIME FRAME

The City of Grass Valley's 2020 General Plan Update defines a Planning Area that is comprised of the current city limits plus unincorporated portions of Nevada County surrounding the City of Grass Valley. The General Plan Update designates much of the unincorporated area within the Planning Area as being within the City's Sphere of Influence. The City has designated this "sphere of influence" in order to include in the General Plan areas outside the city which: 1) are likely to be candidates for annexation during the life of the General Plan, 2) affect, and are affected by, city actions and 3) receive, or might reasonably be expected to receive, city services.

Given the impact that development in the City's sphere of influence can have on the demand for City services, the study area for the impact fee analysis is the existing city limits and that portion of the City's sphere of influence that is within the 2020 annexation horizon. Data on future development used in this study represents the amount of additional development expected in the study area through 2020. In terms of housing units, the General Plan Update projected that there will be 10,203 units in the study in 2020, an increase of 2,820 or 38 percent over the 7,383 units estimated in 1999.

The impact fees calculated in this study are based on the amount and type of projected development and the fees are calculated in terms of current dollars. Development may occur sooner or later than projected, but the rate and timing of development do not affect the fee calculations except in rare cases where fee revenue will be used to repay debt issued to fund capital facilities.

DATA SOURCES

Data on existing and future development available for use in this study are:

- Dwelling units by type (single-family detached, single family attached, multi-family and mobile home)
- Population
- Employment

Demographic, household, and housing data used in this study are based on the 2000 U.S. Census and California Department of Finance estimates. The California Department of Finance Demographic Research Unit publishes annual population and housing estimates. Employment data is based on employment information contained in the *Grass Valley Phase I Baseline Report* (July 15, 2004), which provides 2003 employment information by industry sector for Grass Valley.

Housing projections are based on the projection in the 2020 General Plan Update indicating a total of 10,203 units in the study area in 2020. Based on the housing projections, population projections were calculated based on household size data published in the 2000 Census that provides the number of persons per occupied dwelling

unit by dwelling unit type. The population projection assumes that the City's household size by dwelling unit type from 2000 will remain constant during the study period.

Following the employment projection methodology used by Applied Development Economics in the *Grass Valley Phase I Baseline Report*, employment projections in this study were calculated by establishing a ratio of jobs to housing units and maintaining that ratio constant for future years. This jobs to housing ratio was 1.75 jobs to 1.00 housing units in 2003.

DEMAND VARIABLES AND IMPACT FACTORS

In calculating impact fees, the relationship between facility needs and urban development must be quantified in cost allocation formulas. Certain measurable attributes of development (e.g., population, vehicle trip generation) are used in those formulas as *"demand variables"* to reflect the impact of different types and amounts of development on the demand for specific public services and the facilities that support those services. Demand variables are selected either because they directly measure service demand created by various types of development, or because they are reasonably correlated with that demand.

For example, the service standard for parks in a community is typically defined as a ratio of park acreage to population. As population grows, more parks are needed to maintain the desired standard. Logically, then, population is an appropriate yardstick for measuring the impacts of development on the need for additional parks. Similarly, the need for capacity in a road system depends on the volume of traffic the system must handle. Thus, the number of vehicle trips generated by development is an appropriate demand variable to represent the impact of development on the road system.

Each demand variable has a specific value per unit of development for each land use category. Those values may be referred to as *demand factors*. For example, on average, one single-family detached dwelling unit generates about one vehicle trip during the p.m. peak hour. Consequently, the peak-hour traffic demand factor for single-family residential development is 1.02 trips per dwelling unit. Other land use categories would have different impact factors. Some of the impact factors used in this study are based on widely-accepted standards (e.g., trip generation rates), while others are based on local conditions (e.g., population).

Figure 2B shows the demand variables that will be used for each type of facility addressed in this study. Each demand variable is discussed below.

Figure 2B
Variables by Facility Category

Facility Type	Demand Variable
Fire Department	Service Population
Police Department	Population / Trips
Animal Control	Population
Parks	Population
Water System	Gallons per Day
Wastewater System	Gallons per Day
Drainage Facilities	Impervious Surface Area
Administrative and General Government	Service Population
Local Traffic and Circulation Improvements	Peak Hour Trips

Population per Unit of Development. Resident population is used in this study as a demand variable to calculate impact fees for certain types of facilities, such as parks, that are predominantly used by residents. Population is directly related to residential development and, therefore, no population is attributed to non-residential development. Persons-per-dwelling unit factors for existing and future development are based on an analysis of 2000 Census data, which provides information on persons per unit by housing type.

Service Population per Unit of Development. Other types of public facilities are impacted by both residential and non-residential development, so resident population alone does not adequately measure the impacts of development on those facilities. For these facilities, a "service population" is a useful demand variable. Service population is a composite variable made up of residents and employees, with employees representing non-residential development. It is important to emphasize that the demand represented by the employee component is not only the demand created by the employees themselves, but all service demand related to non-residential development.

Service population will be used to represent demand for functions like administrative or general government activities. New development will increase the need for those functions, but measuring the specific impacts of development on such a complex mix of services is difficult, and service population has been widely accepted as a reasonable proxy for such demand.

In some cases, employees are weighted relative to residents to indicate that, on average one employee represents more or less service demand than one resident. In this study,

residents and employees will be given equal weight. As an example, the 2004 service population in Grass Valley is 21,902, which is the sum of population and employment in the City in 2004.

Peak-Hour Trips per Unit of Development. Traffic generation in terms of peak hour trips is used here to measure the impact of development on the City's street system. Peak hour traffic is used rather than average daily traffic because peak volumes determine the need for street capacity. However, since each trip includes both an origin and destination point, the trip generation rates in the study are adjusted to avoid double counting of the number of trips generated by future development. All residential and non-residential development, except commercial, has a trip adjustment factor of 50 percent. For commercial / shopping center development, the trip adjustment factor is less than 50% because retail uses attract vehicles as they pass by on arterial and collector roads.

The trip generation adjustments in this study are applied to the trip generation rates in *Trip Generation*, published by the Institute of Transportation Engineers publication.

Average Daily Trips per Unit of Development. Traffic generation in terms of average daily trips is used here to measure the impact of nonresidential development on the City's provision of Police Department services. Vehicles trips are used as the nonresidential demand variable because the variation in trip generation rates between nonresidential uses better reflects the variation in demand for police services among nonresidential uses than other possible variables. Trip generation rates are highest for commercial developments, such as shopping centers, and lowest for industrial/warehouse development. This ranking of trip rates is consistent with the relative demand for public safety from nonresidential development when compared to other possible nonresidential demand indicators, such as employment or floor area.

Water Consumption (GPD) per Unit of Development. Water demand in gallons per day (GPD) per unit of development is the most common measure of the impact of development on water systems. For this study, it is assumed that peak demand from single family detached dwellings is 600.53 gallons per day (GPD). This figure reflects the average daily usage by single family units in August 2003, which was the peak demand month for the City's water system in 2003. For other development types, the report uses Capacity Ratios adopted by the City that compare water usage of other development types to single family detached dwellings. These ratios are shown in Table 6.7.

Wastewater Discharge (GPD) per Unit of Development. Wastewater discharge in gallons per day (GPD) per unit of development is the most common measure of the impact of development on wastewater systems. The discharge factors used in this study are based on the 1995-2015 Sewer System Master Plan prepared by Sauers Engineering.

Impervious Surface Area Factor. Impervious surface area (ISA) factor is a variable that reflects the impact of development on storm drainage systems. The ISA factor represents

the typical percentage of total site area covered by impervious surfaces (e.g. roofs, paving) in a particular type of development. Generally, single family residential development has a relatively low ISA factor while commercial and industrial development have much higher factors. The factors used in this study are based on industry standards.

EXISTING AND FUTURE DEVELOPMENT

Table 2.1 on the next page presents summary data on existing and projected development in the City of Grass Valley and the City's "sphere of influence" within the City's 20 year annexation horizon. These data include a 2004 estimate and then a 2020 projection for population, housing, employment, nonresidential space, peak hour trips, and average daily trips occurring in the study area. Appendix A provides additional information about the data sources and assumptions used to derive the information in Table 2.1

The final column in Table 2.1 reflects the projected amount of new residential and nonresidential development during the 2004 to 2020 period. This projection of new development excludes existing development in the City's Sphere of Influence (AOI) that may ultimately be annexed into the City during the study period. For the purposes of the fee study, this existing development is not considered future growth or new development because—though the development annexed by the City will create additional service demands—the City will not collect any impact fees from this existing development.

Table 2.1: City of Grass Valley and Area of Influence - Projected Future Growth 2004-2020

Demand Factor	City of Grass Valley 2004	AOI Area 2004	City & AOI Total 2004	2020 Projection Total	Future Growth 2004-2020
Population[1]					
Population in Group Quarters	350	-	350	350	-
Population in Occupied Units	11,710	4,761	16,471	21,342	4,871
Total Population	12,060	4,761	16,821	21,692	4,871
Housing Units[1]					
Single Family Detached	2,779	1,546	4,325	5,482	1,157
Single Family Attached	256	-	256	256	-
Multi-Family	2,182	742	2,924	3,773	849
Mobile Home	692	-	692	692	-
Total Housing Units	5,909	2,288	8,197	10,203	2,006
Occupied Units	5,628	2,179	7,807	9,718	1,911
Employment[2]					
Employment	9,842	3,811	13,653	16,994	3,341
Nonresidential Space[3]					
Retail/Com (000s)	1,603	621	2,223	2,767	544
Office (000s)	636	246	883	1,099	216
Institutional (000s)	473	183	656	817	161
Goods Production (000s)	695	269	964	1,200	236
Total (000s)	3,407	1,319	4,726	5,883	1,157
Service Population[4]					
Population and Employment	21,902	8,572	30,474	38,686	8,213
Peak Hour Vehicles Trips [5]					
Single Family Detached	1,417	789	2,206	2,796	590
Single Family Attached	67	-	67	67	-
Multi-Family	731	248	979	1,264	284
Mobile Home	208	-	208	208	-
Subtotal Residential	2,422	1,037	3,459	4,334	874
Retail/Com (000s)	2,910	1,127	4,036	5,024	988
Office (000s)	859	333	1,191	1,483	292
Institutional (000s)	452	175	626	780	153
Goods Production (000s)	375	145	521	648	127
Subtotal Nonresidential	4,595	1,779	6,375	7,935	1,560
Total Peak Hour Trips	7,018	2,816	9,834	12,269	2,435
Average Daily Vehicles Trips [5]					
Single Family Detached	13,298	7,399	20,696	26,232	5,536
Single Family Attached	750	-	750	750	-
Multi-Family	7,332	2,492	9,824	12,677	2,853
Mobile Home	1,727	-	1,727	1,727	-
Subtotal Residential	23,106	9,891	32,997	41,386	8,389
Retail/Com (000s)	31,564	12,222	43,785	54,501	10,715
Office (000s)	4,979	1,928	6,906	8,596	1,690
Institutional (000s)	3,154	1,221	4,375	5,446	1,071
Goods Production (000s)	2,422	938	3,360	4,182	822
Subtotal Nonresidential	42,119	16,309	58,427	72,726	14,299
Total Average Daily Trips	65,224	26,200	91,424	114,111	22,687

[1] Source: California Department of Finance 2004 E5 City/County population and housing estimate for population and housing data. Housing Projection based on 2020 Grass Valley General Plan indicating a total of 10,203 units in 2020. Population projections based on applying 2000 U.S. Census data on number of persons per occupied unit by housing unit type.

[2] Employment based on 2003 employment estimate and jobs to housing ratio found in Grass Valley Phase ! Baseline Report July 15, 2004 prepared by Applied Development Economics.

[3] Nonresidential space estimate based on distribution of employment in Phase I Baseline Report and employees per 1,000 square foot ratios published by the Institute for Transportation Engineers in Trip Generation (2003).

[4] Service population is the sum of population and employment

[5] Peak hour and average daily trip rates published by Institute for Transportation Engineers in Trip Generation (2003)

CHAPTER 3
FIRE DEPARTMENT FACILITIES AND EQUIPMENT

This chapter addresses impact fees for Fire Department facilities and equipment needed to serve future development in Grass Valley. The Grass Valley Fire Department currently operates two fire stations, with each of the two stations having a full-time two-person engine company. The company at Station 2 responds with either the engine or the aerial ladder, depending on the type of call. Current response time for emergency calls averages 3 minutes.

Fire Station No. 1 on Brighton Street was constructed in 1975 and remodeled in 1995 at a cost of $90,000. Fire Station No. 2 on Sierra College Drive was constructed in 2000 at a cost of $2 million on land leased from Sierra College.

SERVICE AREA

The study area addressed in this analysis is the City of Grass Valley. The City will be treated as a single service area for purposes of calculating fire impact fees because fire protection and emergency medical services are provided to the entire City by an integrated system of facilities, equipment, and personnel. Although individual fire stations are assigned first-due responsibility for designated areas, development in any part of the City depends on the whole system for protection.

It is important to note that the planning horizon is shorter for the Fire Department impact fee than other fee categories in the study. Because the existing Fire stations are expected to reach their service capacity by 2014 or before, the planning horizon for the stations is 2014. To reflect this shorter horizon, the potential revenue collected from the fee examines the 2004 to 2014 period, not the 2004 to 2020 period examined for most other fee categories in the study. The impact fees should be reviewed if the City constructs additional stations or adds stations to the Capital Improvement Program prior to 2014. At such time, the fees should be recalculated to reflect future capacity expansions that are needed to accommodate development.

METHODOLOGY

The calculation of impact fees for Fire Department facilities and equipment involve the use of two of the impact fee methodologies discussed in Chapter 1. The cost recovery or capacity based methodology is used to recover the cost allocated to future development of the City's two existing fire stations. While additional stations will ultimately be needed to serve projected 2020 demand for services, the study assumes that the capacity of the existing stations will meet the needs of the City to 2014. Therefore, the cost recovery component of the impact fee will be based on the anticipated demand in 2014, not projected demand in 2020. A debt service credit per demand unit is included in the

calculation to reflect the City's outstanding debt related to the construction of Station #2 and to prevent the double payment of debt service costs by future development.

Impact fees for Fire Department equipment is based on the incremental expansion cost approach, using existing level of service standards. Using this methodology, the current level of service is based on the existing ratio of equipment to service demand, where facilities and equipment are represented by the City's investment in the existing Fire Department equipment and demand is represented by the population and employment demand variables discussed below.

DEMAND VARIABLE

Both residential and nonresidential uses benefit from the City's fire protection and emergency medical services and the facilities that support those services. Therefore, population is used to measure demand created by residential development, while jobs or employment is used as the demand variable for nonresidential development.

PROPORTIONAL SHARE OF COSTS BY LAND USE

The allocation of costs between residential and nonresidential development is based on a review by the Fire Department of calls for service. This review indicated that 65.8 percent of calls were to residences, while 33.2 percent were to nonresidential sites in 2004. This proportional distribution of calls for service will be used to allocate Fire Department capital costs between residential and nonresidential development.

FIRE DEPARTMENT FACILITIES – "BUY-IN" COMPONENT

Table 3.1 on the next page shows the Grass Valley's two existing fire stations, which are Fire Station No. 1 located on Brighton Street and Fire Station No. 2 on Sierra College Drive. The building cost data for the stations reflects the depreciated replacement value of the stations, assuming straight-line depreciation on stations with a 50 year life span and a replacement cost of $2 million per station. Land values are intended to reflect current value. Land costs for Station 2 is not included in the analysis because the City leases the site from Sierra College.

It is anticipated that the City will need to expand capacity and construct additional stations to meet the expected 2020 need for fire protection and emergency medical services. However, until the City initiates these stations, future development will "buy into" the system wide capacity that is offered by the existing two stations, contributing, if necessary, to the debt service costs of providing this capacity. The cost per demand unit reflects the City's level of service for fire station facilities in 2014, indicating that the City expects to need additional capacity at this time or before.

Table 3.1: Existing Fire Department Facilities

Existing Fire Stations	Year Built	Depreciated Replacement Cost[1]	Land Value [2,3]	Total Replacement Value
Fire Station No. 1	1975	$800,000	$250,000	$1,050,000
Fire Station No. 2	2000	$1,840,000	$0	$1,840,000
				$2,890,000

	Proportionate Share	2014 Demand Units	Cost per Demand Unit
Residential	65.8%	18,211 Population	$104.42
Nonresidential	34.2%	14,312 Jobs	$69.05

[1] Source: Grass Valley Fire Department estimates the replacement cost of each station is $2 million. Depreciated replacement costs assumes a useful life of 50 years and a straightline depreciation method.

[2] Station 2 is on leased land

[3] Land costs assumes approximately 2 acres @ $3.00 per square foot

Construction of Station #2 was financed using a 15 year lease/ purchase option at an interest rate of 4.845 percent. The financing represented 46.51 percent of a larger $2.15 million lease/purchase arrangement that also provided financing for the City Hall expansion. Table 3.2 shows that the total interest on the lease/purchase option is $899,902. A proportional allocation of this interest was assigned to Fire Station #2, resulting in 46.51 percent or $418,000 in financing costs being added to the cost of the project. Financing costs on a per resident and per job basis are shown at the bottom of Table 3.2.

Table 3.2: Allocation of Interest Payments to Fire Station #2

Description	Allocation of Rental Payment Interest Costs	Total Interest Costs
City Hall Expansion	53.49%	$481,358
Fire Station #2	46.51%	$418,544
Total Interest Cost		$899,902

	Proportionate Share	2014 Demand Units	Cost per Demand Unit
Residential	65.8%	18,211 Population	$15.12
Nonresidential	34.2%	14,312 Jobs	$10.00

Tables 3.1 and 3.2 described the "buy in" and interest cost components related to the City's fire station facilities. However, the future lease payments on the lease / purchase agreement for Station #2 are now part of the City's future cost obligations. Because some of this debt may be retired from General Fund sources other than impact fees, a debt service credit is recommended for the station project to avoid the potential for double payment of costs that were already included in Fire Department impact fee. To calculate the credit, annual debt service payments were allocated to residential or nonresidential development and then divided by the appropriate demand variable, either population or employment, to yield annual payments per capita or per job. A net present value formula was used to account for the time value of payments that will be made through the year 2014, the final repayment year. Table 3.3 shows the debt service credit per capita and per job.

Table 3.3: Debt Service Credit for Fire Station #2

Year	Lease Payments to Principal	Fire Station Proportion	Residential Share	Nonresidential Share	Population	Jobs	Principal Payments Per Person	Principal Payments Per Job
			65.8%	34.2%				
2005	$203,327	$94,567	$62,225	$32,342	12,990	10,289	$4.79	$3.14
2006	$203,327	$94,567	$62,225	$32,342	13,570	10,736	$4.59	$3.01
2007	$203,327	$94,567	$62,225	$32,342	14,150	11,183	$4.40	$2.89
2008	$203,327	$94,567	$62,225	$32,342	14,730	11,630	$4.22	$2.78
2009	$203,327	$94,567	$62,225	$32,342	15,310	12,077	$4.06	$2.68
2010	$203,327	$94,567	$62,225	$32,342	15,890	12,524	$3.92	$2.58
2011	$203,327	$94,567	$62,225	$32,342	16,471	12,971	$3.78	$2.49
2012	$203,327	$94,567	$62,225	$32,342	17,051	13,418	$3.65	$2.41
2013	$203,327	$94,567	$62,225	$32,342	17,631	13,865	$3.53	$2.33
2014	$203,327	$94,567	$62,225	$32,342	18,211	14,312	$3.42	$2.26
Total		$945,673	$622,253	$323,420			$40.35	$26.58
						Discount Rate	5%	5%
						Present Value	**$31.63**	**$20.83**

EXISTING EQUIPMENT AND LEVEL OF SERVICE

Impact fees for Fire Department equipment is based on the incremental cost to the City of maintaining the current level of service as future development places a greater demand on the fire and emergency medical services.

Table 3.4 provides a listing of the Fire Department's existing inventory of vehicles and personal protective equipment that is issued to firefighters. This inventory includes 11 vehicles, personal protective equipment for the City's 22 Fire Department staff and 15 Paid Call Firefighters, and 24 self contained breathing apparatus sets. Since the inventory is the department's current stock of equipment, the City's current population and employment are used to establish the existing level of service, expressed on a cost per capita or per job in Table 3.4.

Table 3.4: Existing Fire Department Equipment

Existing Vehicle/Apparatus	# of Items	Cost per Item	Total Cost
Engine 1380	1	$310,000	$310,000
Engine 1386	1	$310,000	$310,000
Engine 1384	1	$310,000	$310,000
Engine 1381	1	$310,000	$310,000
Truck T-2 (Refurb 2001)	1	$650,000	$650,000
Support S-1 (1341)	1	$185,000	$185,000
Staff Vehicle 1300	1	$40,000	$40,000
Staff Vehicle 1302	1	$40,000	$40,000
Staff Vehicle 1320	1	$40,000	$40,000
Staff Vehicle 1330	1	$40,000	$40,000
Staff Vehicle 1321	1	$40,000	$40,000
Self Contained Breathing Apparatus	24	$5,000	$120,000
Personal Protective Equip (staff)	22	$3,250	$71,500
Personal Protective Equip (PCF)	15	$2,000	$30,000
Total			$2,496,500

	Proportionate Share	2004 Demand Units	Cost per Demand Unit
Residential	65.8%	12,060 Population	$136.21
Nonresidential	34.2%	9,842 Jobs	$86.74

Source: Grass Valley Fire Department

COST PER DEMAND UNIT SUMMARY

Table 3.5 summarizes the cost per demand unit calculations shown in Tables 3.1 through 3.4 for Fire Department facilities and equipment.

