Impact fees: The Reno experience: A comprehensive description of program development

D. Christopher Windecker

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IMPACT FEES: THE RENO EXPERIENCE

A Comprehensive Description of Program Development

By

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B.S. University of Nevada, Reno, 1978

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[Date]
April 17, 1992
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INTRODUCTION

The escalating costs of maintaining existing infrastructure, and the decline of public support for taxation alternatives, are making it increasingly difficult for rapidly growing communities to finance new public capital facilities. In recent years, local governments have confronted the combined effects of state and local tax limitations, unwillingness of voters to approve bonds for services to new residents, and a general reluctance of elected officials to impose higher taxes.

Continuing growth and development creates a need for public infrastructure improvements such as parks and recreation facilities, water and wastewater systems, fire and police protection, transit services, cultural and educational resources, street and drainage networks and other services and facilities. A major problem for communities has been to provide the services new residents need while maintaining adequate services for existing residents. The growing infrastructure crisis has been well documented in the professional literature and is now becoming more apparent to local residents driving in congested traffic on deteriorated streets, or experiencing inadequacy and failure of water and wastewater systems. The widening gap between capital facility
needs and limited or decreasing fiscal resources is driving communities to search for alternative funding mechanisms. To finance capital needs, communities must address the question of who is to pay. A 1987 report by the Florida State Comprehensive Plan Committee stated:

These new Floridians come seeking sunshine. They come seeking opportunity. They come seeking a new beginning, a new start with hope, or a final fulfillment of life's just reward.

They come for the same reasons that we came. They stay for the same reasons that we stay in this state we all love.

These newcomers bring with them all their fondest dreams of the future -- as all newcomers to Florida have done since the days of the conquistadors. They bring dreams that are the same as our dreams for Florida -- dreams of a better life and a better future.

What they don't bring with them are the roads, the bridges, the schools, the hospitals, the libraries, the parks, the utilities, the sewers, the water lines, and all the vast and varied human services that will be needed to realize our dreams.

Several communities, including Reno, Nevada, have addressed the issue of who pays for growth by imposing impact fees assessed against new development to help pay for a variety of infrastructure needs including roads, sewer and storm drain systems, schools, parks and public safety facilities.

Much has been written about the philosophic bases for the use of impact fee systems to ensure that new development pays its share of the costs to accommodate growth. Professional planners and others have written extensively about the common
forms of constitutional challenges and the basic judicial review standards for evaluating impact fee systems. However, little has been written regarding the basic procedures for developing an impact fee system.

A comprehensive discussion of the procedures and time involved in developing the data necessary to determine fees and defend the program is lacking. Although some of the current literature addresses the need to establish level of service standards, nothing is written about how to do that in communities where none exist. This paper will provide a comprehensive description and analysis of the development of Reno's impact fee program.

Chapter 1 addresses the process of analyzing and evaluating the need to establish a system of impact fees in Reno. Chapter 2 emphasizes the critical procedure of establishing the legal authority of the City to impose impact fees. Chapter 3 describes the methodology for developing the technical foundation for the impact fee system, and Chapter 4 describes how the system was constructed upon that foundation. Chapter 5 addresses some of the major policy decisions faced by the City. This paper concludes in Chapter 6 with some closing remarks about the program to date.
CHAPTER 1
EVALUATING THE NEED FOR IMPACT FEES

Before a community decides to develop and impose a system of impact fees to help finance infrastructure costs associated with growth, the inadequacy of traditional methods should be established. In Reno, an analysis of the traditional sources available for funding infrastructure and the ability of those sources to meet rising demands for services and facilities was conducted.

Historically, the mechanisms used by Reno to provide infrastructure have paralleled those used by other communities. In virtually every area of the country, the evolution of developer financing follows a fairly predictable path.

First, the city begins to feel the adverse fiscal effects of rapid growth, higher borrowing costs, reduced federal and state aid for public facilities, and higher infrastructure costs. Second, the city gradually shifts responsibility for off-site infrastructure from public revenue sources to the developer by expanding the use of exactions. Third, as the use of exactions is expanded, the city and developers find exactions to be both administratively cumbersome and inequitable. Finally, the city institutionalizes developer responsibilities for