Table 3.5: Cost per Demand Unit Summary--Fire Department

Item	Residential Development (Cost Per Capita)	Nonresidential Development (Cost Per Job)
Fire Stations		
Buy-In Component - Fire Stations	$104.42	$69.05
Financing Costs For Fire Station #2	$15.12	$10.00
Debt Service Credit for Fire Station #2	($31.63)	($20.83)
Subtotal	$87.91	$58.22
Fire Department Vehicles & Equipment		
Fire Department Vehicles and Equipment - Existing LOS	$136.21	$86.74
Total Cost per Demand Unit	$224.12	$144.96

IMPACT FEES PER UNIT OF DEVELOPMENT

The cost per demand unit shown in Table 3.5 are converted into impact fees per unit of development, by development type, in Table 3.6 on the next page. Residential impact fees are calculated by multiplying the cost per capita by the number of persons per housing unit by housing type. In most instances, the fees for nonresidential development are calculated by multiplying the cost per job by the number employees per 1,000 square feet of floor area. Except for nonresidential uses such as schools, and lodging facilities, the fees are per 1,000 square feet of nonresidential floor area.

Table 3.6 Fire Department Impact Fees per Unit of Development

Land Use Category	Dev Units [1]	Demand Unit [2 3]	Total Fee Per Unit
Residential		Population	
Single Famly--Detached	D.U.	2.43	$544.45
Single Famly--Attached	D.U.	1.95	$436.40
Multi-Family	D.U.	2.00	$447.90
Commercial / Shopping Center		Jobs	
25K gross leasable area	1,000 Sq Ft	3.33	$483.20
50K gross leasable area	1,000 Sq Ft	2.86	$414.17
100K gross leasable area	1,000 Sq Ft	2.50	$362.40
200K gross leasable area	1,000 Sq Ft	2.22	$322.13
400K gross leasable area	1,000 Sq Ft	2.00	$289.92
General Office			
10K gross floor area	1,000 Sq Ft	4.48	$649.41
25K gross floor area	1,000 Sq Ft	4.15	$601.58
50K gross floor area	1,000 Sq Ft	3.91	$566.79
100K gross floor area	1,000 Sq Ft	3.69	$534.90
Industrial			
Business Park[4]	1,000 Sq Ft	3.16	$457.84
Mini-Warehouse	1,000 Sq Ft	0.04	$6.44
Warehousing	1,000 Sq Ft	1.28	$184.83
Manufacturing	1,000 Sq Ft	1.79	$259.97
Light Industrial	1,000 Sq Ft	2.31	$334.56
Other Nonresidential			
Medical-Dental Office	1,000 Sq Ft	4.05	$587.81
Hospital	1,000 Sq Ft	3.38	$489.79
Day Care	student	0.16	$23.09
Lodging	room	0.71	$103.09

[1] Units of development. D.U. equals dwelling unit

[2] Population per residential unit is based on U.S. Census data on household size by housing type (ST3; H32). Nonresidential data on employees per 1,000 square feet of space is based on Trip Generation, Institute of Transportation Engineers, 2003.

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

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

PROJECTED REVENUE

Finally, the impact fees from Table 3.6 can be applied to projected future development to project the total revenue that will be generated if the fees calculated here are imposed on that development. Table 3.7 shows the revenue projections for the fees calculated in this chapter.

As noted earlier, revenue is only projected to 2014 since it is anticipated that future development will "buy-into" the existing fire stations' system wide capacity. When future stations are constructed or included in the City's capital improvement program, the fee should be recalculated to reflect the capital costs of the system wide capacity expansions undertaken to accommodate future growth.

Table 3.7: Potential Revenue--Fire Department Facilities and Equipment

Land Use / Size	Demand Unit	Total Additional Units 2004-2014[1]	Existing Development to be Annexed 2004-2014[1]	Estimate of Future Development 2004-2014[1]	Fire Department Impact Fee Revenue[2]
Residential			*53.3%*	*46.7%*	
Single Family	D.U.	1,690	900	789	$429,727
Multi-Family	D.U.	994	530	464	$208,035
Subtotal		2,684	1,430	1,254	$637,762
Nonresidential[3]			*53.3%*	*46.7%*	
Retail/Com	1,000 Sq Ft	728	388	340	$164,314
Office	1,000 Sq Ft	289	154	135	$55,910
Institutional	1,000 Sq Ft	215	114	100	$36,361
Goods Production	1,000 Sq Ft	316	168	147	$47,505
Subtotal		1,547	824	723	$304,090
Total					$941,852

[1] See Appendix A for development projections used in this study. Distribution of existing development to be annexed and new development is based on the data shown in Table 2.1 indicating that 53.3 percent of additional development in the City during the 2004 to 2020 period will be due to the annexation of existing development. Table 2.1 also indicates that 46.7 percent of future development in the City will be new development.

[2] See Table 3.6 for impact fee per unit of development.

[3] Revenue potential for nonresidential is based using a nonresidential development prototype to represent four types of nonresidential development. The retail/commercial prototype is based on the impact fee for a 100,000 square foot facility, office is based on a 50,000 square foot facility, institutional is based on a facility with 100,000 square feet of leasable office space, and goods production is based on the fee for a light indistrial use.

It is important to note that the revenue projection shown in Table 3.7 only represents fees collected from new development occurring either in the City or within areas annexed by the City, not existing development that is projected to be annexed by the City between 2004 and 2014. Such existing development is excluded from the revenue calculation because the City will not collect impact fees from this development that is already constructed in the City's "sphere of influence". The number of units excluded from the revenue projection is based on the data in Table 2.1, which indicated that about 53

percent of the City's development between 2004 and 2020 will be existing development annexed into the City.

All costs used in this report are given in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 4
POLICE AND ANIMAL CONTROL FACILITIES AND EQUIPMENT

This chapter addresses impact fees for facilities and equipment that will be needed by the Police Department and by animal control services to serve future development in Grass Valley. The Grass Valley Police Department provides 24-hour law enforcement service to the City. The Department is staffed by 27 sworn officers and 11 non-sworn personnel. The Department occupies a 12,600 square foot building adjacent to City Hall that was constructed in 1996 to house the department.

Animal Control in Grass Valley consists of patrol services and maintaining an animal shelter at 556 Freeman Lane. Animal Control provides service to both the City of Grass Valley as well as Nevada City. Impact fees calculated in this study are based on the proportional cost of providing Animal Control facilities and equipment for Grass Valley only.

METHODOLOGY

The calculation of impact fees for Police Department and animal control facilities and equipment involve the use of each of the three impact fee methodologies discussed in Chapter 1. The cost recovery or capacity based methodology is used to recover the cost allocated to future development of the 1996 construction of a new Police Department station. The capacity of the existing station is expected to meet the needs of the City to 2008. Since the station will be at capacity in 2008, the cost recovery component will be based on the anticipated demand in 2008, not projected demand in 2020. A principal payment credit per demand unit is included in the calculation to reflect the City's outstanding debt related to the construction of the facility and to prevent the double payment of debt service costs by future development.

Impact fees for animal control facilities uses the plan-based method. The City's Capital Improvement Program (CIP) Summary identifies animal control facilities that will be needed to serve both existing and future residents of the City. In addition, animal control facilities also serve Nevada City, an area located outside the study area of this report. To reflect these circumstances, a proportional share of the cost of future facilities identified in the CIP Summary are attributed to

existing development and to areas outside the scope of this study. These costs are excluded from the impact fee calculations.

The third cost component of the Police Department and animal control impact fee addresses capital costs associated with the additional vehicles and equipment that will be needed by Police and animal control to accommodate future development. Impact fees for vehicles and equipment are calculated using the incremental expansion based method discussed in Chapter 1. Incremental based fees are open-ended, meaning that they do not depend on information or assumptions about end-state development or equipment needs in the study area. Rather, the fees are based on maintaining the City's existing ratio of equipment to service demand.

SERVICE AREA AND PLANNING HORIZON

The service area for the Police Department and animal control impact fee is the City and that portion of the City's "sphere of influence" that is within the 2020 annexation horizon.

It is important to note that the planning horizon is shorter for the Police Department and animal control impact fee than other fee categories in the study. Because the existing Police station is expected to reach capacity in 2008, the planning horizon for the station is 2008. To reflect this shorter horizon, the potential revenue collected from the fee examines the 2004 to 2008 period, not the 2004 to 2020 period examined for most other fee categories in the study. The impact fees should be reviewed and, if necessary, recalculated at (or near) the end of the planning horizon to reflect future capacity expansions that are needed to accommodate development occurring after 2008.

DEMAND VARIABLE

Impact fees for the Police Department and Animal Control use different demand indicators for residential and nonresidential development. These demand indicators are the following:

- **Police Department—Residential Development.** Residential impact fees are calculated on a per capita basis and then converted to a proportionate fee amount by type of housing, based on household size.
- **Police Department—Nonresidential Development.** To calculate nonresidential impact fees, vehicle trips are recommended as the best demand indicator for Police Department facilities. Vehicles trips are used as the nonresindential demand variable because the variation in trip generation rates between nonresidential uses better reflects the variation in demand for police services among nonresidential uses than other possible variables. For

example, trip generation rates are highest for commercial developments, such as shopping centers, and lowest for industrial/warehouse development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for public safety from nonresidential development. Other possible nonresidential demand indicators, such as employment or floor area, do not accurately reflect the demand for service. If employees per thousand square feet of nonresidential floor area were used as the demand indicator, public safety impact fees would be too high for office and institutional development. If floor area were used as the demand indicator, public safety impact fees would be too high for industrial development. Also, police officers respond to traffic accidents, which are directly proportionate to trip generation rates.

- **Animal Control—Residential Development.** Residential impact fees are calculated on a per capita basis and then converted to a proportionate fee amount by type of housing, based on household size.
- **Animal Control—Nonresidential Development.** It is the consultant's experience that the majority of demand for animal control services is from residential development. Under these circumstances, no nonresidential fee is calculated for animal control facilities and equipment.

PROPORTIONAL SHARE OF COSTS BY LAND USE

In 2003, the Grass Valley Police Department received 22,907 calls for service. When available, the distribution of these calls to residential and nonresidential development serves as a measure for allocating costs to either residential and nonresidential uses. The Police Department, however, does not compile calls for service data by land use type.

In lieu of the calls for service data, the proportional share of population and employment to the service population (population + employment) in the City serves as the indicator of the relative demand for service from residential and nonresidential development. In 2004, the population represented 55 percent of the service population, while jobs represented 45 percent. Therefore, the proportionate share factor in the study for housing is 55 percent, with nonresidential development accounting for 45 percent of the demand for police facilities and vehicles.

POLICE FACILITIES –COST RECOVERY COMPONENT

In 1996, the City completed the construction of a new central station for the Grass Valley Police Department. This project, which cost about $950,000 benefited both existing and future development in the City, as it improved the existing Police Department facility as well as addressed the department's need for additional space to accommodate demand for services created by future development. The new station is anticipated to meet the needs of the department to 2008.

Table 4.1 shows the construction and land replacement cost associated with the Police station. Since both existing and future development benefited from the new station, Table 4.1 shows that the costs of the project were allocated to the total number of projected residents and jobs in the City in 2008. The year 2008 projection was used because the station is expected to be at capacity in 2008. Costs were allocated between residential and nonresidential development using the proportional shares noted above.

Table 4.1: Police Department Facilities

Item	Existing Facilities (sq. ft.)	Cost per Unit (sq. ft.)	Total Cost
Police Administrative Building[1]	9,627	$99	$952,277
Police Administrative Building (Site Area)[1]	21,780	$10	$217,800
			$1,170,077

[1]Source: City of Grass Valley

Development Type	Proportional Share	2008 Demand Units[2]	Cost per Demand Unit
Residential	55%	14,730 Persons	$43.74
Nonresidential	45%	49,770 Nonres Veh Trips	$10.56

[2]See Appendix A for the 2008 demand unit projections shown in the table.

Construction of the Police station was 100 percent financed using a lease/ purchase arrangement. The City refinanced the outstanding debt in 2002, with a six year term ending in 2008. The future lease payments on the lease / purchase agreement are now part of the City's future cost obligations. Because some of this debt will be retired from General Fund sources other than impact fees, a debt service credit is recommended for the Police station to avoid the potential for double payment of costs that were already included in the impact fee. To calculate the credit, annual principal payments were allocated to residential or nonresidential development and then divided by the appropriate demand variable,

either population or nonresidential trips, to yield annual payments per capita or per trip. A net present value formula was used to account for the time value of payments that will be made through the year 2008, the final repayment year. Interest costs are not included in the credit because they have been excluded from the cost recovery component shown in Table 4.1. Table 4.2 shows the principal payment credit per capita and per trip.

Table 4.2: Principal Payment Credit for Police Stationit

Year	Police Facility Lease (Principal Payments)	Residential Share	Nonresidential Share	Population	Nonresidential Vehicle Trips	Principal Payments Per Person	Principal Payments Per Trip
		55%	45%				
2005	$75,000	$41,250	$33,750	12,990	44,032	$3.18	$0.77
2006	$80,000	$44,000	$36,000	13,570	45,944	$3.24	$0.78
2007	$85,000	$46,750	$38,250	14,150	47,857	$3.30	$0.80
2008	$75,000	$41,250	$33,750	14,730	49,770	$2.80	$0.68
Total	$315,000	$173,250	$141,750			$12.52	$3.03
					Discount Rate	5%	5%
					Present Value	**$11.12**	**$2.69**

ANIMAL CONTROL FACILITY NEEDS

The City's 2004 CIP Summary identified a need for a new animal control facility to service Grass Valley and Nevada City. Table 4.3 shows the estimated cost of the City's proposal for a new animal control facility. Only 80 percent of the $400,000 cost has been allocated to Grass Valley because Animal Control provides services to both Grass Valley and Nevada City. The 80 percent allocation is based on the proportional share of Grass Valley's 2004 population to the total population of Grass Valley and Nevada City.

Since the new animal control facility will benefit new and existing residents, Grass Valley's $320,425 share of the facility's cost are allocated across the entire population projected for 2020. Based on this cost allocation, the cost is the same for both existing and new residents, $14.77 per capita.

Table 4.3: Planned Animal Control Capital Facilities Attributable to New and Existing Development

Project	Proposed Capital Project or Facility	Facility Size (sq. ft.)	Total Cost
AC-1	New Animal Control Facility	4,000	$400,000
			$400,000

Source: City of Grass Valley Capital Improvement Program Summary, dated July 2004

Area	2004 Population	Proportional Share	Proportional Cost	2020 Population	Cost per Capita
Grass Valley	12,060	80%	$320,425	21,692	$14.77
Nevada City	2,995	20%	$79,575	NA	NA
Total	15,055	100%	$400,000	NA	NA

EXISTING EQUIPMENT AND LEVEL OF SERVICE

Impact fees for Police Department and Animal Control equipment are calculated using the incremental-based method. As noted above, equipment needs for the purposes of calculating the impact fee is the ratio of existing equipment cost to existing demand, where demand is measured by residents and nonresidential vehicle trips. The impact fee is based on the assumption that the City's cost to provide equipment to serve future development will be equivalent to the City's investment per unit of demand in existing equipment.

Table 4.4 provides an inventory of Police Department vehicles and equipment. The most significant equipment—in terms of cost—are the department's vehicles. Table 4.4 indicates that the replacement value of the department's equipment is $796,270. Since impact fees capturing the City's equipment costs are based on the City's existing level of service, the City's current population and nonresidential vehicle trips are used to determine the cost per demand unit.

Table 4.4: Police Vehicles and Equipment

Vehicle Type	Cost Per Unit[1]	# of Units[1]	Total Cost
Marked Patrol Cars	$35,000	5	$175,000
Marked Patrol Trucks	$38,090	3	$114,270
Unmarked Cars	$25,000	1	$25,000
Unmarked Trucks	$28,000	4	$112,000
Volunteer Vehicles	$25,000	2	$50,000
Unmarked Vans	$25,000	1	$25,000
GO-4 (Pkg. Enforcement)	$25,000	1	$25,000
Officer Equipment	$10,000	27	$270,000
Total		44	$796,270

[1] Source: Police Vehicle Information Sheet - March 2004, 2004 CIP Summary for patrol cars and City of Grass Valley Vehicle List (3-10-03) for patrol trucks, and City of Grass Valley.

Development Type	Proportional Share	2004 Demand Units	Cost per Demand Unit
Residential	55%	12,060 Persons	$36.36
Nonresidential	45%	42,119 Nonres Veh Trips	$8.50

Table 4.5 shows that Animal Control has an inventory of three trucks with an estimated value of $84,000. The cost of expanding this fleet (based on the existing level of service) has been distributed proportionally to Grass Valley and Nevada City, as Animal Control provides services to both jurisdictions. Based on this cost allocation, the cost of expanding the fleet is $5.58 per capita.

Table 4.5: Inventory and Cost of Animal Control Vehicles

Item	Cost Per Unit[1]	# of Units[1]	Total Cost
Animal Control Trucks	$28,000	3	$84,000
Total			$84,000

Source: City of Grass Valley Memorandum 8-31-04

Area	2004 Population	Proportional Share	Proportional Cost	Cost per Capita
Grass Valley	12,060	80%	$67,289	$5.58
Nevada City	2,995	20%	$16,711	$5.58
Total	15,055	100%	$84,000	$5.58

COST PER DEMAND UNIT SUMMARY

Table 4.6 summarizes the cost per demand unit calculations shown in Tables 4.1 through 4.5 for Police and Animal Control facilities and equipment.

Table 4.6: Cost per Demand Unit Summary--Police and Animal Control

Item	Residential Development (Cost Per Capita)	Nonresidential Development (Cost Per Trip)
Police Department		
Police Department Facilities	$43.74	$10.56
Police Vehicles and Equipment	$36.36	$8.50
Principal Payment Credit for Public Safety Facilities	($11.12)	($2.69)
Subtotal	$68.97	$16.37
Animal Control		
Facilities Costs Allocated to New and Existing Development	$14.77	NA
Animal Control Vehicles	$5.58	NA
Subtotal	$20.35	$0.00
Total Cost per Demand Unit	$89.32	$16.37

IMPACT FEES PER UNIT OF DEVELOPMENT

In Table 4.7, the cost per demand unit in Table 4.6 is converted into impact fees per unit of development, by development type. To make that conversion, the cost per person in Table 4.6 is multiplied by the average persons per household (or occupied unit) for the corresponding housing unit type.

For nonresidential development, the impact fee is calculated by multiplying the cost per vehicle trip by the expected trip generation characteristics for various types of nonresidential development. A trip generation adjustment factor has been used to avoid the double counting of trips. The adjustment factors for commercial development vary inversely to the square footage of such developments to account for the inverse relationship between shopping center size and pass-by trips. Appendix A (page A-8) provides a more detailed explanation of the adjustment factor used in Table 4.7.

The trip generation data is drawn from the Institute of Transportation Engineers Trip Generation Manual, 2003 edition.

Table 4.7 Police Department and Animal Control Impact Fees per Unit of Development

Land Use Category	Dev Units [1]	Avg Daily Trips per Unit [2]	Adjust Factor [3]	Demand Unit [4]	Impact Fee Per Unit (Police)	Impact Fee Per Unit (Animal Control)	Total Fee Per Unit
Residential				Persons			
Single Famly--Detached	D.U.		NA	2.43	$167.55	$49.44	$216.99
Single Famly--Attached	D.U.		NA	1.95	$134.30	$39.63	$173.92
Multi-Family	D.U.			2.00	$137.84	$40.67	$178.51
Commercial / Shopping Center				Trips			
25K gross leasable area	1,000 Sq Ft	110.32	0.22	24.27	$397.33		$397.33
50K gross leasable area	1,000 Sq Ft	86.56	0.26	22.51	$368.44		$368.44
100K gross leasable area	1,000 Sq Ft	67.91	0.29	19.69	$322.41		$322.41
200K gross leasable area	1,000 Sq Ft	53.28	0.32	17.05	$279.12		$279.12
400K gross leasable area	1,000 Sq Ft	41.80	0.35	14.63	$239.51		$239.51
General Office							
10K gross floor area	1,000 Sq Ft	22.66	0.5	11.33	$185.48		$185.48
25K gross floor area	1,000 Sq Ft	18.35	0.5	9.18	$150.20		$150.20
50K gross floor area	1,000 Sq Ft	15.65	0.5	7.83	$128.10		$128.10
100K gross floor area	1,000 Sq Ft	13.34	0.5	6.67	$109.19		$109.19
Industrial							
Business Park [5]	1,000 Sq Ft	12.76	0.5	6.38	$104.45		$104.45
Mini-Warehouse	1,000 Sq Ft	2.50	0.5	1.25	$20.46		$20.46
Warehousing	1,000 Sq Ft	4.96	0.5	2.48	$40.60		$40.60
Manufacturing	1,000 Sq Ft	3.82	0.5	1.91	$31.27		$31.27
Light Industrial	1,000 Sq Ft	6.97	0.5	3.49	$57.05		$57.05
Other Nonresidential							
Medical-Dental Office	1,000 Sq Ft	36.13	0.5	18.07	$295.74		$295.74
Hospital	1,000 Sq Ft	17.57	0.5	8.79	$143.82		$143.82
Day Care	student	4.48	0.5	2.24	$36.67		$36.67
Lodging	room	9.11	0.5	4.56	$74.57		$74.57

[1] DU = dwelling units and KSF = per 1,000 square feet of nonresidential floor area

[2] Trip Generation, Institute of Transportation Engineers, 2003.

[3] Based on the ITE data in Table VII-1 of the 5th edition of Trip Generation.

[4] Demand Unit for residential units is persons and demand unit for nonresidential is adjusted vehicle trips

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

PROJECTED REVENUE

Finally, the impact fees from Table 4.7 can be applied to projected future development to 2008 to project the total revenue that will be generated if the fees calculated here are imposed on that development. As noted earlier, revenue is only projected to 2008 since a cost recovery component for the Police Department station is necessary until the station reaches capacity in 2008. The fee can be recalculated at that time based on planned station expansions or the department's existing level of service.

Table 4.8 shows the revenue projections for the fees calculated in this chapter. It is important to note that the revenue projection only represents fees collected from new development occurring either in the City or within areas annexed by the City, not existing development that is projected to be annexed by the City between 2004 and 2008. Such existing development is excluded from the revenue calculation because the City will not collect impact fees from this development that is already constructed in the City's "sphere of influence". The number of units excluded from the revenue projection is based on the data in Table 2.1, which indicated that about 53 percent of the City's development between 2004 and 2020 will be existing development annexed into the City.

Table 4.8: Potential Revenue--Police Department and Animal Control Facilities and Equipment

Land Use / Size	Demand Unit	Total Additional Units 2004-2008[1]	Existing Development to be Annexed 2004-2008[1]	Estimate of Future Development 2004-2008[1]	Police Dept. & Animal Control Impact Fee Revenue[2]
Residential			*53.3%*	*46.7%*	
Single-Family Residential	D.U.	676	360	316	$68,506
Multi-Family Residential	D.U.	757	403	354	$63,127
Subtotal		1,433	763	669	$131,633
Nonresidential[3]			*53.3%*	*46.7%*	
Retail/Com	Trips	291	155	136	$54,046
Office	Trips	116	62	54	$19,895
Institutional	Trips	86	46	40	$12,940
Goods Production	Trips	126	67	59	$16,465
Subtotal		619	330	289	$103,345
Total					$234,979

[1] See Appendix A for development projections used in this study. Distribution of existing development to be annexed and new development is based on the data shown in Table 2.1 indicating that 53.3 percent of additional development in the City during the 2004 to 2020 period will be due to the annexation of existing development. Table 2.1 also indicates that 46.7 percent of future development in the City will be new development.

[2] See Table 4.7 for impact fee per unit of development.

[3] Revenue potential for nonresidential is based vehicle trips generated by nonresidential development prototypes used to represent four types of nonresidential development. The retail/commercial prototype is based on the impact fee for a 100,000 square foot facility, office is based on a 50,000 square foot facility, institutional is based on a facility with 100,000 square feet of leasable office space, and goods production is based on the fee for a light indistrial use.

It should be noted that all costs used in this report are given in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 5
PARKS

Future development in Grass Valley will create additional demand for park and recreation facilities in the City. To meet this future demand, this chapter addresses development impact fees for Grass Valley's park and recreation facilities. The fees calculated in this chapter are intended to cover the capital cost of maintaining the City's existing level of service, in terms of parkland and park improvements.

There are two components to the impact fees calculated in this chapter. One is a parkland acquisition impact fee to cover the cost of additional parkland that will be needed to accommodate future development. The second is a park and recreation development impact fee to cover the cost of additional park and recreation improvements, such as fields, courts, or picnic facilities, that are needed to respond to additional demand created by new development.

Information on existing and planned parks used in this study is based on the 2001 Grass Valley Parks and Recreation Master Plan and information provided by the City concerning existing parkland and park and recreational facilities found in the City.

SERVICE AREA

The service area for the park impact fee analysis is the existing City and any areas annexed to the City in the future. Because level of service standards are set on a citywide basis, impact fees for parks will be calculated on a citywide basis and applied to new development in all parts of the City. According to the Parks and Recreation Master Plan, new parks are programmed within all major developments planned in the City. This study assumes that future parks will be sited in a manner that provides reasonable proximity and access to parks for all future development subject to the park impact fees.

METHODOLOGY

The incremental expansion cost method is used to derive the land acquisition and park improvement development impact fees. Under this methodology, the current Level of Service (LOS) for park and recreational facilities are documented and cost components are allocated 100% to residential development. Per capita standards are multiplied by average household size to yield the impact fee by type of housing unit.

All fees in this report are calculated in current dollars and should be adjusted annually to reflect changes in facility costs.

DEMAND VARIABLE

Virtually all local governments define the need for parks as a function of population. The standards contained in the Grass Valley Parks and Recreation Master Plan are consistent

with that approach. Consequently, population is used as the demand variable in calculating impact fees for parks and recreation facilities in this chapter. Because the fees are population-driven, they apply only to residential development.

PARKLAND—LEVEL OF SERVICE

Table 5.1 shows that Grass Valley has a total of 108.91 acres of parkland. According to the Parks and Recreation Master Plan, this acreage encompasses all parkland in the City, which includes neighborhood, community, and urban pocket parks. All parks are included in the inventory because all of the parks offer attractions that draw residents from throughout the City, according to City staff.

Table 5.1: Existing City-Owned Parks

Park Type/Name	Total Acres
Dow Alexander Park	0.25
Elizabeth Daniels Park	0.16
Glenn Jones Park	2.00
Minnie Park	2.00
Morgan Ranch Park	4.00
Memorial Park	7.60
Mulcahy Park	12.90
Condon Park	80.00
Grand Total	108.91

Source: 2001 Grass Valley Parks and Recreation Master Plan

Based on a 2004 population, Table 5.2 shows that the City's inventory of parkland equates to 9.03 acres of parkland per 1,000 residents.

Table 5.2: Existing Ratio of City-Owned Parks to Population

Component	Existing Acres [1] [3]	Existing Population [2]	Acres per Capita	Acres per 1,000
City-owned Park Acreage	108.91	12,060	0.00903	9.03

[1] See Table 5.1

[2] Estimated population as of January, 2004.

[3] Neighborhood, community, and urban park acreage.

Parkland Dedication or In-lieu Fees - Subdivisions. The Quimby Act authorizes cities to impose parkland dedication requirements, or fees in lieu of dedication, on residential subdivisions. The act specifies that those requirements be based on a ratio of park

acreage to population ranging from 3.0 to 5.0 acres per thousand residents. A standard of 3.0 acres per 1,000 residents may be used even if the existing level is lower, and the standard may not exceed 5.0 acres per thousand regardless of the existing level. As shown in Table 5.2, the existing ratio of City-owned park acreage to population in Grass Valley is nine acres per 1,000 residents, so the 5-acre limit applies.

Parkland Acquisition for Non-Subdivision Projects–Impact Fees. Since the Quimby Act applies only to subdivisions, the standard for residential projects not involving a subdivision is not necessarily the same as the Quimby standard. Essentially, any fees for parkland acquisition not involving a subdivision are impact fees, and should be based on the existing ratio of population to park acreage. Table 5.2 shows that the ratio of all City-owned park acreage to population is 9.03 acres per 1,000 residents. For purposes of this analysis, however, we have assumed that the same standard of 5.0 acres per 1,000 residents would be used for both subdivisions and non-subdivision projects.

PARKLAND ACQUISITION—COST PER CAPITA

City staff has estimated that the current cost of parkland is about $115,000 per acre. This figure is based on an updated estimate of land costs found in the most recent Park and Recreation plan for the City. Based on this estimate, Table 5.3 shows the cost per capita for parkland acquisition using the 5.0 acres per 1,000 residents permitted under the Quimby Act.

Table 5.3: Cost per Capita - Park Land Acquisition

Acres per 1,000 [1]	Acres per Capita	Land Cost per Acre [2]	Cost per Capita [3]
5.00	0.00500	$115,000	$575.00

[1] Maximum entitlement in acres per 1,000 reisdents under the Quimby Act
[2] City of Grass Valley estimate of average per-acre land cost for a community park
[3] Cost per capita = acres per capita x improvement cost per acre

PARK IMPROVEMENTS

Grass Valley's residents benefit from the amenities found at its parks and recreation facilities. Table 5.4 inventories park improvements, such as fields, courts, community buildings, restrooms, and other basic park amenities, that are available to residents.

Since the cost of these park improvements are not included in the calculation of the parkland acquisition fee, the second component of the park impact fee is a park improvement fee. This fee is based on the per capita cost of maintaining the City's existing level of service in terms of park improvements and amenities. City staff has estimated that the value of the existing park improvements is $15.9 million. Based on

this estimate, Table 5.4 shows that the cost to maintain the City's existing level of service is $1,318 per capita.

Table 5.4: City of Grass Valley -- Inventory of Park Improvements[1]

	Total	Cost Per Unit	Cost of Park Improvements
Bocci Ball	1	$5,883	$5,883
Basketball Courts	1	$80,000	$80,000
Playground	4	$194,250	$777,000
Disc Golf	1	$17,760	$17,760
Tennis Courts	6	$40,166	$240,996
Softball Field	1	$244,200	$244,200
Baseball Field	2	$222,000	$444,000
Soccer Field	1	$175,000	$175,000
Skatepark	1	$355,000	$355,000
Group BBQ Area	2	$49,950	$99,900
LOVE Bldg	1	$799,200	$799,200
Community Bldg	2	$399,600	$799,200
Museum	1	$1,198,800	$1,198,800
Swimming Pool	1	$2,442,000	$2,442,000
Maintenance / Office Space	3	$209,836	$629,509
Landscaping and Misc. Park Fixtures[2]	NA		$5,551,772
Restrooms	9	$89,417	$804,750
Parking (square feet)	247,510	$5.00	$1,237,550
			$15,902,519
		Population in 2004	12,060
		Cost of Park Improvements per Capita	$1,318.62

[1] Source: City of Grass Valley

[2] Landscaping and miscellaneous park fixtures includes basic park inftrastructure (e.g. turf, benches, signage, and hardscaping) for the 37.51 acres of developed parkland in the City. The total landscaping figure also includes the cost of the arboretum at Condon Park.

Appendix B provides detailed information about the fields, courts, and other park amenities that are found at each of the City's parks.

IMPACT FEES PER UNIT OF DEVELOPMENT

The per capita costs from the two previous tables are converted into fees per unit of development for parkland acquisition and park improvements. Because these fees are population-based, they apply only to residential development. To calculate fees per unit of development, the per capita cost is multiplied by the average number of people per dwelling unit for each type of residential development. Table 5.5 shows the resulting impact fees per unit for land acquisition. Those fees may be imposed either as in-lieu fees pursuant to the Quimby Act, or as impact fees for non-subdivision projects.

Table 5.5: Impact or In-Lieu Fees per Unit of Development - Park Land Acquisition

Development Type	Dev Units [1]	Population per Unit [2]	Cost per Capita [3]	Impact Fee per Unit [4]
Single Famly--Detached	D.U.	2.43	$575.00	$1,396.84
Single Famly--Attached	D.U.	1.95	$575.00	$1,119.61
Multi-Family	D.U.	2.00	$575.00	$1,149.12

[1] DU = dwelling unit

[2] Household size by housting type based on 2000 Census (STF 3 Tables 30 through 33)

[3] See Table 5.3

[4] Impact fee per unit = population per unit x cost per capita

Similarly, Table 5.6 shows the calculation of fees per unit of development for park improvements. Those fees would apply to all residential development in the City.

Table 5.6: Impact Fees per Unit of Development - Park Improvements

Development Type	Dev Units [1]	Population per Unit [2]	Cost per Capita [3]	Impact Fee per Unit [4]
Single Famly--Detached	D.U.	2.43	$1,318.62	$3,203.31
Single Famly--Attached	D.U.	1.95	$1,318.62	$2,567.55
Multi-Family	D.U.	2.00	$1,318.62	$2,635.22

[1] DU = dwelling unit

[2] Household size by housting type based on 2000 Census (STF 3 Tables 30 through 33)

[3] See Table 5.4

[4] Impact fee per unit = population per unit x cost per capita

As shown in Table 5.7, the fees from Tables 5.5 and 5.6 can be summed to arrive at the total amount of park in-lieu/impact fees per unit of development.

Table 5.7: Total Fees per Unit - Park Land and Improvements

Development Type	Dev Units [1]	Fees per Unit of Development [2]
Single Famly--Detached	D.U.	$4,600.15
Single Famly--Attached	D.U.	$3,687.16
Multi-Family	D.U.	$3,784.34

[1] DU = dwelling unit

[2] Total of fees from Tables 5.5 and 5.6

PROJECTED REVENUE

Finally, the fees shown in Table 5.7 can be applied to anticipated future development to project the total revenue, in current dollars, that would be generated by those fees through 2020, assuming future development occurs as projected in Chapter 2 of this study.

Table 5.8: Projected Revenue - Fees for Parkland and Improvements

Development Type	Dev Units [1]	Future Units [2]	Fees per Unit [3]	Projected Revenue [4]
Single Famly	D.U.	1,157	$4,600.15	$ 5,322,378
Multi-Family	D.U.	849	$3,784.34	$ 3,212,908
Total				$ 8,535,286

[1] DU = dwelling unit

[2] See Chapter 2 for information on development projections

[3] See Table 5.7

[4] Projected revenue = future units x fee per unit

All costs used in this report are given in current dollars, and the revenue projections shown in Table 5.8 are also in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 6
WATER SYSTEM

This section of the report addresses water treatment and distribution facilities in the City of Grass Valley. Presently, the City's water system consists of a water treatment plant with a 5 million gallon per day (MGD) capacity, water storage tanks and reservoir, and the water distribution system. Though the peak design capacity of the system is 5.0 million gallons per day, peak demand in 2003 was approximately 2.2 MGD. The City estimates that total peak demand at build out within the water system's service area will be 2.8 MGD.

The City of Grass Valley Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary) has identified future capital projects that will be required to serve both existing and future development. Project costs in the 2004 CIP Summary attributable to future development—plus a cost recovery component for the capital costs associated with existing facilities and equipment that will serve future development—provide the basis for the water system impact fee.

SERVICE AREA AND PLANNING HORIZON

The service area for the water treatment and distribution system is the City's water service district, which encompasses only a portion of the City of Grass Valley and the "Sphere of Influence" that serves as the study area for other fees in this report. Potential expansion of the existing water service district is limited since the Nevada Irrigation District provides potable water to the area surrounding the City's service district. According to the Infrastructure Report for the Grass Valley Water System prepared by Sauers Engineering, two areas of future growth are the northern two-thirds of the Northstar property and the East Bennet Street corridor. In-fill development within the existing water district will comprise the remaining source of additional demand for water from the system.

The planning horizon used in calculating impact fees typically extends to the point at which the capacity of a particular system component is fully committed. However, the 5.0 MGD design capacity of the treatment plant will meet expected additional demand created by future development during the 2020 time horizon of this study. Total demand is not expected to exceed 2.8 MGD by 2020.

DEMAND VARIABLE

The demand variable used in this analysis is peak water usage in gallons per day (GPD), as the volume of water demanded by development is the best measure of development's impact on the system. The use of this demand variable permits the presentation of capital costs on a per gallon basis, which can then be applied to various development types according to the amount of water used.

While the cost analysis uses GPD, it is noted that the City bases its current capacity charge on a development's capacity ratio. A capacity ratio of one (1.0) is equivalent to the peak number of gallons per day used by a single family residential unit. For this study, it is assumed that a single family residential unit peak demand is 600.53 gallons per day. This figure is based on the peak demand in August 2003 from single family units with metered connections to the water system. Table 6.1 shows that the 1,664 single family units connected to the system used—during the 2003 peak demand month of August—1 MGD per day or 600.53 GPD per unit.

Table 6.1: Peak Water System Demand (2003)[1]

	Single Family Residential	Other Land Uses	Total Demand
2003 Potable Acre-Feet	92.00	111.00	203.00
2003 Potable (MGD)	1.00	1.21	2.20
2003 SF Metered Connections	1,664		
SF Gallons per Day (GPD)	600.53		
Gallons per Equivalent Dwelling Unit	600.53		

[1] 2003 Potable acre-feet and number of single family residential connections based on Department of Water Resources: Public Water Statistics for Calendar Year 2003 for the City of Grass Valley. Peak demand data reflects water demand in August 2003, which was the month with the highest monthly demand in 2003.

METHODOLOGY

The water system impact fee is based on a net capital cost per gallon of providing water service to new development. The fee is calculated by multiplying the net capital cost per gallon by the peak number of gallons per day used by a particular development type (i.e. single family residential, commercial, industrial uses). Matching peak daily water usage (by development type) with net capital cost per gallon is used to calculate the fee because such an approach provides a direct measure of future development's impact on the water system's capacity.

The net capital cost per gallon calculation is comprised of three components. One is a cost recovery component to reflect the capital costs the City has already incurred to oversize various water system facilities to support future development. The capacity-based methodology discussed in Chapter 1 is used to calculate the cost recovery component's cost per gallon by taking the cost of oversized facilities and dividing by the projected demand placed on the system at build out of the system's service area. Interest costs are also included in the cost recovery component in order to reflect financing costs. A separate a debt service credit per gallon is calculated at the end of the chapter to prevent double payment of debt service costs by future development.

The second cost component of the net capital cost per gallon calculation addresses the cost of planned improvements needed to provide water treatment or distribution facilities to future development. The plan-based methodology discussed in Chapter 1 is used to calculate this component of the fee based on dividing planned capital costs by projected demand at build out.

In addition to capital facility costs, the City also incurs capital costs for the vehicles and other equipment needed by the Public Works Department to operate the water system. This is the third component of the water impact fee. The capital cost per gallon is based on an incremental methodology, which is the impact methodology used to address vehicles in other chapters in this study.

LEVEL OF SERVICE

The water system must have the physical capacity to treat and distribute the volume of water demanded by development in its service area, while meeting appropriate health, safety, and environmental standards. If the system is not capable of satisfying those requirements, additional development may be precluded until the problem is corrected. The level of service of a water system is implied in the capacity and level of treatment designed into the system, and those factors influence the cost of the system.

PROJECTED 2020 DEMAND

According to Grass Valley–Nevada Irrigation District / Water System / Collaboration and Partnering Study / Report of Findings (September, 2004), the City estimates that total peak demand for the water system will be 2.8 MGD at build out of the water system's service area. The projection is based on demand from residential in-fill development and potential residential and nonresidential demand from development of the Northstar property. In a previous report—Infrastructure Report for the Grass Valley Water System—prepared by Sauers

Engineering, it was estimated that 600 of the 900 future residential in-fill units would be served by the City's water system.

EXISTING WATER SYSTEM-COST PER GALLON

As noted above, the City's existing water treatment plant has a peak capacity of 5 MGD, indicating that the City's water system has ample capacity to accommodate projected demand of 2.8 MGD from future development. For this reason, impact fees for the water system are based on future development "buying into" the capacity available in the system as a way to recover the capital costs associated with oversizing the facilities.

Table 6.2 on the next page provides a summary of the cost of the City's existing water system assets, which include the water treatment plant, storage tanks and reservoirs, water mains and hydrants and other facilities that comprise the distribution system, and, finally, the machinery and equipment needed to operate the water system. Since the cost recovery component is intended to reflect costs incurred by the City, the table subtracts from the original cost the value of grants and other funding contributions that have reduced the cost to the City of providing water services to customers.

Table 6.2 also includes interest on debt issued to provide capacity and upgrade the water treatment plant. Interest costs are included because such costs are often a substantial portion of total capital costs, particularly for utility systems where the large, up front costs associated with such systems require debt financing with bonds, loans, or other financial instruments. All of the City's outstanding debt on the water system were to finance upgrades—though not capacity expansions—of the water treatment plant. These debts include $1,206,459 in Water Revenue Refunding Bonds issued in 1992, with repayment based on a 20 year term at 5.85 percent interest rate; a Davis Grunsky loan received in 1980 for $152,468, on a 25 year term at 2.5 percent interest; and, finally, the City obtained a State Safe Drinking Water loan of $3,255,000 in 1991 at an interest rate of 3.37 percent to pay for the most recent water treatment plant upgrade.

Table 6.2: Cost Recovery Component - Grass Valley Water Facilities

Description	Original Cost
Water Treatment Facility	
Water Treatment Plant	$4,549,430
Water Tanks and Reservoir	$962,000
Interest on Water Revenue Refunding Bonds	$511,207
Interest on Davis Grunsky Loan	$32,230
Interest on Safe Drinking Water Loan	$2,222,714
Less Grants Received	($1,302,136)
Sub-total Treatment Facility	$6,975,445
Water Distribution System	
Water Mains and Hydrants	$4,203,722
Less Grants Received	($387,981)
Less Contributions from Subdividers	($563,765)
Sub-total Distribution System	$3,251,975
Water Machinery and Equipment (less vehicles)	$145,882
Less Grants Received	($12,911)
Sub-total Sewer Machinery and Equipment	$132,971
Total Water System	$10,360,392

Source: City of Grass Valley Summary of Fixed Assets and Depreciation Schedules

Total Cost	$10,360,392
Peak Demand in 2020 (GPD)	2,800,000
Buy-In Cost per Gallon	**$3.70**

Based on the City's original costs, the table shows that the total cost of the existing water system is about $10.4 million. While some fee studies may inflate original costs to current dollars and then decrease the current value to account for the remaining years of useful life, it is the consultant's experience that these two adjustments basically cancel each other. To avoid unnecessary complication of the fee methodology, we have simply used original costs in the buy-in calculation.

The cost per gallon calculation is based on the 2.8 MGD projected peak demand at build out of the water system's service area. Peak demand at build out is used to calculate the "buy-in" cost per gallon because the future development leading to build out is buying into the capacity available from the entire system.

EXISTING SYSTEM VEHICLES—COST PER GALLON

Table 6.3 shows the value of the vehicles used by the City to serve the existing water system. The per gallon cost for vehicles is derived using the incremental cost methodology, which assumes that additional vehicles will be needed to provide the same level of service as system demand increases.

Table 6.3: Inventory of Vehicles - Grass Valley Water System

Service Date	Existing Vehicles	# of Items	Cost per Item	Total Cost
2003	Ford 3/4 ton extended cab	1	$40,000	$40,000
1990	Isuzu utility body truck	1	$50,500	$50,500
1990	Ford 3/4 ton 4X4 utility truck	1	$40,000	$40,000
	Total	3		$130,500

Source: Public Works Twenty Year Replacement Plan

Peak Demand in 2020 (GPD)	2,800,000
Vehicle Cost per Gallon	**$0.04**

WATER SYSTEM IMPROVEMENTS

The 2004 CIP Summary identifies 19 planned improvement projects to the City's water treatment and distribution system. Of those projects, five projects were identified by the City as system improvements that are necessary to accommodate future development, but will also benefit existing users. Table 6.4 shows these improvements, indicating that the City will spend $4.05 million on the five projects.

Since the projects in Table 6.4 benefit existing and future development, costs are allocated based on the projected peak demand of 2.8 MGD at build out. This cost allocation equates to $1.45 per gallon.

Table 6.4: Planned Water System Improvements Needed for Future Development

Facility Number	Facility	Total Cost
	Distribution Improvements	
WD-2	Master Plan	$100,000
WD-3	Bennett Street	$125,000
WD-13	N. Church Street	$75,000
	Treatment Plant Improvements	
WTF-3	Empire Tank Rehabilitiation	$1,750,000
WTF-4	Facility Renovation	$2,000,000
Total		$4,050,000

Source: City of Grass Valley Capital Improvement Program Summary, dated July 2004

Peak Demand in 2020 (GPD)	2,800,000
Capital Cost Per Gallon (Future Improvements)	$1.45

DEBT SERVICE CREDIT

Table 6.3 incorporated in the cost recovery component the interest costs from the three outstanding debts that were taken out by the City for the upgrades to water the treatment plant. The future debt service payments for these debts are now part of the cost obligations that determine water user charges for all utility customers. Because this debt will be retired through the payment of utility bills, a debt service credit is recommended for the facilities to avoid the potential for double payment of costs that were already included in the water system impact fees. To calculate the credit, annual debt service payments were divided by the average daily demand of the customer base to yield annual payments per gallon. A net present value formula was used to account for the time value of payments that will be made through the year 2028, the final repayment year for the Safe Drinking Water Loan. Table 6.5 shows the per gallon debt service credit.

Table 6.5: Debt Service Credit for Water System Bonds and Loans

FY	Debt Service on Water System Bonds and Loans			Projected Water Flow[1]	Debt Service
	Refunding Bond	Davis Grunsky	Safe Drinking Water	(gal /avg day)	Per Gallon
2003				2,200,000	
2004				2,240,000	
2005	$137,413	$5,600	$148,646	2,270,000	$0.13
2006		$6,593	$148,646	2,310,000	$0.07
2007		$6,506	$148,646	2,340,000	$0.07
2008		$5,696	$148,646	2,380,000	$0.06
2009		$6,593	$148,646	2,410,000	$0.06
2010		$6,586	$148,646	2,450,000	$0.06
2011		$6,589	$148,646	2,480,000	$0.06
2012		$6,576	$148,646	2,520,000	$0.06
2013			$148,646	2,550,000	$0.06
2014			$148,646	2,590,000	$0.06
2015			$148,646	2,620,000	$0.06
2016			$148,646	2,660,000	$0.06
2017			$148,646	2,690,000	$0.06
2018			$148,646	2,730,000	$0.05
2019			$148,646	2,760,000	$0.05
2020			$148,646	2,800,000	$0.05
2021			$148,646	2,800,000	$0.05
2022			$148,646	2,800,000	$0.05
2023			$148,646	2,800,000	$0.05
2024			$148,646	2,800,000	$0.05
2025			$148,646	2,800,000	$0.05
2026			$148,646	2,800,000	$0.05
2027			$148,646	2,800,000	$0.05
2028			$149,054	2,800,000	$0.05
Total	$137,413	$50,739	$3,567,905		$1.45
					6%
			Debt Service Credit Per Gallon (Net Present Value)		**$0.81**

Source: Safe Drinking Water Payment Schedule; Davis Grunsky Payment Schedule; and State Refunding Loan Payment Schedule

[1] See discussion of future demand on page 6-3

IMPACT FEE PER UNIT OF DEVELOPMENT

Table 6.6 summarizes the information in tables 6.2 through 6.5 to arrive at a net capital cost per gallon for the City's water system. The table also converts the net

capital cost per gallon to an impact fee per equivalent dwelling unit, which represents peak usage of 600.53 gallons per day.

Table 6.6: Net Capital Cost per Gallon

Capital Cost Component	Cost per Gallon
Cost Recovery Component - Grass Valley Water Facilities	$3.70
Vehicle Cost per Gallon of Capacity	$0.04
Cost of Planned System Imrprovements	$1.45
Debt Service Credit per Gallon of Capacity	($0.81)
Net Capital Cost Per Gallon	$4.38

Equivalent Dwelling Peak Demand Per Day (GPD)	600.53
Impact Fee per EDU	$2,628

Table 6.7 converts the cost per GPD into impact fees for residential and nonresidential development. To make that conversion, the net capital cost per gallon from Table 6.6 is multiplied by the projected peak gallons per day for each residential dwelling type and, in the case of nonresidential uses, the appropriate meter size. Capacity ratios and meter sizes shown in the table are drawn from the City of Grass Valley Fee Schedule Fiscal Year 2003 / 2004.

Table 6.7: Impact Fee by Development / Capacity Demand

Development Type	Meter Size [1]	Capacity Ratio [2]	Impact Fee	Unit
Single-Family Residential		1.00	$2,628.17	Per Dwelling Unit
Duplex		0.45	$1,182.67	Per Dwelling Unit
Apartments		0.45	$1,182.67	Per Dwelling Unit
Mobile Home Park		0.45	$1,182.67	Per Trailer Pad
Nonresidential	0.58	1.00	$2,628.17	Per Meter
	0.75	1.50	$3,942.25	Per Meter
	1.00	2.50	$6,570.41	Per Meter
	1.50	5.00	$13,140.83	Per Meter
	2.00	8.00	$21,025.32	Per Meter
	3.00	16.00	$42,050.65	Per Meter
	4.00	25.00	$65,704.14	Per Meter
	6.00	50.00	$131,408.28	Per Meter

[1] Meter size standards based on City of Grass Valley Municipal Code 13.04.330 relating to water connection fees

[2] Capacity ratio is based on equivelant dwelling units (EDU). One EDU is equal to peak demand of 600.53 gallons per day

PROJECTED REVENUE

Finally, the net capital cost per gallon from Table 6.7 can be applied to projected future water demand discussed on page 6-3 to project the total revenue that may be generated if the fees calculated here are imposed on that development.

Table 6.8: Water System Impact Fees - Potential Revenue

Revenue Factor	
Projected 2020 Water Demand (GPD)	2,800,000
Estimated 2004 Water Demand (GPD)[1]	2,240,000
Projected Water Demand (2004-2020) (GPD)	560,000
Net Capital Cost Per Gallon[2]	$4.38
Potential Impact Fee Revenue	$2,450,800

[1] See Table 6.5 for estimated 2004 water demand

[2] See Table 6.6 for summary of net capital cost per gallon

CHAPTER 7
WASTEWATER SYSTEM

This section of the report addresses wastewater collection and treatment facilities in the City of Grass Valley. Adequate capacity in the wastewater system is, obviously, a precondition for future development in the City. The impact fees for the City's wastewater facilities include a wastewater treatment plant, the sewer mains, lift stations, and other components of the sewer collection system, and various equipment and vehicles required to operate the system and provide service to users.

Grass Valley's 1995-2015 Sewer System Master Plan was prepared by Sauers Engineering, Inc., and was completed in 1999. When the master plan was prepared, the rated capacity of the wastewater treatment plant (WWTP), which is located adjacent to Wolf Creek on the west side of State Route 49, was 1.72 million gallons per day (MGD), based on average dry weather flow (ADWF). Since that time, the WWTP has been expanded to a capacity of 2.78 MGD ADWF. The City has also undertaken improvement to Wolf Creek Interceptor to increase its capacity to handle additional flows generated by new development.

SERVICE AREA AND PLANNING HORIZON

The service area for the WWTP and the collection system is the entire study area, which encompasses the City and the City's sphere of influence within the 2020 annexation horizon. The planning horizon used to calculate the impact fees for wastewater facilities extends to the point at which the capacity of a particular system component is fully committed.

IMPACTS OF DEVELOPMENT

Each increment of development increases the volume of wastewater discharged into the City's sewer system. The volume discharged by various types of development is reasonably foreseeable and engineers can estimate the required capacity for the treatment plant and for specific components of the collection system. The factors used to determine system capacity can be used to project the impacts of development on the wastewater system, and to allocate the cost of facilities needed to mitigate those impacts.

DEMAND VARIABLE

Wastewater facilities are designed to handle certain flow volumes. Those volumes are measured in gallons per day (GPD) or millions of gallons per day (MGD). The volume of wastewater discharged by development is the best measure of development's impact on the system. The demand variable used in this analysis is average wastewater discharge in gallons per day (GPD).

METHODOLOGY

The wastewater system impact fee is based on a net capital cost per gallon of providing wastewater service to new development. The fee is calculated by multiplying the net capital cost per gallon by the average wastewater dry-weather flow per day (in gallons) generated by a particular development type. This net capital cost per gallon of capacity approach is used to maintain the connection between development and the average gallons per day in capacity used by that development

The net capital cost per gallon calculation is comprised of three components. One is a cost recovery component to reflect the capital costs the City has already incurred to oversize wastewater treatment and collection facilities to support future development. The capacity-based methodology discussed in Chapter 1 is used to calculate the cost recovery component's cost per gallon by taking the cost of oversized facilities and dividing by the estimated design capacity (in gallons) of the facilities. Interest costs are also included in the cost recovery component in order to reflect financing costs. A separate a debt service credit per gallon is calculated at the end of the chapter to prevent double payment of debt service costs by future development.

The second cost component of the net capital cost per gallon calculation addresses the cost of planned improvements needed to provide wastewater treatment or collection facilities to future development. The plan-based methodology discussed in Chapter 1 is used to calculate this component of the fee based on dividing planned capital costs by projected design capacity.

Capital costs incurred by the City for vehicles needed as part of the wastewater system operation are the third component of the fee calculation. These capital costs have been treated differently than other treatment or collection system equipment that are more closely tied to the capacity characteristics of the system's facilities. In the case of vehicles, the capital cost per gallon is based on an incremental methodology, which is the impact methodology used to address vehicles in other chapters in this study.

LEVEL OF SERVICE

The City cannot make choices regarding service levels with respect to wastewater facilities in the same way it does for some other facilities such as streets or parks. A wastewater system must have the physical capacity to convey and treat the volume of wastewater produced by development in its service area, while meeting standards defined in the discharge permit issued by the responsible regional water quality control board. If the system (or any part of it) becomes incapable of satisfying those requirements, additional development will be precluded until the problem is corrected. The level of service of a wastewater system is implied in the capacity and level of treatment designed into the system, and those factors influence the cost of the system.

EXISTING WASTEWATER FACILITIES—COST PER GALLON

Wastewater Treatment Plant (WWTP). Until recently, the capacity of the Wastewater Treatment Plant was rated at 1.72 MGD of average dry weather flow (ADWF). In 1992, the City constructed a "renewal and replacement" project at the WWTP. As part of that project, certain components of the plant were expanded to accommodate a total ADWF of 3.5 MGD, which was 1.78 MGD beyond its overall design capacity of 1.72 MGD at the time. The excess capacity was constructed to accommodate future development. More recently, in 2001-2002, an expansion project was constructed to increase overall treatment plant capacity from 1.72 MGD to 2.78 MGD—scaled back from the earlier target of 3.5 MGD.

As noted above, impact fees for the wastewater treatment plant are based on future development "buying into" the excess capacity created through the plant expansions in 1992 and 2002. The original cost of these projects were $11 and $12 million, respectively. In Tables 7.1 and 7.2, original project costs and interest costs related to financing the projects have been allocated to either costs related to capacity expansion or costs related to regulatory compliance. This allocation is necessary to appropriately assign costs to future development: all costs related to capacity expansion can be assigned to future development, while compliance costs—which produce benefits for both current and future users—must be shared proportionally by existing and future development.

Table 7.1: Cost Recovery Component - 1992 WWTP Renewal and Replacement Project

	Capacity Expansion	Compliance Improvements	Total
Project Distribution Expansion / Compliance[1]	29.17%	70.83%	100.00%
Distribution of Original Project Costs[1]	$3,241,406	$7,870,717	$11,112,123
Distribution of Interest Costs on Certificates of Participation[2]	$2,500,193	$6,070,919	$8,571,112
Design Capacity Factors (MGD)[3]	1.78	2.78	
Cost per Gallon	$3.23	$5.01	$8.24

[1] Distribution of costs based on February 6, 2003 memorandum from Wes Peters, Director of Finance, to Joe Colgan, Maximus.

[2] Debt Service Schedule - Wastewater Treatment Improvements Certificates of Participation

[3] The capacity expansion component of the project would have expanded capacity by 1.78 MGD. 2.78 MGD is based on the current systemwide design capacity.

Source: City of Grass Valley Summary of Fixed Assets and Depreciation Schedules

Table 7.1 shows that the cost recovery component for the 1992 project results in a cost of $8.24 per gallon. This cost per gallon includes the original cost of the expansion, total interest costs related to the expansion, and the per gallon cost of required compliance improvements. The cost per for the capacity expansion is based on 1.78 MGD because certain plant components were sized to accommodate 3.5 MGD, which was 1.78 MGD beyond its overall design capacity of 1.72 MGD at the time.

Table 7.2 provides similar cost data for the 2002 WWTP expansion. According to City staff, 65 percent of the project costs for the 2002 expansion were directly related to increasing the capacity of the plant by 1.06 MGD. Based on the distribution of project costs, $10.43 per gallon is the cost recovery component allocated to future development.

Table 7.2: Cost Recovery Component - 2002 WWTP Expansion

	Capacity Expansion	Compliance Improvements	Total
Project Distribution Expansion / Compliance[1]	65.00%	35.00%	100.00%
Distribution of Original Project Costs[2]	$8,013,898	$4,315,176	$12,329,074
Distribution of Interest Costs on State Revolving Loan Fund[3]	$1,156,024	$622,474	$1,778,498
Design Capacity Factors (MGD)[4]	1.06	2.78	
Cost per Gallon	$8.65	$1.78	$10.43

[1] Distribution of costs based on February 6, 2003 memorandum from Wes Peters, Director of Finance, to Joe Colgan, Maximus.

[2] Source: City of Grass Valley Summary of Fixed Assets and Depreciation Schedules

[3] Amortization Schedule - State Revolving Loan Fund - Sewer Plant Expansion

[4] The capacity expansion component increased capacity by 1.06 MGD. 2.78 MGD is based on the current systemwide design capacity to ensure compliance costs are allocated to existing and future development.

Wastewater Collection System. The most significant recent capacity enhancing improvement to the City's wastewater collection system was the Wolf Creek Interceptor project. The cost of this project, which provided needed transmission capacity to serve future development, is shown in Table 7.3. Because pipeline capacity is measured by flow rate in terms of cubic feet per second, interceptor capacity does not correlate directly with the GPD units used in this analysis. For purposes of the impact fee calculation, it is assumed that 75% of the flow reaching the WWTP traverses the Wolf Creek Interceptor, and equate that flow to 75% of the 1.06 MGD capacity added by the recent plant expansion. Thus the interceptor improvements will be assigned a capacity of 0.795 MGD. The remainder of the flow reaching the plant will come from areas not served by the Wolf Creek Interceptor.

Table 7.3 Wolf Creek Interceptor - Improvements

Improvement Project	Project Cost [1]	Added Capacity (MGD) [2]	Cost per GPD [3]
Wolf Creek Interceptor Improvements	$ 739,292	0.795	$0.93
Total	$ 739,292		$0.93

[1] Total cost of interceptor improvements

[2] Imputed capacity of interceptor in MGD. See discussion in text.

[3] Cost per GPD = project cost / (MGD x 1,000,000)

EXISTING WASTEWATER VEHICLES—COST PER GALLON

Table 7.4 shows the cost of the vehicles used by the City to serve the existing wastewater treatment facility. The per gallon cost for vehicles is derived using the incremental cost methodology, which assumes that additional vehicles will be needed to provide the same level of service as the design capacity of the system expands.

Table 7.4: Inventory of Vehicles - Grass Valley Wastewater Facilities

Service Date	Existing Vehicles	# of Items	Cost per Item	Total Cost
1989	Ford Explorer	1	$31,500	$31,500
1989	Ford 1 Ton T.V. Truck	1	$150,000	$150,000
1989	Ford 1 Ton Utility Flat Bed Truck	1	$45,000	$45,000
1990	Ford F450 Utility Truck	1	$46,500	$46,500
1991	Chevrolet 3/4 Ton 4x4 Pick-Up	1	$40,000	$40,000
1991	Ford Ranger Mini Pick-Up	1	$25,000	$25,000
2002	Rodder Truck	1	$168,000	$168,000
	Total	7		$506,000

Source: City of Grass Valley Summary of Fixed Assets and Depreciation Schedules

System Capacity (average daily gallons)	2,780,000
Vehicle Cost per Gallon	**$0.18**

FUTURE WASTEWATER SYSTEM IMPROVEMENTS

The 2004 CIP Summary identifies 33 planned improvement projects totaling $41.9 million. Of those projects, seven projects were identified by City staff as system improvements necessary solely to accommodate future development. These projects, which are shown in Table 7.5, include six expansions to the wastewater collection system and a periodic wastewater master plan update. Since all costs for these projects are attributable to future growth, the cost per gallon is based on 1.06 MGD treatment plant capacity expansion completed in 2002.

Table 7.5: Planned Wastewater System Improvements Needed for Future Development

Facility Number	Facility	Total Cost
	Wastewater Collection Improvements	
CS-2	Collection System Evaluation Study	$60,000
CS-3	Wastewater Master Plan Update	$80,000
CS-4	Taylorville Road Bypass	$100,000
CS-6	East Main 100 Block	$75,000
CS-7	East Main 400-1500 Block	$650,000
CS-8	West Main 100 Block	$100,000
CS-21	Colfax Avenue	$272,000
CS-22	Idaho Maryland	$343,674
Total		$1,680,674

Source: City of Grass Valley Capital Improvement Program Summary, dated July 2004

System Capacity (average daily gallons)	1,060,000
Capital Cost Per Gallon of Capacity (Future Improvements)	$1.59

The 2004 CIP Summary also identifies planned improvement projects that will benefit both existing and future development within the study area. Table 7.6 shows that two of the projects are wastewater collection system improvements, while the remaining projects are related to improvements to the wastewater treatment facility. Since the cost of these improvements must be shared proportionally by existing and future development, the cost per gallon analysis is based on the total design capacity of the treatment facility.

Table 7.6: Planned Wastewater System Improvements Benefiting All Users

Facility Number	Facility	Total Cost
	Wastewater Collection Improvements	
CS-17	Slate Creek I	$250,000
CS-24	Morgan Ranch Lift Station	$100,000
	Treatment Plant Improvements	
WWTF-1	Coagulation Facilities	$200,000
WWTF-2	Wolf Creek Stream Gauge	$25,000
WWTF-3	Primary Clarifier Drive Replacement	$125,000
WWTF-4	NPDES Compliance Improvement--membrane filtration	$4,000,000
WWTF-5	NPDES Compliance Improvement--UV disinfection	$4,000,000
WWTF-6	NPDES Compliance Improvement--cooling towers	$2,000,000
WWTF-7	NPDES Compliance Improvement--denitrification facilities	$6,000,000
Total		$16,700,000

Source: City of Grass Valley Capital Improvement Program Summary, dated July 2004

System Capacity (average daily gallons)	2,780,000
Capital Cost Per Gallon of Capacity (Future Improvements)	$6.01

The remaining 14 wastewater facility improvements in the CIP Summary were identified as projects needed to serve existing users and/or overcome existing system deficiencies. These projects are not included in the impact fee analysis since they are not related to future development.

DEBT SERVICE CREDIT

Tables 7.1 and 7.2 showed the interest costs related to the debt issued by the City for construction of the wastewater treatment plant upgrades and expansion. For the 1992 renewal and replacement project, the City issued Certificates of Participation (COP) in the amount of $10.1 million at an interest rate of 4.5 percent. The final COP debt service payment will be in 2025. For the 2002 expansion project, the City tapped the State Revolving Loan Fund to finance $10.6 million of the sewer plant improvement, on a 20 year term at a 1.8 percent interest rate.

The future debt service payments for the 1992 and 2002 wastewater treatment projects are now part of the cost obligations that determine wastewater user charges for all utility customers. Because this debt will be retired through the payment of periodic utility bills, a debt service credit is recommended for the facilities to avoid the potential for double payment of costs that were already included in the wastewater facility impact fees. To calculate the credit, annual debt service payments were divided by the average daily sewer flow of the customer base to yield annual payments per gallon. A net present value formula was used to account for the time value of payments that will be made through the year 2025, the final repayment for the COP. Table 7.7 shows the per gallon debt service credit.

Table 7.7: Debt Service Credit for Wastewater System Bonds and Loans

FY	Debt Service on COPs and Loans[1]		Projected Wastewater Flow[2]	Debt Service
	COPs	State Revolving Loan Fund	(gal /avg day)	Per Gallon
2004			1,390,000	$0.00
2005	$615,138	$533,539	1,460,000	$0.79
2006	$614,338	$533,539	1,530,000	$0.75
2007	$613,088	$533,539	1,590,000	$0.72
2008	$616,275	$533,539	1,660,000	$0.69
2009	$613,900	$533,539	1,730,000	$0.66
2010	$615,963	$533,539	1,800,000	$0.64
2011	$612,463	$533,539	1,870,000	$0.61
2012	$613,400	$533,539	1,940,000	$0.59
2013	$613,663	$533,539	2,010,000	$0.57
2014	$613,250	$533,539	2,080,000	$0.55
2015	$612,163	$533,539	2,150,000	$0.53
2016	$615,288	$533,539	2,220,000	$0.52
2017	$612,625	$533,539	2,290,000	$0.50
2018	$614,175	$533,539	2,360,000	$0.49
2019	$609,938	$533,539	2,430,000	$0.47
2020	$609,913	$533,539	2,490,000	$0.46
2021	$613,875	$533,539	2,560,000	$0.45
2022	$611,825	$533,539	2,630,000	$0.44
2023	$613,763	$533,539	2,700,000	$0.42
2024	$609,688		2,770,000	$0.22
2025	$609,600		2,840,000	$0.21
Total	$12,874,325	$10,137,236		$11.29
				6%
		Debt Service Credit per Gallon (Net Present Value)		**$6.50**

[1] Source: Debt Service Schedule - Wastewater Treatment Improvements Certificates of Participation and Amortization Schedule - State Revolving Loan Fund - Sewer Plant Expansion

[2] Projected flow based on Table 3-3 in Grass Valley Wastewater Treatment Plant Improvements (October 1997) prepared by Dewante and Stowell. Table 3-3 projected 2020 wastewater flow based on 115 gpd per capita. This factor was applied to the population projection in Chapter 2 to arrive at a projected 2020 wastewater flow. Flow projections after 2020 are based on maintaining the incremental increase is demand flow projected for the 2004 to 2020 period.

IMPACT FEE PER UNIT OF DEVELOPMENT

Table 7.8 summarizes the information in tables 7.1 through 7.7 to arrive at a net capital cost per gallon for the City's wastewater system. Based on the 191 gallons per day wastewater generation factor for single family dwelling units used in the *Sewer System Master Plan 1995-2015: City of Grass Valley,* the table also converts the net capital cost per gallon to an impact fee per equivalent dwelling unit.

Table 7.8: Net Capital Cost per Gallon

Capital Cost Component	Cost per Gallon
Treatment Plant Cost Recovery Component - 1992 Renewal and Replacement Project	$8.24
Treatment Plant Cost Recovery Component - 2002 Expansion Project	$10.43
Collection System Cost Recovery Component	$0.93
Vehicle Cost per Gallon of Capacity	$0.18
Cost of Planned System Imrprovements Attributable to Existing and Future Development	$6.01
Cost of Planned System Imrprovements Attributable to Future Development	$1.59
Debt Service Credit per Gallon of Capacity	($6.50)
Net Capital Cost Per Gallon	$20.87

Equivalent Dwelling Unit Avg. Usage Per Day (GPD)[1]	191
Impact Fee per EDU	$3,986.22

[1] The gallons per day (GPD) per equivalent dwelling unit is based on the *Sewer System Master Plan 1995-2015 City of Grass Valley* (March 1999) prepared by Sauers Engineering, which used the 191 GPD average dry-weather flow as the wastewater generation factor for single family dwelling units.

In Table 7.9, the net capital cost is converted into impact fees per unit of development, by development type. For residential units, the impact fee is expressed in terms of equivalent dwelling units (EDU) defined by the City. Following the City's existing practice, the impact fee for nonresidential development should be determined on a case by case basis. In such instances, it is recommended that the fee be based on net capital cost per gallon shown in Table 7.8.

Table 7.9: Impact Fee per Residential Unit Type

Development Type	Unit	Capacity Ratio in EDU's [1]	Impact Fee
Single-Family Residential	Per Dwelling Unit	1.00	$3,986.22
Boarding House	Bedroom	0.36	$1,435.04
Apartments	Apartment	0.71	$2,830.22
Duplex	Per Unit	0.71	$2,830.22
Mobile Home Parks	Trailer Pad	0.57	$2,272.15

[1] Capacity ratio is based on equivelant dwelling units (EDU). One EDU is equal to the average dry-weather flow for a single family dwelling. According the Sewer System Master Plan 1995-2015 City of Grass Valley (March 1999), the average dry-weather flow for a single family dwelling is 191 gallons per day

POTENTIAL REVENUE

Finally, the net capital cost per gallon from Table 7.8 can be applied to projected future wastewater flows shown in Table 7.7 to project the total revenue that may be generated if the fees calculated here are imposed on that development.

Table 7.10: Wastewater System Impact Fees - Potential Revenue

Revenue Factor	
Projected 2020 Wastewater Flow (GPD)[1]	2,490,000
Estimated 2004 Wastewater Flow (GPD)[1]	1,390,000
Projected Wastewater Flow (2004-2020) (GPD)	1,100,000
Net Capital Cost Per Gallon[2]	$20.87
Potential Impact Fee Revenue	$22,957,287

[1] See Table 7.7 for projected wastewater flow projection

[2] See Table 7.8 for summary of net capital cost per gallon

It should be noted that all costs used in this report are given in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 8
STORM DRAINAGE IMPROVEMENTS

This chapter addresses local and regional drainage improvements required to serve future development in the City of Grass Valley. Development related improvements used in this analysis were identified in the City of Grass Valley Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary).

SERVICE AREA AND PLANNING HORIZON

The study area addressed in this analysis is the City and its sphere of influence. While some jurisdictions adopt geographically-differentiated impact fees based on the boundaries of drainage sub-basins, this study allocates the cost of development related drainage improvements to all future development in the study area, regardless of location. This means that a particular type and amount of development will pay the same fee throughout the City. This approach follows the method that was used in the March 1986 City of Grass Valley: Storm Drainage Master Plan and Criteria (1986 Master Plan), which was prepared by Cranmer Engineering. The analysis assumes that the drainage improvements in the CIP Summary will be initiated by 2020.

It is important to note that, unlike impact fees for other facilities calculated in this report, the storm drainage improvements impact fee is this chapter is based on full build out of the study (i.e. the City and the City's sphere of influence within the 2020 annexation horizon), not just development projected to 2020. This approach is used for storm drainage improvements because the drainage facility improvements are being sized for the ultimate build out of the area.

METHODOLOGY

The "plan-based" fee methodology discussed in Chapter 1 is used to calculate the impact fee for drainage improvements in Grass Valley. This method forecasts the number and type of improvements needed to serve future development and then allocates the cost of those improvements to new development. The method results in a proportional allocation of development related costs, so that the share of drainage system costs charged to a particular development equals the share of storm water runoff generated by that project. Thus, a development that generates 1 percent of the runoff projected to be added by new development will pay a fee

equivalent to 1 percent of the local drainage improvements needed to serve new development.

In allocating costs to future development, the analysis takes into account that drainage improvement projects needed to serve future development also benefit existing users. This situation arises—most notably—because of the City's drainage system encompasses the entire study area. Therefore, to ensure that both existing and future development share in the cost of facilities that benefit existing and future development, a proportional share of the cost of future facilities is attributed to existing development, which is then excluded from the impact fee calculations.

DEMAND VARIABLE

The demand variable used to allocate improvement costs for drainage facilities is impervious surface area (ISA). The amount of impervious surface area (ISA) per acre by type of development is determined using typical storm water runoff factors for various development types. These runoff factors are employed by civil engineers to calculate drainage system loading that vary by development type, depending on the percentage of a site typically covered by impervious surfaces (e.g. roofs, paved areas). The factors used in this study are shown in Table 8.4.

LEVEL OF SERVICE

Level of service for a drainage system is represented by the level of protection provided by that system, with that level of protection defined in terms of the design storm event used to determine the system's capacity requirements. The 1986 Master Plan states that, "any new drainage facility shall be constructed to convey the runoff that will result when the upstream areas are developed to the ultimate density shown in the General Plan. Facilities on major drainageways shall pass a 100 year flood; all other facilities must pass a 25 year flood" (1986 Master Plan, p. ii).

FACILITY NEEDS

The 2004 CIP Summary identifies 26 planned improvement projects totaling $8.6 million. Of those projects, 13 projects were identified as system improvements that are necessary to accommodate future development, but will also benefit existing users. Table 8.1 shows these improvements, indicating that the total estimated cost is $4.93 million.

The remaining 14 drainage improvements in the CIP Summary were identified as projects needed to serve existing users and/or overcome existing system

deficiencies. These projects, which total $3.7 million, are not included in the impact fee analysis since they are not related to future development.

Table 8.1: Planned Drainage Improvements Needed for Future Development

Facility Number	Facility	Total Cost
	Local Drainage Improvements	
SD-L-6	E. Main Street	$100,000
SD-L-8	Centerville Flume	$275,000
SD-L-9	Master Plan Updates	$100,000
SD-L-10	Freeman Lane	$100,000
SD-L-11	Slide Ravine Drain	$250,000
SD-L-23	Washington-Bennett Drain	$150,000
	Regional Drain Improvements	
SD-R-1	Colfax Avenue Drain	$1,250,000
SD-R-2	Woodpecker Ravine	$500,000
SD-R-3	Matson Creek Phase 1	$300,000
SD-R-4	Wolf Creek Improvements	$1,000,000
SD-R-5	S. Auburn Street Drainage	$250,000
SD-R-6	Matson Creek Phase 2	$500,000
SD-R-7	Matson Creek Lateral	$150,000
Total		$4,925,000

Source: City of Grass Valley Capital Improvement Program Summary, dated July 2004

COST PER ACRE OF IMPERVIOUS SURFACE AREA

An average facility cost per acre of impervious surface area (ISA) is calculated based on the projected number of ISA acres when the study area is at build out. Total developed acres in the study area (rather than just future development) is used to determine facility cost per acre of ISA in order to ensure that facility costs are spread across both existing and future development. Table 8.2 projects a total of 3,176 acres of impervious surface area assuming there is a total of 5,910 developed acres in the study area at build out. Based on the drainage improvement costs shown in Table 8.1, the average cost per acre of impervious surface area is $1,550.89.

Table 8.2 Projected Build Out Acres and ISA (City and 2020 IOA in Annexation Horizon)

Development Type	Build Out Dev Acres [1]	ISA Factors [2]	Build Out Acres of ISA	Distrib. of ISA Acres	Capital Cost per Dev. Acre[3]
Single-Family Residential	2,734.4	0.4	1,093.7	34.4%	$620
Multi-Family Residential	319.7	0.6	191.8	6.0%	$931
Commercial	655.9	0.8	524.7	16.5%	$1,241
Mixed Use/Business Park	634.6	0.7	444.2	14.0%	$1,086
Manufacturing / Industrial	625.0	0.8	500.0	15.7%	$1,241
Public/Quasi-Public	680.2	0.6	408.1	12.9%	$931
Parks and Open Space	259.9	0.1	13.0	0.4%	$78
Totals	5,909.6		3,175.6	100.0%	

Drainage Improvement Costs (see Table 8.1)	$4,925,000
Drainage Improvement Cost Per Acre of ISA	$1,550.89

[1] See Table 8.3

[2] The City's existing stormwater management plan does not provide ISA factors specifically for conditions in Grass Valley. Therefore, Maximus has used typical ISA factors by development type for the analysis.

[3] Capital cost per acre is calculated by multiplying the distribution of ISA acres by total facilities costs and dividing by projected developed acreage at build out the study area.

The number of developed acres in the study area is based on land use information provided by the City of Grass Valley. This information, which is shown in Table 8.3, is presented by the land use classifications used in the City of Grass Valley 2020 General Plan. In gross acreage, the table indicates that there is currently about 3,800 developed acres and 2,765 vacant acres within the City and that portion of the City's sphere of influence in the 2020 annexation horizon.

Since net developed or developable acreage—not gross acreage—should be used to calculate the drainage impact fee, the consultant has assumed that 10 percent of existing or future development will consist of road, right-of-way, and other public infrastructure that should be excluded from the analysis. This adjustment is made to the gross acreage data provided by the City and shown as net acreage in Table 8.3. The net acreage data for vacant (2,487.8), developed (3,421.8), and total acres (5,909.6) are used to calculate the drainage impact fee.

Table 8.3: Existing and Future Land Use by Land Use Classification (City and 2020 IOA in Annexation Horizon)

City of Grass Valley 2020 General Plan Land Use Classification	Gross Acreage[1] Vacant Acres	Gross Acreage[1] Developed Acres	Net Acreage[2] Vacant Acres	Net Acreage[2] Developed Acres	Net Acreage[2] Total	Existing Residential Density[3]
Single Family Residential						
UED	360.0	356.0	324.0	320.4	644.4	
ULD	146.9	1,181.0	132.2	1,062.9	1,195.1	
UMD	158.5	121.0	142.7	108.9	251.6	
SDA[4]	651.8	62.9	586.6	56.6	643.2	
Sub-total	1,317.3	1,720.9	1,185.5	1,548.8	2,734.4	2.79
Multi-Family Residential						
UHD	40.4	220.0	36.4	198.0	234.4	
SDA[4]	86.5	8.3	77.8	7.5	85.4	
Sub-total	126.9	228.3	114.2	205.5	319.7	14.23
Commercial						
C	87.8	330.0	79.0	297.0	376.0	
OP	34.2	94.0	30.8	84.6	115.4	
SDA[4]	166.7	16.1	150.0	14.5	164.5	
Sub-total	288.7	440.1	259.8	396.1	655.9	
Mixed Use / Business Park						
BP	237.6	195.0	213.8	175.5	389.3	
MIXED	21.0	117.0	18.9	105.3	124.2	
SDA[4]	122.7	11.8	110.4	10.7	121.0	
Sub-total	381.2	323.8	343.1	291.5	634.6	
Manufacturing / Industrial						
M-I	213.6	336.0	192.2	302.4	494.6	
SDA[4]	132.1	12.8	118.9	11.5	130.4	
Sub-total	345.7	348.8	311.1	313.9	625.0	
Public, Institutional, Nongovernmental						
ING	20.2	78.0	18.2	70.2	88.4	
P	-	210.0	-	189.0	189.0	
SC	-	185.0	-	166.5	166.5	
U	-	41.0	-	36.9	36.9	
SDA[4]	202.1	19.5	181.9	17.6	199.4	
Sub-total	222.3	533.5	200.1	480.2	680.2	
Parks and Open Space						
OS	1.0	5.0	0.9	4.5	5.4	
PR	3.0	194.0	2.7	174.6	177.3	
SDA[4]	78.2	7.6	70.4	6.8	77.2	
Sub-total	82.2	206.6	74.0	185.9	259.9	
Total Acres	**2,764.3**	**3,802.0**	**2,487.8**	**3,421.8**	**5,909.6**	

[1] Source: City of Grass Valley

[2] Ninety percent of gross acreage was calculated for the study in order to exclude public infrastructure, such as roads and right-of-ways, which should be excluded from the analysis.

[3] Residential density is based on dividing existing housing units by type in the City and AOI by current land designated for residential development. Density is expressed as dwelling units per acre.

[4] SDA represents the Special Development Area designation. This classification is a holding category pending a Specific Plan or PUD that would likely permit a range of residential, nonresidential, and public uses. To reflect the potential future uses of this land, the 1,440 vacant acres that are currently designated SDA were allocated to other land use classifications in proportion to the study area's existing distribution of land uses.

COSTS ATTRIBUTABLE TO FUTURE DEVELOPMENT

Table 8.4 shows that $2.1 million of the drainage improvement costs in Table 8.1 are attributable to future development. Costs allocated to future development are based on multiplying the facility cost per acre of ISA by the projected number of ISA acres by development type associated with future development in the City. For example, Table 8.4 shows that future development of land designated for single family residential development will result in an additional 474.2 ISA acres. This figure was multiplied by the facility cost per acre of ISA ($1,550.89) to arrive at a total cost of $735,449 for single family residential. This approach ensures that a new single family residential development's share of drainage system costs equals the share of storm water runoff generated by that project.

Table 8.4: Future Development Share of Improvement Costs

Development Type	Future Dev Acres [1]	ISA Factors [2]	Future ISA Acres	Dev Share of Costs	Capital Cost per Dev. Acre[3]
Single-Family Residential	1,185.5	0.4	474.2	$735,449	$620
Multi-Family Residential	114.2	0.6	68.5	$106,290	$931
Commercial	259.8	0.8	207.8	$322,344	$1,241
Mixed Use/Business Park	343.1	0.7	240.2	$372,498	$1,086
Manufacturing / Industrial	311.1	0.8	248.9	$385,987	$1,241
Public/Quasi-Public	200.1	0.6	120.0	$186,158	$931
Parks and Open Space	74.0	0.1	3.7	$5,739	$78
Totals	2,487.8		1,363.4	$2,114,465	

Drainage Improvement Costs (see Table 8.1)	$4,925,000
Drainage Improvement Cost Per Acre of ISA	$1,550.89

1 See Table 8.3

2 See Table 8.2

3 Capital cost per acre calculated by dividing new development's share of facilities costs by development type by projected future developed acres.

IMPACT FEE AND PROJECTED REVENUE

The drainage improvement costs that are shown in Table 8.4 as attributable to future development can be converted to impact fees per unit of development. The impact fees by type of development are shown in the right-hand column of Table 8.5. The table indicates the impact fee for single family residential units is $222.14 per unit. The number of projected residential units is greater than the 2020 projection in Chapter 2 because the impact fee analysis in this chapter is based on build out of the City and the City's sphere of influence within the 2020 annexation horizon.

Since development units for nonresidential development are in acres, the impact fee for nonresidential is the same as the capital cost per developed acre shown in Table 8.4.

Table 8.5: Impact Fee Calculation

Development Type	Dev Units[1]	Future Dev. Units[2]	Dev Share of Costs[3]	Impact Fee Per Unit[4]
Single-Family Residential	DU	3,311	$735,449	$222.14
Multi-Family Residential	DU	1,625	$106,290	$65.41
Commercial	Acre	259.8	$322,344	$1,240.71
Mixed Use/Business Park	Acre	343.1	$372,498	$1,085.62
Manufacturing / Industrial	Acre	311.1	$385,987	$1,240.71
Public/Quasi-Public	Acre	200.1	$186,158	$930.53
Parks and Open Space	Acre	74.0	$5,739	$77.54
Total			$2,114,465	

[1] DU = dwelling units

[2] Projection of future development is based on applying the existing densities shown in Table 8.3 by the vacant land designated for residential uses.

[3] See Table 8.4

[4] Impact fee per unit of development = development's share of cost divided by development units.

Based on the development projections in the study, revenue from the drainage impact fee would be $2.1 million. Revenue from the impact fees match the total facility costs attributable to future development because the fees are based on dividing the costs allocated to future development by the number of projected development units (i.e. dwelling units and nonresidential acreage).

In the event that developers construct any of the development related improvements in the 2004 CIP Summary, the cost of those improvements should

be credited against the drainage impact fees charged to that development project. Please see the Implementation Chapter for more information about offsets, credits, and the administration of impact fees.

It should be noted that all costs used in this report are given in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 9
ADMINISTRATIVE AND GENERAL GOVERNMENT FACILITIES AND EQUIPMENT

This chapter addresses impact fees for administrative and general government facilities and equipment needed to serve future development in Grass Valley. Administrative and general government facilities include City Hall and the City's Corporation Yard. These facilities house staff from most City departments and support most services provided by the City. All space in the current City Hall building is currently occupied.

Administrative and general government equipment includes vehicles used by the following City departments: City Hall; Fleet; Facility Maintenance; and Public Works.

DEMAND VARIABLE

Both residential and nonresidential uses benefit from the City's general government functions and the facilities that support those functions. Therefore, population is used to measure demand created by residential development, while jobs or employment is used as the demand variable for nonresidential development. Allocation of costs is based on the each demand variables' (population or jobs) proportional share of the City's applicable service population, which is the sum of the City's population and employment.

METHODOLOGY

The calculation of impact fees for general government facilities and equipment involve the use of each of the three impact fee methodologies discussed in Chapter 1. The cost recovery or capacity based methodology is used to recover the cost allocated to future development of the $1.15 million remodel/expansion of City Hall in 2000. This remodeling of City Hall provided expanded City Council chambers and conference space that will meet the City's need to 2020. Interest costs are also included in the cost recovery component in order to reflect financing costs and, therefore, a debt service credit per capita/per job is calculated to prevent the double payment of debt service costs by future development.

The second cost component of the general government impact fee addresses the cost of planned improvements to City Hall to provide the office space needed to meet the demand placed on the City's general government by future development. The City of Grass Valley Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary) indicates that a 6,000 square foot expansion to City Hall will be necessary to meet this demand. The plan-based methodology discussed in Chapter 1 is used to calculate this component of the fee based on dividing the projected $1.2 million cost of the expansion by projected population and job growth during the 2004 to 2020 period.

The demand created by future development on the City's Corporation Yard and maintenance facilities is derived using the incremental expansion cost approach, based on existing level of service standards. Using this methodology, the current level of service is based on the existing ratio of the Corporation Yard's site area and facilities to service demand, where facilities are represented by the City's investment in the existing Corporation Yard and maintenance site area and facilities and demand is represented on a per capita or per job basis.

In addition to facility costs, the City also incurs capital costs for the vehicles and other equipment needed by the City's general government functions to meet the demand created by future development. Like the Corporation Yard, the capital cost for vehicles and equipment is also based on an incremental methodology, based on existing level of service standards. This impact methodology is used to address vehicles in other chapters in this study.

SERVICE AREA

The existing service area for general government facilities is the current city limits of Grass Valley, meaning that the present service area excludes the City's "sphere of influence" located outside the city.

While the existing service area for general government facilities is the city limits, it is important to note that this service area will change as development occurs in the "sphere of influence" and the City annexes such areas. As a result of this development (and subsequent annexation), it is anticipated that the city limits will expand to the point where by 2020 the service area for general government facilities will include the current City and the City's current "sphere of influence" that is within the 2020 annexation horizon.

CITY HALL

As discussed above, the City Hall component of the general government impact fee includes a cost recovery element for the cost of the 2000 remodel/expansion of City Hall and a planned based element to reflect the cost of a future 6,000 square foot expansion of City Hall.

2000 Remodel/Expansion of City Hall

In 1999, the City initiated a $1.15 million remodeling / expansion of the Grass Valley City Hall. This project provided the City additional space for City Council Chambers as well as conference and meeting space within City Hall. This project benefited both existing and future development in the City, as it improved the existing "public space" at City Hall as well as addressed the City's need for such space out to 2020.

Since both existing and future development benefit from the City Hall project, Table 9.1 shows that the costs of the project were allocated to the total number of projected residents and jobs in the City in 2020. The year 2020 projection was used because the project is expected to meet the 2020 needs of the City. Costs were allocated between residential and nonresidential development based on the projected distribution of residents and jobs in the City in 2020.

Table 9.1: City Hall Remodel/Expansion - Cost Recovery Component

Description	Year Constructed	Original Cost
City Hall Expansion	2000	$1,150,000
Total Cost		$1,150,000

	Proportionate Share	2020 Demand Units	Cost per Demand Unit
Residential	56%	21,692 Population	$29.72
Nonresidential	44%	16,994 Jobs	$29.72
	100%	38,686	

The City Hall remodel/expansion project was 100 percent financed using a 15 year lease/purchase option at an interest rate of 4.845 percent. The financing represented 53.49 percent of a larger $2.15 million lease/purchase arrangement that also provided financing for Fire Station #2. Table 9.2 shows that the total interest on the lease/purchase option is $899,902. A proportional allocation of this interest was assigned to the City Hall project, resulting in 53.49 percent or $481,000 in financing costs being added to the cost of the City Hall project. Financing costs on a per resident and per job basis are shown at the bottom of Table 9.2.

Table 9.2: Allocation of Interest Payments to City Hall Expansion

Description	Allocation of Rental Payment Interest Costs	Total Interest Costs
City Hall Expansion	53.49%	$481,358
Northeast Fire Station	46.51%	$418,544
Total Interest Cost		$899,902

	Proportionate Share	2020 Demand Units	Cost per Demand Unit
Residential	56%	21,692 Population	$12.44
Nonresidential	44%	16,994 Jobs	$12.44
	100%	38,686	

Tables 9.1 and 9.2 described the cost recovery and interest cost components related to the City's remodel/expansion of City Hall. The future lease payments on the lease / purchase agreement are now part of the City's future cost obligations. Because some of this debt will be retired from General Fund sources other than impact fees, a debt service credit is recommended for the expansion project to avoid the potential for double payment of costs that were already included in general government impact fee. To calculate the credit, annual debt service payments were allocated to residential or nonresidential development and then divided by the appropriate demand variable, either population or employment, to yield annual payments per capita or per job. A net present value formula was used to account for the time value of payments that will be made through the year 2014, the final repayment year. Table 9.3 shows the debt service credit per capita and per job.

Table 9.3: Debt Service Credit for City Hall Remodel / Expansion Project

	Lease Payments	City Hall Proportion	Residential Share	Nonresidential Share	Population	Jobs	Lease Payments Per Person	Lease Payments Per Job
		53.49%	55%	45%				
2005	$203,327	$108,760	$59,886	$48,873	12,990	10,289	$4.61	$4.75
2006	$203,327	$108,760	$59,886	$48,873	13,570	10,736	$4.41	$4.55
2007	$203,327	$108,760	$59,886	$48,873	14,150	11,183	$4.23	$4.37
2008	$203,327	$108,760	$59,886	$48,873	14,730	11,630	$4.07	$4.20
2009	$203,327	$108,760	$59,886	$48,873	15,310	12,077	$3.91	$4.05
2010	$203,327	$108,760	$59,886	$48,873	15,890	12,524	$3.77	$3.90
2011	$203,327	$108,760	$59,886	$48,873	16,471	12,971	$3.64	$3.77
2012	$203,327	$108,760	$59,886	$48,873	17,051	13,418	$3.51	$3.64
2013	$203,327	$108,760	$59,886	$48,873	17,631	13,865	$3.40	$3.52
2014	$203,327	$108,760	$59,886	$48,873	18,211	14,312	$3.29	$3.41
Total	$2,033,268	$1,087,595	$598,862	$488,733			$38.83	$40.17
						Discount Rate	5%	5%
						Present Value	**$30.44**	**$31.48**

Future City Hall Expansion

While the recent City Hall remodel/expansion project addressed the City's need for public meeting space at City Hall, the project did not address the need that will be created by future development for additional office space at City Hall. To address this need, the City of Grass Valley Capital Improvement Program Summary, dated July 2004 (2004 CIP Summary) proposes the construction of a 6,000 square foot expansion to City Hall to be constructed after 2008. Based on an estimated construction cost of $200 per square foot, the projected cost of the expansion is $1.2 million.

According to the City Manager, a future expansion of City Hall is only necessary to accommodate demand created by future development. Therefore, all costs of the proposed expansion have been allocated to future development. The allocation of costs

between residential and nonresidential development is based on population's and employment's proportional share of the City's total service population (population plus employment) in 2020. Table 9.4 shows the cost of the proposed expansion project on a per capita and per job basis.

Table 9.4 Planned City Hall Expansion[1]

Item	Total Cost[1]
City Hall Improvements	$1,200,000
Total	$1,200,000

[1] Source: City of Grass Valley Capital Improvement Program Summary, July 2004

	Proportionate Share	2004-2020 Demand Units	Cost per Demand Unit
Residential	56%	4,871 Population	$138.12
Nonresidential	44%	3,341 Jobs	$157.76

CORPORATION YARD

As discussed above, the Corporation Yard component of the general government impact fee is calculated using the incremental expansion approach based on existing service standards. This approach projects future demand for additional Corporation Yard and maintenance facilities—with facilities defined as buildings and site area—based on the ratio of existing facility cost to existing demand. This approach assumes that the City's cost to provide Corporation Yard and maintenance facilities to serve future development will be equivalent to the City's investment per unit of demand in existing facilities.

Table 9.5 shows the Grass Valley's existing Corporation Yard and maintenance facilities. The site area for the Corporation Yard includes the yard, proper, as well as a nearby storage and transfer station owned by the City.

The City did not have current replacement cost data for the buildings at the Corporation Yard. Therefore, the consultant used data from Marshall and Swift Valuation Services to estimate an average value per square foot of the storage and repair shop facilities at the Corporation Yard. The square footage costs in Table 9.5 for these facilities are based on basic wood framed storage or repair buildings on concrete slabs with limited office space.

Table 9.5 Corporation Yard Level of Service Standards

Item	Existing Facilities (Square Feet)[1]	Cost per Unit (Square Feet)	Total Cost
Corporation Yard (Storage Space)[2]	7,540	$31.80	$239,787
Corporation Yard (Shop Space)[2]	3,600	$41.00	$147,592
Corporation Yard (Site Area)[1]	128,900	$4.00	$515,600
Total			$902,979

[1] Source: City of Grass Valley

[2] Marshall and Swift, Marshall and Swift Valuation Service (2004)

	Proportionate Share	2004 Demand Units	Cost per Demand Unit
Residential	55%	12,060 Population	$41.22
Nonresidential	45%	9,842 Jobs	$41.22
	100%	21,902	

Based on the City's existing facilities, Table 9.5 shows the cost per capita and per job for expanding the Corporation Yard to accommodate future growth while maintaining the current level of service. The allocation of costs between residential and nonresidential development is based on population's and employment's proportional share of the City's total service population (population plus employment) in 2004.

EXISTING EQUIPMENT AND LEVEL OF SERVICE

Impact fees for general government vehicles and equipment are based on the incremental cost to the City of maintaining the current level of service as future development places a greater demand on the general government services provided by departments such as public works.

Tables 9.6 provides a listing of the existing inventory of vehicles currently needed to perform the City's general government functions. This inventory includes 17 vehicles with an estimated replacement value of $817,500. Since the inventory is the department's current stock of vehicles, the current population and employment are used to establish the existing level of service.

Table 9.6: General Government Vehicles and Equipment

Item	# of Units[1]	Unit Cost[2]	Total Cost
City Hall			
Ford Escort	2	$25,000	$50,000
Ford Explorer	1	$40,000	$40,000
Engineering			
Nissan Pick-Up	1	$25,000	$25,000
Chevy 1/2 ton	1	$25,000	$25,000
Facility Maintenance			
Dodge Van	1	$25,000	$25,000
Chevy 3/4 ton	1	$35,000	$35,000
Chevy Utility Mini Truck	1	$25,000	$25,000
Public Works			
Intl Flat Bed Dump	1	$52,500	$52,500
John Deere Back Hoe	1	$85,000	$85,000
Intl 4X4 Dump Truck	1	$85,000	$85,000
Intl Dump Truck	1	$70,000	$70,000
Chevy/GMC Bucket Truck	2	$70,000	$140,000
Cat Front Loader	1	$90,000	$90,000
Bobcat Loader	1	$25,000	$25,000
Cat 12 foot Motor Grader	1	$45,000	$45,000
	17		$817,500

[1] Source: City of Grass Valley Public Works Twenty Year Replacement Plan

	Proportionate Share	2004 Demand Units	Cost per Demand Unit
Residential	55%	12,060 Population	$37.32
Nonresidential	45%	9,842 Jobs	$37.32
	100%	21,902	

COST PER DEMAND UNIT SUMMARY

Table 9.7 summarizes the cost per demand unit calculations shown in Tables 9.1 through 9.6 for general government facilities and equipment.

Table 9.7: Cost per Demand Unit Summary--General Government

Item	Residential Development (Cost Per Capita)	Nonresidential Development (Cost Per Job)
City Hall		
City Hall Remodel / Expansion Project		
Buy-In Component	$29.72	$29.72
Financing Costs	$12.44	$12.44
Debt Service Credit for 2000 City Hall Expansion	($30.44)	($31.48)
Planned City Hall Expansion	$138.12	$157.76
Subtotal	$149.84	$168.44
Corporation Yard		
Corporation Yard Buildings and Site Area - Existing LOS	$41.22	$41.22
General Government Vehicles		
Gen. Gov. Vehicles and Equipment - Existing LOS	$37.32	$37.32
Total Cost per Demand Unit	$228.38	$246.98

IMPACT FEES PER UNIT OF DEVELOPMENT

In Table 9.8, the cost per service population in Table 9.7 are converted into impact fees per unit of development, by development type. Residential impact fees are calculated by multiplying the cost per capita by the number of persons per housing unit by housing type. In most instances, the fees for nonresidential development are calculated by multiplying the cost per job by the number employees per 1,000 square feet of floor area. Except for nonresidential uses such as schools and lodging facilities, the fees are per 1,000 square feet of nonresidential floor area.

Table 9.8 General Government Impact Fees per Unit of Development

Land Use Category	Dev Units [1]	Service Pop per Unit [2 3]	Total Fee Per Unit
Residential			
Single Famly--Detached	D.U.	2.43	$554.80
Single Famly--Attached	D.U.	1.95	$444.69
Multi-Family	D.U.	2.00	$456.41
Commercial / Shopping Center			
25K gross leasable area	1,000 Sq Ft	3.33	$823.27
50K gross leasable area	1,000 Sq Ft	2.86	$705.66
100K gross leasable area	1,000 Sq Ft	2.50	$617.45
200K gross leasable area	1,000 Sq Ft	2.22	$548.85
400K gross leasable area	1,000 Sq Ft	2.00	$493.96
General Office			$0.00
10K gross floor area	1,000 Sq Ft	4.48	$1,106.47
25K gross floor area	1,000 Sq Ft	4.15	$1,024.97
50K gross floor area	1,000 Sq Ft	3.91	$965.69
100K gross floor area	1,000 Sq Ft	3.69	$911.36
Industrial			$0.00
Business Park[4]	1,000 Sq Ft	3.16	$780.07
Mini-Warehouse	1,000 Sq Ft	0.04	$10.97
Warehousing	1,000 Sq Ft	1.28	$314.92
Manufacturing	1,000 Sq Ft	1.79	$442.94
Light Industrial	1,000 Sq Ft	2.31	$570.02
Other Nonresidential			$0.00
Medical-Dental Office	1,000 Sq Ft	4.05	$1,001.51
Hospital	1,000 Sq Ft	3.38	$834.51
Day Care	student	0.16	$39.33
Lodging	room	0.71	$175.64

[1] Units of development. D.U. equals dwelling unit

[2] Population per residential unit is based on U.S. Census data on household size by housing type (ST3; H32). Nonresidential data on employees per 1,000 square feet of space is based on Trip Generation, Institute of Transportation Engineers, 2003. Nursing home is based on employees per bed.

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

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

[5] Impact Fee for general government vehicles and equipment per unit of development. Fee is equal to service population per development unit multiplied by per capita cost of equipment shown in Table 9.2.

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

PROJECTED REVENUE

Finally, the impact fees from Table 9.8 can be applied to projected future development to 2020 to project the total revenue that will be generated if the fees calculated here are imposed on that development. Table 9.9 shows the revenue projections for the fees calculated in this chapter.

Table 9.9: Potential Revenue--General Government Facilities and Equipment

Land Use / Size	Demand Unit	Additional Units 2004-2020[1]	General Government Impact Fee Revenue[2]
Residential			
Single-Family Residential	D.U.	1,157	$641,904
Multi-Family Residential	D.U.	849	$387,492
Subtotal		2,006	$1,029,396
Nonresidential[3]			
Retail/Com	1,000 Sq Ft	544	$335,951
Office	1,000 Sq Ft	216	$208,581
Institutional	1,000 Sq Ft	161	$146,306
Goods Production	1,000 Sq Ft	236	$134,497
Subtotal		1,157	$825,336
Total			$1,854,731

[1] See Chapter 2 for development projections used in this study.

[2] See Table 9.8 for impact fee per unit of development.

[3] Revenue potential for nonresidential is based using a nonresidential development prototype to represent four types of nonresidential development. The retail/commercial prototype is based on the impact fee for a 100,000 square foot facility, office is based on a 50,000 square foot facility, institutional is based on a facility with 100,000 square feet of leasable office space, and goods production is based on the fee for a light indistrial use.

It should be noted that all costs used in this report are given in current dollars. To keep pace with changing price levels, the fees calculated above should be adjusted annually for inflation. See the Implementation Chapter for more on indexing of fees.

CHAPTER 10
TRAFFIC AND CIRCULATION IMPROVEMENTS (LOCAL FEE PROJECTS)

This chapter addresses local transportation improvements that will be needed to serve future development in the City of Grass Valley. Presently, the City collects two impact fees to address transportation needs. One is the Nevada County Regional Transportation Mitigation Fee (NCRTMF), which funds regional projects in the County (Regional Fee Projects). The second is targeted to recover costs associated with transportation improvements that are necessary to offset the local impact of development (Local Fee Projects).

This chapter calculates the maximum supportable impact fee for funding transportation improvements designated by the City as Local Fee Projects. The impact fee analysis for the Local Fee Projects is based on the capital improvement needs identified in the City's Street System Master Plan (Master Plan).

SERVICE AREA AND TIME HORIZON

The study area addressed in this analysis is the City and that portion of the City's "sphere of influence" that is within the 2020 annexation horizon. The time horizon assumes that the projects identified in the analysis will be initiated by 2020.

DEMAND VARIABLE

The demand variable used to allocate costs for local transportation improvements in this chapter is peak-hour trips (PHT). Peak-hour trips are used instead of average daily trips (ADT) because peak traffic is critical in determining the amount of system capacity required to maintain a certain level of service.

Peak hour trip generation rates are applied to projected future development in this analysis to arrive at a projection of total traffic volumes added by future development. Residential development is defined in terms of added dwelling units. Nonresidential development is projected in terms of additional nonresidential building space. In addition to new development, future development also includes existing residential and nonresidential development that will be annexed during the study period.

The trip generation rates used in this study are based on Trip Generation (2003), published by the Institute of Transportation Engineers.

METHODOLOGY

This chapter calculates impact fees using the plan-based method discussed in Chapter 1. Plan-based fees are calculated by allocating costs for a defined set of improvements to a defined set of land uses that will be served by the improvements. This method results in a proportional allocation of costs, so that the share of transportation improvement costs charged to a particular development project equals the share of new traffic generated by that project. Thus, if a project generates 1% of the traffic added by new development, it will be allocated 1% of the improvement costs attributed to new development.

The projected traffic volume for all future development is used to establish an overall average improvement cost per peak hour trip. Specifically, eligible improvement costs are divided by the number of peak hour trips added by future development to arrive at an average cost per peak hour trip. Then, that cost per trip is applied to the number of trips generated by a development project to determine the impact fee for that project.

Because specific information about all future development over the course of the study period is not available, the average cost per peak hour trip is calculated using generalized information on future development and development-related trip generation. However, when the resulting impact fees are applied to an actual project, the City can use the best available information about the trip generation characteristics of a specific project when the fee is imposed.

LEVEL OF SERVICE

Rather than defining a broad level of service to establish the need for transportation improvements in this analysis, the need for specific improvements in the City are identified in the City of Grass Valley Street System Master Plan.

FACILITY NEEDS

The Master Plan lists 51 capital improvement projects that are necessary to meet future transportation requirements in the City and its sphere of influence (See Appendix C: Excerpts from the Street Master Plan). These projects include street, intersection, interchange and other transportation improvements that the Master

Plan proposes over the next two decades. The total cost of these projects is $48.6 million.

As noted above, this study provides an impact fee analysis for projects designated as Local Fee Projects, which are improvements that are needed locally to accommodate future development. Based on the City's cost allocation of the Master Plan's proposed projects, Table 10.1 shows that the City has identified 14 Local Fee Projects. These projects, which total $3.9 million, are located throughout the City's Traffic Planning Areas (TPA). A complete list of these improvement projects are in Tables 3.9, 3.10, and 3.11 of the Master Plan that are found in Appendix C.

Table 10.1: Cost Allocation of Capital Improvement Projects (2004-2024)

	Number of Projects	TPA 1 ($000's)	TPA 2 ($000's)	TPA 3 ($000's)	Total ($000's)
City Cost Contribution	4	$392	$236	$0	$628
Dev Related Improvements Cost (Local Fee Projects)	14	$1,826	$549	$1,537	$3,912
Condition of Project Approval Contributions	14	$1,294	$3,515	$17,400	$22,209
Dev Related Improvements Cost (Regional Fee Projects)	19	$6,930	$13,717	$1,201	$21,848
Totals	51	$10,442	$18,017	$20,138	$48,597

Source: City of Grass Valley Street System Master Plan (Adopted October 2004)

Overall, costs associated with the Local Fee Projects account for 8 percent of all funding needed to fulfill the Master Plan. The remaining projects in the Master Plan will be funded through the Nevada County Regional Transportation Mitigation Fee, City funds, and/or specific funding received as a condition of development project approval.

AVERAGE COST PER PEAK HOUR TRIP

To allocate the cost of improvements to future development projects in proportion to their impact on the road system, improvement costs that will be recovered through the City's local impact fee are averaged over the number of projected additional peak hour trips to be generated by new development. Table 10.2 shows that over 5,251 additional peak hour trips are projected to be related to future development that is either annexed into or constructed in the City.

Table 10.2: Peak Hour Trips Added by Future Development

Development Type	Units[1]	Additional Units	Peak Hr Trips per Unit[2]	Adjustment Factor[3]	Adj. Pk Hr per Unit	Added Peak Hour Trips
Single Famly--Detached	DU	2,703	1.02	50%	0.51	1,379
Single Family--Attached	DU	-	0.52	50%	0.26	-
Multi-Family	DU	1,591	0.67	50%	0.34	533
Mobile Home	DU	-	0.60	50%	0.30	-
Retail /Commercial	KSF	1,165	6.26	29%	1.82	2,114
Office	KSF	462	2.70	50%	1.35	624
Government /Institutional	KSF	344	1.91	50%	0.96	328
Goods Production	KSF	505	1.08	50%	0.54	273
Total						5,251

[1] DU = dwelling units and acre=nonresidential land

[2] Trip Generation, Institute of Transportation Engineers, 2003

[3] Based on the ITE data in Table VII-1 of the 5th edition of Trip Generation, the best trendline correlation between pass-by trips and floor area is a power curve. The equation used to derive the pass-by trip percentage is 116.63 x (KSF ^ -0.2254).

The projected additional peak hour trips are based on trip generation information from the Institute of Transportation Engineers. However, since each trip includes both an origin and destination point, the trip generation rates must be adjusted to avoid double counting of the number of trips generated. For all residential and non-residential development, except commercial, Table 10.2 shows that the trip adjustment factor is 50 percent.

For commercial / shopping center development, the trip adjustment factor is less than 50% because retail uses attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. Data contained in the book Trip Generation (see Table VII-1 of the 5th edition, 1991) indicates an inverse relationship between shopping center size and pass-by trips. For a shopping center of 100,000 square feet of floor area (which could be assumed to be a typical commercial development in this study), the ITE manual indicates that on average 42% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 58% of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 58% multiplied by 50%, or approximately the 29% of trip ends shown in Table 10.2.

Based on the project costs identified in Table 10.1, Table 10.3 shows an average cost per peak hour trip for the Local Fee Project improvements.

Table 10.3: Average Cost per Peak Hour Trip

Total Cost of Improvements (Local Fee Projects)	Added Peak Hour Trips	Avg Cost per Peak Hour Trip
$3,912,000	5,251	$745.00

IMPACT FEE CALCULATION

The average cost per peak-hour trip from Table 10.3 can be used to calculate the impact fee for a specific development project. Table 10.4 on the next page shows the calculation of impact fees per unit of development for various types of development, based on expected trip generation characteristics for each type of development.

The impact fees in Table 10.4 are calculated as the number of peak-hour trips per unit of development multiplied by the average cost per peak hour trip. Like Table 10.2, a trip generation adjustment factor has been used to avoid the double counting of trips.

The trip generation rates for non-residential development types shown in the table cover different uses, but trip generation rates can vary significantly within non-residential categories, and the characteristics of each project should be assessed when the fees are applied. If necessary a project-specific impact fee can be calculated for that project. The formula for calculating a project-specific impact fee is as follows:

No. of Development Units in Project x Trips per Unit x Adjustment Factor x Cost per Trip

See the Implementation Chapter for recommendations on adoption of fees to facilitate this approach.

Table 10.4 Impact Fee per Unit of Development (Local Project Fees)

Land Use Category	Dev Units [1]	Peak Hr Trips per Unit[2]	Adjustment Factor[3]	Cost per Pk Hr Trip	Impact Fee Per Unit
Residential					
Single Family-Detached	D.U.	1.02	0.5	$745.00	$379.95
Single Family-Attached	D.U.	0.52	0.5	$745.00	$193.70
Multifamily	D.U.	0.67	0.5	$745.00	$249.58
Commercial / Shopping Center					
25K gross leasable area	1,000 Sq Ft	10.03	0.22	$745.00	$1,643.92
50K gross leasable area	1,000 Sq Ft	7.92	0.26	$745.00	$1,534.11
100K gross leasable area	1,000 Sq Ft	6.26	0.29	$745.00	$1,352.48
200K gross leasable area	1,000 Sq Ft	4.95	0.32	$745.00	$1,180.08
400K gross leasable area	1,000 Sq Ft	3.91	0.35	$745.00	$1,019.54
General Office					
10K gross floor area	1,000 Sq Ft	9.00	0.5	$745.00	$3,352.51
25K gross floor area	1,000 Sq Ft	4.27	0.5	$745.00	$1,590.58
50K gross floor area	1,000 Sq Ft	2.70	0.5	$745.00	$1,005.75
100K gross floor area	1,000 Sq Ft	1.91	0.5	$745.00	$711.48
Industrial					
Business Park[4]	1,000 Sq Ft	1.29	0.5	$745.00	$480.53
Mini-Warehouse	1,000 Sq Ft	0.29	0.5	$745.00	$108.03
Warehousing	1,000 Sq Ft	0.61	0.5	$745.00	$227.23
Manufacturing	1,000 Sq Ft	0.75	0.5	$745.00	$279.38
Light Industrial	1,000 Sq Ft	1.08	0.5	$745.00	$402.30
Other Nonresidential					
Medical-Dental Office	1,000 Sq Ft	4.45	0.5	$745.00	$1,657.63
Nursing Home	bed	0.30	0.5	$745.00	$111.75
Hospital	1,000 Sq Ft	1.61	0.5	$745.00	$599.73
Day Care	student	0.85	0.5	$745.00	$316.63
Lodging	room	0.69	0.5	$745.00	$257.03

[1] DU = dwelling units and KSF = per 1,000 square feet of nonresidential floor area

[2] Trip Generation, Institute of Transportation Engineers, 2003.

[3] Based on the ITE data in Table VII-1 of the 5th edition of Trip Generation.

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

PROJECTED REVENUE

Finally, the impact fees from Table 10.4 can be applied to future development to project the total impact fee revenue that would be generated by future development projected in this study. Table 10.5 shows projected revenue in current dollars.

Table 10.5: Potential Revenue--Local Traffic and Circulation

Land Use / Size	Demand Unit	Additional Units 2004-2020[1]	Local Traffic Impact Fee Revenue[2]
Residential			
Single-Family Residential	D.U.	1,157	$439,604
Multi-Family Residential	D.U.	849	$164,452
Subtotal		2,006	$604,056
Nonresidential[3]			
Retail/Com	1,000 Sq Ft	544	$735,874
Office	1,000 Sq Ft	216	$217,234
Institutional	1,000 Sq Ft	161	$114,218
Goods Production	1,000 Sq Ft	236	$94,924
Subtotal		1,157	$1,162,249
Total			$1,766,305

[1] See Chapter 2 for development projections used in this study.

[2] See Table 10.4 for impact fee per unit of development.

[3] Revenue potential for nonresidential is based using a nonresidential development prototype to represent four types of nonresidential development. The retail/commercial prototype is based on the impact fee for a 100,000 square foot facility, office is based on a 50,000 square foot facility, institutional is based on a facility with 100,000 square feet of leasable office space, and goods production is based on the fee for a light indistrial use.

Potential revenue in Table 10.5 is less than the project costs shown in Table 10.1 because existing development annexed by the City accounts for a portion of the City's future growth during the study period. Since the City will not be collecting impact fees from existing development annexed by the City, potential revenue does not match projected costs.

In the event that developers construct any of the improvements used as the basis for these impact fees, the cost of that right-of-way and/or construction should be credited against the traffic impact fees charged to that project.

SECTION 11
IMPLEMENTATION

This section of the report contains recommendations for adoption and administration of a development impact fee program based on this study, and for the interpretation and application of impact fees recommended herein. Statutory requirements for the adoption and administration of fees imposed as a condition of development approval are found in the Mitigation Fee Act (Government Code Sections 66000 *et seq*.).

ADOPTION

The form in which development impact fees are adopted, whether by ordinance or resolution, should be determined by the City Attorney. Typically, it is desirable that specific fee schedules be set by resolution to facilitate periodic adjustments. Procedures for adoption of fees subject to the Mitigation Fee Act, including notice and public hearing requirements, are specified in Government Code Section 66016. Such fees do not become effective until 60 days after final action by the Governing body. Actions establishing or increasing fees subject to the Mitigation Fee Act require certain findings, as set forth in Government Code Section 66001 and discussed in Section 1 of this report summarized below.

It should be noted that the all the fees calculated in this report are subject to the provisions of the Mitigation Fee Act, except for the fees in lieu of park dedication for new subdivisions. Those in-lieu fees are governed by the Quimby Act (Government Code 66477) and should be adoped and administered in keeping with the requirements of that statute.

ADMINISTRATION

Several requirements of the California Mitigation Fee Act (Government Code Sections 66000 *et seq*.) address the administration of impact fee programs, including collection and accounting procedures, refunds, updates and reporting. References to code sections in the following paragraphs pertain to the California Government Code.

Fees for Parkland Acquisition. This report calculates fees in lieu of parkland dedication pursuant to the Quimby Act, which may be collected as a condition of approval of residential subdivisions. The report also calculates impact fees for park land acquistion which apply to residenital development projects not involving a new division of land. The in-lieu fees for parkland acquisition are exempt from the provisions of the Mitigation Fee Act, but must comply with the provisions of the Quimby Act. Caution should be exercised to ensure that impact fees for parkland acquisition not be imposed on

development which has already been subject to the in-lieu fees or parkland dedication requirements at the time of a previous subdivision approval.

Imposition of Fees. Pursuant to the Mitigation Fee Act, when the City imposes an impact fee upon a specific development project, it must make findings to :

1. Identify the purpose of the fee;
2. Identify the use of the fee; and
3. Determine that there is a reasonable relationship between:
   a. The use of the fee and the development type on which it is imposed;
   b. The need for the facility and the type of development on which the fee is imposed; and
   c. The amount of the fee and the facility cost attributable to the development project.

Most of those findings would normally be based on an impact fee study, and this study is intended to provide a basis for all of the required findings. According to the statute, the use of the fee (2., above) may be specified in a capital improvement plan, the General Plan, or other public document. This study is intended to serve as a public document identifying the use of the fees.

In addition, Section 66006, as amended by SB 1693, provides that a local agency, at the time it imposes a fee for public improvements on a specific development project, "... shall identify the public improvement that the fee will be used to finance." For each type of fee calculated in this report, the improvements to be funded by the impact fees are identified. Consequently, this report provides a basis for the notification required by the statute. The City Attorney should be consulted as to the specific method of notification to be provided.

Collection of Fees. Section 66007, provides that a local agency shall not require payment of fees by developers of residential projects prior to the date of final inspection, or issuance of a certificate of occupancy, whichever occurs first. However, "utility service fees" (not defined) may be collected upon application for utility service. In a residential development project of more than one dwelling unit, the agency may choose to collect fees either for individual units or for phases upon final inspection, or for the entire project upon final inspection of the first dwelling unit completed.

An important exception allows fees to be collected at an earlier time if they will be used to reimburse the agency for expenditures previously made, or for improvements or facilities for which money has been appropriated. The agency must also have adopted a

construction schedule or plan for the improvement. These restrictions on the time of collection do not apply to non-residential development.

Notwithstanding the foregoing restrictions, many cities routinely collect impact fees for all facilities at the time building permits are issued, and builders often find it convenient to pay the fees at that time. In cases where the fees are not collected upon issuance of building permits, Section 66007 provides that the city may require the property owner to execute a contract to pay the fee, and to record that contract as a lien against the property until the fees are paid.

Credit for Improvements provided by Developers. If the City requires a developer, as a condition of project approval, to construct facilities or improvements for which impact fees have been, or will be, charged, the impact fee imposed on that development project, for that type of facility, should be adjusted to reflect a credit for the cost of those facilities or improvements. If the reimbursement would exceed the amount of the fee to be paid by the development for that type of facility, the City may wish to negotiate a reimbursement agreement with the developer.

Credit for Existing Development. If a project involves replacement, redevelopment or intensification of previously existing development, impact fees should be applied only to the portion of the project which represents an increase in demand for City facilities, as measured by the demand variables used in this study. Since residential service demand is normally estimated on the basis of demand per dwelling unit, an addition to a single family dwelling unit typically would not be subject to an impact fee if it does not increase the number of dwelling units in the structure. If a dwelling unit is added to an existing structure, no impact fee would be charged for the previously existing units. A similar approach can be used for other types of development.

Earmarking of Fee Revenue. Section 66006 specifies that fees shall be deposited with other fees for the improvement in a separate capital facilities account or fund in a manner to avoid any commingling of the fees with other revenues and funds of the local agency, except for temporary investments. Fees must be expended solely for the purpose for which the fee was collected. Interest earned on the fee revenues must also be placed in the capital account and used for the same purpose.

The language of the law is not clear as to whether depositing fees "with other fees for the improvement" refers to a specific capital improvement or a class of improvements (e.g., street improvements). We are not aware of any city that has interpreted that language to mean that funds must be segregated by individual projects. As a practical matter, that would make it exceedingly difficult to accumulate enough funds to construct any improvements funded by impact fees. Common practice is to maintain separate funds or accounts for impact fee revenues by facility category (i.e., streets, traffic signals, or park improvements), but not for individual projects. We recommend that approach.

Reporting. As amended by SB 1693 in 1996, Section 66006 requires that once each year, within 180 days of the close of the fiscal year, the local agency must make available to the public the following information for each separate account established to receive impact fee revenues:

1. The amount of the fee;
2. The beginning and ending balance of the account or fund;
3. The amount of the fees collected and interest earned;
4. Identification of each public improvement on which fees were expended and the amount of the expenditures on each improvement, including the percentage of the cost of the public improvement that was funded with fees;
5. Identification of the approximate date by which the construction of a public improvement will commence, if the City determines sufficient funds have been collected to complete financing of an incomplete public improvement;
6. A description of each inter-fund transfer or loan made from the account or fund, including interest rates, repayment dates, and a description of the improvement on which the transfer or loan will be expended;
7. The amount of any refunds or allocations made pursuant to Section 66001, paragraphs (e) and (f).

That information must be reviewed by the City Council at its next regularly scheduled public meeting, but not less than 15 days after the statements are made public.

Findings and Refunds. Prior to the adoption of Government Code amendments contained in SB 1693, a local agency collecting impact fees was required to expend or commit the fee revenue within five years or make findings to justify a continued need for the money. Otherwise, those funds had to be refunded. SB 1693 changed that requirement in material ways.

Now, Section 66001 requires that, for the fifth fiscal year following the first deposit of any impact fee revenue into an account or fund as required by Section 66006, and every five years thereafter, the local agency shall make all of the following findings for any fee revenue that remains unexpended, whether committed or uncommitted:

1. Identify the purpose to which the fee will be put;
2. Demonstrate the reasonable relationship between the fee and the purpose for which it is charged;
3. Identify all sources and amounts of funding anticipated to complete financing of incomplete improvements for which impact fees are to be used;
4. Designate the approximate dates on which the funding necessary to complete financing of those improvements will be deposited into the appropriate account or fund.

Those findings are to be made in conjunction with the annual reports discussed above. If such findings are not made as required by Section 66001, the local agency must refund the moneys in the account or fund. Once the agency determines that sufficient funds have been collected to complete an incomplete improvement for which impact fee revenue is to be used, it must, within 180 days of that determination, identify an approximate date by which construction of the public improvement will be commenced. If the agency fails to comply with that requirement, it must refund impact fee revenue in the account according to procedures specified in the statute.

Costs of Implementation. The ongoing cost of implementing the impact fee program is not included in the fees themselves. Implementation costs would include the staff time involved in applying the fees to specific projects, accounting for fee revenues and expenditures, preparing required annual reports, updating the fees, and preparing forms and public information handouts. We recommend that those costs be included in user fees charged to applicants for processing development applications.

Annual Update of the Capital Improvement Plan. Section 66002 provides that if a local agency adopts a capital improvement plan to identify the use of impact fees, that plan must be adopted and annually updated by a resolution of the governing body at a noticed public hearing. The alternative is to identify improvements in other public documents. Since impact fee calculations in this study include costs for future facilities to be funded by impact fees, we believe it is to the City's advantage to use this report as the public document in which the use of impact fees is identified. In that event, we believe the City would not be required to update its CIP annually to satisfy Section 66002.

Indexing of Impact Fee Rates. The fees recommended in this report are stated in current dollars. Fees should be adjusted annually to account for construction cost escalation. The *Engineering News Record* Building Cost Index is recommended as the basis for indexing the cost of yet to be constructed projects. It is desirable that the ordinance or resolution establishing the fees include provisions for annual escalation.

Updates of This Study. Generally, impact fees should be reviewed and updated about every five years, unless significant changes in land use or facility plans make it necessary to update the fees more often.

TRAINING AND PUBLIC INFORMATION

Administering an impact fee program effectively requires considerable preparation and training. It is important that those responsible for writing findings to impose the fees, for collecting the fees, and for explaining them to the public, understand both the details of the fee program and its supporting rationale. Before fees are imposed, a staff training workshop is highly desirable if more than a handful of employees will be involved in collecting or accounting for fees.

It is also useful to pay close attention to handouts which provide information to the public regarding impact fees. Impact fees should be clearly distinguished from user fees, such as application and plan review fees, and the purpose and use of particular impact fees should be made clear.

Finally, anyone who is responsible for accounting, capital budgeting, or project management for projects involving impact fees must be fully aware of the restrictions placed on the expenditure of impact fee revenues. The fees recommended in this report are tied to specific improvements and cost estimates. Fees must be expended accordingly and the City must be able to show that funds have been properly expended.

RECOVERY OF STUDY COST

It is reasonable for the City to recover the cost of this study through the impact fee program. Once the City Council decides what impact fees to impose, it is a relatively simple matter to calculate an adjustment to cover the cost of the study.

Assuming the impact fee study will be updated every five years or so, the cost of this study can be divided by the amount of revenue projected over the next five years to determine the percentage by which fees should be increased to cover the cost of the study. That percentage typically represents a very small increase in the fees. For example, if the study costs amount to $25,000 and the City expects to collect $2,500,000 in public safety impact fees over the next five years, the fees calculated in this study would be have to be increased by 1% to recover the cost of the study over five years [25,000 / 2,500,000 = 0.01]. The necessary adjustment should be made before the fees are actually adopted by the City Council.

APPENDIX A

City of Grass Valley

Residential and Nonresidential Demand Data

APPENDIX A
RESIDENTIAL AND NONRESIDENTIAL DEMAND DATA

Table 2.1 in Chapter 2 provided summary development data that is used in the impact fee analysis for determining current levels of service as well as projecting future development. This development data included information on housing, population, employment, nonresidential building space, and vehicles trips.

The following provides more detailed information about the data and assumptions that were used to derive the information in Table 2.1.

HOUSING ESTIMATES AND PROJECTIONS

The foundation of the development data used in the study are the 2004 housing estimate for the City of Grass Valley published by the California Department of Finance (DOF) and the 2020 housing projection found in the City of Grass Valley 2020 General Plan. In 1999, the City's General Plan projected a total of 10,203 housing units in the City and the City's sphere of influence within the City's 20 year annexation horizon (AOI). To arrive at 10,203 units, the General Plan estimated that there were 7,383 units in the City and AOI in 1999 and an additional 2,820 new residential units would be constructed over the 21 year period, with 1,551 units being single family and 1,269 being multi-family units.

Since 1999, the City of Grass Valley has added 935 housing units, according to DOF. However, the additional units represent both new development as well as housing units annexed by the City. To ascertain the number of new units, the consultant compared residential building permit data provided by the City, which indicated that the City issued 814 residential building permits between 1999 and 2003.

Based on the building permit data, the study subtracted 814 of the 2,820 projected units in the General Plan, indicating that 2,006 residential units will be developed in the City

Table A-1: Comparison of General Plan Housing Projection and Building Permit Data

Dwelling Unit Type	Projected New Units 1999-2020[1]	New Units (Bldg Permits) 1999-04[2]	Projected New Units 2004-2020
Single Famly--Detached	1,551	394	1,157
Single Famly--Attached	-		
Multi-Family	1,269	420	849
Mobile Home			
Total	2,820	814	2,006

[1] Source: City of Grass Valley 2020 General Plan

[2] Source: City of Grass Valley

and AOI over the next 16 years. This approach assumes that the number of single family-attached and mobile home units in the study area will remain constant over the study period.

The analysis also indicated that 121 units (935-814) were incorporated into the City from the AOI between 1999 and 2003. Based on an estimate of 2,409 units in the AOI in 1999, the annexation of the 121 units would indicate that there is approximately 2,288 units in the AOI, assuming minimal new construction in the unincorporated area of the County. An estimate of the number housing units in AOI is critical for the fee analysis because—while the annexation of the units will place additional service demands on the City—the impact fees will not be collected from this existing development.

Based on the above analysis, the 2020 housing projection was prepared by housing type. This projection was the sum of the 2004 DOF housing unit estimate, the estimate of existing development in the AOI, and projected future residential development. Table A-2 shows this distribution. The number of occupied units for 2004 and future years is based on the 2004 DOF vacancy rate of 4.8 percent.

Table A-2: Existing and Future Projected Residential Development

	Vacancy Rate	2004 DOF Estimate	2004 AOI Estimate	Projected Units 2004-2020	Total
Single Family Detached		2,779	1,546	1,157	5,482
Single Family Attached		256	-	-	256
Multi-Family		2,182	742	849	3,773
Mobile Home		692	-	-	692
Total Housing Units		5,909	2,288	2,006	10,203
Occupied Units	4.8%	5,628	2,179	1,911	9,718

HOUSEHOLD SIZE

As shown in Table A-3, the City of Grass Valley had a total of 5,070 occupied housing units in 2000. The blended, or weighted average, household size was 2.15 persons per unit. However, the study differentiates impact fees by housing type in order to make the fees proportionate to the demand for public facilities. This differentiation is accomplished, in most instances, by using the 2000 Census data on the number of persons per household by housing type. The household size figures by housing type used in the study are noted in Table A-3.

Table A-3: Persons per Occupied Unit by Dwelling Unit Type* (2000 Census)

Dwelling Unit Type	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Population	Persons Per Hsld.
Single Famly--Detached	2,464	2,369	95	5,755	2.43
Single Famly--Attached	258	246	12	479	1.95
Multi-Family	2,073	1,966	107	3,929	2.00
Mobile Home	503	489	14	743	1.52
Total	5,298	5,070	228	10,906	2.15

Source: U.S. Census Bureau; 2000 STF 3; Tables H30, H32, and H33

POPULATION PROJECTION

The 2020 population projection used in the study has two components. One component is the population residing in group quarters, while the other is the population residing in housing units. The 2020 projection for the population residing in housing units is based on the housing unit projection, vacancy rate, and the persons per household by housing type data shown above. Table A-4 shows that the projected population residing in housing units is 21,342.

Table A-4: 2020 Population Projection (Population in Housing Units)

	Pers Per Hsld	Hsg Units 2020	Occupied Units 2020	Population 2020
Single Family Detached	2.43	5,482	5,222	12,685
Single Family Attached	1.95	256	244	475
Multi-Family	2.00	3,773	3,593	7,181
Mobile Home	1.52	692	659	1,001
Total		10,203	9,718	21,342

For the group quarters population, the study assumes that the 2004 DOF population estimate of 350 people residing in group quarters will remain constant throughout the study period.

EMPLOYMENT AND JOBS TO HOUSING RATIO

Employment data for the study was obtained from the recently completed Grass Valley Phase I Baseline Report prepared by Applied Development Economics. The report indicated that there were 9,645 jobs in Grass Valley in 2003, with retail trade and the service sector accounting for the largest employment sectors.

Table A-5: Employment and Jobs to Housing Ratio

	2003 Jobs[1]	2003 Distribution	2004 Jobs	2020 Jobs
Mining	12	0.1%	12	21
Construction	424	4.4%	433	747
Manufacturing	956	9.9%	976	1,684
Trans, Comm, & Utilities	108	1.1%	110	190
Wholesale Trade	73	0.8%	74	129
Retail Trade	2,187	22.7%	2,232	3,853
Finance, Ins, & Real Estate	696	7.2%	710	1,226
Services	3,479	36.1%	3,550	6,130
Government	1,710	17.7%	1,745	3,013
Total	9,645	100.0%	9,842	16,994
Occupied Housing Units	5,515		5,628	9,718
	1.75		1.75	1.75

[1]Source: Grass Valley Phase 1 Baseline Report (July 15, 2004) prepared by Applied Development Economics

Employment data for subsequent years was derived by maintaining the 2003 jobs to housing ratio constant at 1.75 jobs per occupied housing unit. Table A-5 shows the employment estimate for 2004 for the City of Grass Valley and the 2020 projection for the City and AOI.

NONRESIDENTIAL BUILDING SPACE

In addition to housing, population, and employment data, the calculation of impact fees also requires data on nonresidential development in the study area. Such information is necessary to convert the per capita cost of public facilities to impact fees by nonresidential development type. This conversion is made by converting the employment projections to gross floor area of nonresidential development using average square feet per employee multipliers derived from data published by the Institute of Transportation Engineers (ITE) and the Urban Land Institute (ULI).

Table A-6 shows the average square feet per employee multipliers published by ITE and ULI. These multipliers were applied to per capita costs to arrive at the impact fee for different types of nonresidential uses.

To gauge potential impact fee revenue from nonresidential development, it is necessary to estimate and then project the amount of nonresidential space in Grass Valley. Since it is not possible to forecast specific nonresidential uses, the consultant has identified four non-residential prototypes to estimate and project nonresidential floor space. Shown as the shaded development types in Table A-6, an estimate of space was ascertained by allocating current employment in Table A-5 into the four nonresidential prototypes and

applying the relevant average square feet per employee multipliers published by ITE and ULI.

Table A-6: Employee and Building Area Ratios

*ITE Code**	*Land Use / Size*	*Demand Unit*	*Emp Per Dmd Unit***	*Sq Ft Per Emp*
Commercial / Shopping Center				
820	25K gross leasable area	1,000 Sq Ft	3.33	300
820	50K gross leasable area	1,000 Sq Ft	2.86	350
820	100K gross leasable area	1,000 Sq Ft	2.50	400
820	200K gross leasable area	1,000 Sq Ft	2.22	450
820	400K gross leasable area	1,000 Sq Ft	2.00	500
General Office				
710	10K gross floor area	1,000 Sq Ft	4.48	223
710	25K gross floor area	1,000 Sq Ft	4.15	241
710	50K gross floor area	1,000 Sq Ft	3.91	256
710	100K gross floor area	1,000 Sq Ft	3.69	271
Industrial				
770	Business Park***	1,000 Sq Ft	3.16	317
151	Mini-Warehouse	1,000 Sq Ft	0.04	22,512
150	Warehousing	1,000 Sq Ft	1.28	784
140	Manufacturing	1,000 Sq Ft	1.79	558
110	Light Industrial	1,000 Sq Ft	2.31	433
Other Nonresidential				
720	Medical-Dental Office	1,000 Sq Ft	4.05	247
620	Nursing Home	bed	0.36	na
610	Hospital	1,000 Sq Ft	3.38	296
565	Day Care	student	0.16	na
530	High School	student	0.09	na
520	Elementary School	student	0.08	na
520	Elementary School	1,000 Sq Ft	0.92	1,084
320	Lodging	room	0.71	na

* Trip Generation, Institute of Transportation Engineers, 2003.
** Employees per demand unit calculated from trip rates, except for Shopping Center data, which are derived from Development Handbook and Dollars and Cents 'of Shopping Centers, published by the Urban Land Institute.
*** According to ITE, a Business Park is a group of flex-type buildings served by a common roadway system. The space includes various uses with an average mix of 20-30% office/commercial and 70-80% industrial/warehousing.

Table A-7 shows this allocation of employment to the four prototypes (retail/ commercial, office, institutional, and industrial/warehousing). Based on this distribution of employment, Table A-7 estimates that there was 3.3 million square feet of nonresidential space in Grass Valley in 2003. Applying the multipliers to the 2004 employment estimate yields an estimate of 3.4 million square feet of nonresidential space in the City.

Table A.7: Estimate of Non-Residential Floor Area (Grass Valley)

	2003 Employment	Percent of Employment	Sq Ft Per Emp[2]	2003 NR Floor Area Grass Valley[3]	2004 NR Floor Area Grass Valley[4]
Retail/Commerical					
Retail Trade	2,187				
Services (50%)	1,739				
Subtotal	3,926	40.7%	400	1,570,437	1,602,714
Office					
Finance/Ins./Real Estate	696	-		-	-
Services (50%)	1,739	-		-	-
Subtotal	2,435	25.3%	256	623,423	636,236
Institutional		-		-	-
Government	1,710				
Subtotal	1,710	17.7%	271	463,362	472,885
Goods Production					
Agriculture	12				
Construction	424				
Manufacturing	956				
Wholesale Trade	73				
Comm, Trans, & Utilities	108				
Subtotal	1,573	16.3%	433	681,038	695,036
Total	9,644	100.0%		3,338,261	3,406,871

[1] Employment based data in Table A-5.

[2] Trip Generation, Institute of Transportation Engineers (ITE), 2003.

[3] NR=nonresidential. NR Floor Area determined by multiplying Butte County employment estimate by ITE ratio of average number of square feet of nonresidential floor space per employee.

[4] NR=nonresidential. NR Floor Area for 2004 based on 2004 employment estimate.

As noted above, the nonresidential prototypes are intended to aggregate a broad range of nonresidential types, including retail/ commercial, office, institutional, and industrial/warehousing uses. For retail/commercial development, a prototypical future development is expected to be a 100,000 square foot development where future retail trade and about one-half of service jobs would be located. A general office building of 50,000 square feet of gross floor area is used as a prototype where future financial and real estate sector jobs and 50 percent of service employment would be located. The institutional prototype is where public sector employment would be represented and 100,000 square foot office facility is used as a prototype for this use. Light industrial facility space is used as the prototype for where goods production employment would be concentrated.

VEHICLE TRIPS

Future residential and nonresidential development in Grass Valley will have an impact on the City's road system due to the additional vehicle trips that will be generated by such development. Using the housing and nonresidential floor space data in the Appendix, additional trips and peak hour PM trips were calculated so that vehicle trip data can be used as a demand unit to measure the impact of development in the City.

Table A-8: 2004 Peak Hour Trips (Grass Valley)

Development Type	Units[1]	2004 Units	Peak Hr Trips per Unit[2]	Adjustment Factor[3]	Adj. Pk Hr per Unit	2004 Peak Hr Trips
Residential						
Single Family Detached	DU	2,779	1.02	50%	0.51	1,417
Single Family Attached	DU	256	0.52	50%	0.26	67
Multi-Family Residential	DU	2,182	0.67	50%	0.34	731
Mobile Home		692	0.60	50%	0.30	208
Non-Residential						
Commerical	KSF	1,603	6.26	29%	1.82	2,910
Office	KSF	636	2.70	50%	1.35	859
Government / Institutional	KSF	473	1.91	50%	0.96	452
Industrial	KSF	695	1.08	50%	0.54	375
Total						7,018

[1] DU = dwelling units and KSF = per 1,000 square feet of nonresidential floor area

[2] Trip Generation, Institute of Transportation Engineers, 2003.

[3] Based on the ITE data in Table VII-1 of the 5th edition of Trip Generation, the best trendline correlation between pass-by trips and floor area is a power curve. The equation used to derive the pass-by trip percentage is 116.63 x (KSF ^ -0.2254).

Table A-9: 2004 Average Daily Trips (Grass Valley)

Development Type	Units[1]	2004 Units	Avg Daily Trips per Unit[2]	Adjustment Factor[3]	Adj. ADT per Unit	2004 ADT Trips
Residential						
Single Family Detached	DU	2,779	9.57	50%	4.79	13,298
Single Family Attached	DU	256	5.86	50%	2.93	750
Multi-Family Residential	DU	2,182	6.72	50%	3.36	7,332
Mobile Home	DU	692	4.99	50%	2.50	1,727
Non-Residential						
Commerical	KSF	1,603	67.91	29%	19.69	31,564
Office	KSF	636	15.65	50%	7.83	4,979
Government / Institutional	KSF	473	13.34	50%	6.67	3,154
Industrial	KSF	695	6.97	50%	3.49	2,422
Total						65,224

[1] DU = dwelling units and KSF = per 1,000 square feet of nonresidential floor area

[2] Trip Generation, Institute of Transportation Engineers, 2003.

[3] Based on the ITE data in Table VII-1 of the 5th edition of Trip Generation, the best trendline correlation between pass-by trips and floor area is a power curve. The equation used to derive the pass-by trip percentage is 116.63 x (KSF ^ -0.2254).

Tables A-8 and A-9 provide an estimate for 2004 of total vehicle trips and peak hour PM trips in Grass Valley. The vehicle trip projections were derived by applying trip generation rates published by the Institute of Transportation Engineers to the 2004 estimates of housing units and nonresidential floor space in the City. For nonresidential space, the same four prototype developments used to estimate floor space were used to estimate trips and peak hour trips.

Since each trip includes both an origin and destination point, it should be noted that the trip generation rates must be adjusted to avoid double counting of the number of trips generated. This adjustment is shown in Tables A-8 amd A-9 and, except commercial, the tables indicates that the trip adjustment factor of 50 percent is the same for all residential and non-residential development. For commercial / shopping center development, the trip adjustment factor is less than 50% because retail uses attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. Data contained in an earlier edition of the Institute of Transportation Engineers Trip Generation Manual (see Table VII-1 of the 5th edition, 1991) indicates an inverse relationship between shopping center size and pass-by trips. For a shopping center of 100,000 square feet of floor area (which is used as a typical commercial development in this study), the above ITE manual indicates that, on average, 42% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 58% of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 58% multiplied by 50%, or approximately the 29% of trip ends shown in Tables A-8 amd A-9.

DEMAND DATA SUMMARY(2004-2020)

Table A-10 on the next summarizes the demand data used in the impact fee study for the 2004 to 2020 time period.

Table A-10: City of Grass Valley - Projected Future Growth 2004-2020

Demand Factor	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Future Growth 2004-2020	Average Annual Change
Population[1]																			
Population in Group Quarters	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	0	0
Population in Occupied Units	11,710	12,640	13,220	13,800	14,380	14,960	15,540	16,121	16,701	17,281	17,861	18,441	19,021	19,602	20,182	20,762	21,342	9,632	602
Total Population	12,060	12,990	13,570	14,150	14,730	15,310	15,890	16,471	17,051	17,631	18,211	18,791	19,371	19,952	20,532	21,112	21,692	9,632	602
Housing Units[1]																			
Single Family Detached	2,779	2,948	3,117	3,286	3,455	3,624	3,793	3,962	4,131	4,300	4,469	4,637	4,806	4,975	5,144	5,313	5,482	2,703	169
Townhouse/Duplex	256	256	256	256	256	256	256	256	256	256	256	256	256	256	256	256	256	-	-
Multi-Family	2,182	2,281	2,381	2,480	2,580	2,679	2,779	2,878	2,977	3,077	3,176	3,276	3,375	3,475	3,574	3,673	3,773	1,591	99
Mobile Home	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	-	-
Total Housing Units	5,909	6,177	6,446	6,714	6,983	7,251	7,519	7,788	8,056	8,324	8,593	8,861	9,130	9,398	9,666	9,935	10,203	4,294	268
Employment[2]																			
Employment	9,842	10,289	10,736	11,183	11,630	12,077	12,524	12,971	13,418	13,865	14,312	14,759	15,206	15,653	16,100	16,547	16,994	7,152	447
Nonresidential Space[3]																			
Retail/Com (000s)	1,603	1,676	1,748	1,821	1,894	1,967	2,039	2,112	2,185	2,258	2,331	2,403	2,476	2,549	2,622	2,695	2,767	1,165	73
Office (000s)	636	665	694	723	752	781	810	839	867	896	925	954	983	1,012	1,041	1,070	1,099	462	29
Institutional (000s)	473	494	516	537	559	580	602	623	645	666	688	709	731	752	774	795	817	344	21
Goods Production (000s)	695	727	758	790	821	853	884	916	948	979	1,011	1,042	1,074	1,105	1,137	1,169	1,200	505	32
Total (000s)	3,407	3,562	3,716	3,871	4,026	4,181	4,335	4,490	4,645	4,799	4,954	5,109	5,264	5,418	5,573	5,728	5,883	2,476	155
Peak Hour Vehicles Trips[4]																			
Single Family Detached	1,417	1,503	1,590	1,676	1,762	1,848	1,934	2,020	2,107	2,193	2,279	2,365	2,451	2,537	2,624	2,710	2,796	1,379	86
Single Family Attached	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	-	-
Multi-Family	731	764	798	831	864	898	931	964	997	1,031	1,064	1,097	1,131	1,164	1,197	1,231	1,264	533	33
Mobile Home	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	-	-
Subtotal Residential	2,422	2,542	2,661	2,781	2,900	3,020	3,139	3,259	3,378	3,498	3,617	3,737	3,856	3,976	4,095	4,215	4,334	1,912	119
Retail/Com (000s)	2,910	3,042	3,174	3,306	3,438	3,570	3,702	3,835	3,967	4,099	4,231	4,363	4,495	4,627	4,760	4,892	5,024	2,114	132
Office (000s)	859	898	937	976	1,015	1,054	1,093	1,132	1,171	1,210	1,249	1,288	1,327	1,366	1,405	1,444	1,483	624	39
Institutional (000s)	452	472	493	513	534	554	575	595	616	636	657	677	698	718	739	759	780	328	21
Goods Production (000s)	375	392	409	426	444	461	478	495	512	529	546	563	580	597	614	631	648	273	17
Subtotal Nonresidential	4,595	4,804	5,013	5,222	5,430	5,639	5,848	6,056	6,265	6,474	6,683	6,891	7,100	7,309	7,517	7,726	7,935	3,339	209
Total Peak Hour Trips	7,018	7,346	7,674	8,002	8,331	8,659	8,987	9,315	9,643	9,972	10,300	10,628	10,956	11,284	11,612	11,941	12,269	5,251	328
Avg. Daily Vehicles Trips[4]																			
Single Family Detached	13,298	14,106	14,914	15,723	16,531	17,340	18,148	18,957	19,765	20,573	21,382	22,190	22,999	23,807	24,616	25,424	26,232	12,935	808
Single Family Attached	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	-	-
Multi-Family	7,332	7,666	8,000	8,334	8,668	9,002	9,336	9,670	10,004	10,338	10,672	11,006	11,340	11,674	12,008	12,342	12,677	5,345	334
Mobile Home	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	-	-
Subtotal Residential	23,106	24,248	25,391	26,533	27,676	28,818	29,961	31,103	32,246	33,388	34,531	35,673	36,816	37,958	39,101	40,243	41,386	18,280	1,142
Retail/Com (000s)	31,564	32,997	34,431	35,864	37,298	38,731	40,165	41,599	43,032	44,466	45,899	47,333	48,766	50,200	51,634	53,067	54,501	22,937	1,434
Office (000s)	4,979	5,205	5,431	5,657	5,883	6,109	6,335	6,561	6,787	7,014	7,240	7,466	7,692	7,918	8,144	8,370	8,596	3,618	226
Institutional (000s)	3,154	3,297	3,441	3,584	3,727	3,870	4,014	4,157	4,300	4,443	4,587	4,730	4,873	5,016	5,160	5,303	5,446	2,292	143
Goods Production (000s)	2,422	2,532	2,642	2,752	2,862	2,972	3,082	3,192	3,302	3,412	3,522	3,632	3,742	3,852	3,962	4,072	4,182	1,760	110
Subtotal Nonresidential	42,119	44,032	45,944	47,857	49,770	51,683	53,596	55,509	57,422	59,335	61,248	63,161	65,074	66,987	68,900	70,813	72,726	30,607	1,913
Total Average Daily Trips	65,224	68,280	71,335	74,391	77,446	80,501	83,557	86,612	89,668	92,723	95,779	98,834	101,889	104,945	108,000	111,056	114,111	48,887	3,055

APPENDIX B

City of Grass Valley

Inventory of Park and Recreation Improvements

City of Grass Valley -- Inventory of Park Improvements[1]

	Condon Park	Dow Alexander	Elisabeth Daniels	Glenn Jones	Mautino Park	Memorial Park	Minnie Park	Total	Cost Per Unit	Cost of Park Improvements
Bocci Ball	1							1	$5,883	$5,883
Basketball Courts	1							1	$80,000	$80,000
Playground	1	1				1	1	4	$194,250	$777,000
Disc Golf	1							1	$17,760	$17,760
Tennis Courts					2	4		6	$40,166	$240,996
Softball Field						1		1	$244,200	$244,200
Baseball Field	2							2	$222,000	$444,000
Soccer Field					1			1	$175,000	$175,000
Skatepark	1							1	$355,000	$355,000
Group BBQ Area	1					1		2	$49,950	$99,900
LOVE Bldg	1							1	$799,200	$799,200
Community Bldg						2		2	$399,600	$799,200
Museum				1				1	$1,198,800	$1,198,800
Swimming Pool						1		1	$2,442,000	$2,442,000
Maintenance / Office Space	1		1		1			3	$209,836	$629,509
Landscaping and Misc. Park Fixtures[2]								NA		$5,551,772
Restrooms	3		1		1	3	1	9	$89,417	$804,750
Parking (square feet)	140,000	1,260	0	15,000	36,800	43,560	10,890	247,510	$5.00	$1,237,550
										$15,902,519

Population in 2004	12,060
Cost of Park Improvements per Capita	$1,318.62

[1] Source: City of Grass Valley

[2] Landscaping and miscellaneous park fixtures includes basic park inftrastructure (e.g. turf, benches, signage, and hardscaping) for the 37.51 acres of developed parkland in the City. The total landscaping figure also includes the cost of the arboretum at Condon Park.

APPENDIX C

Excerpts from the City of Grass Valley

Street Master Plan (Adopted October 2004)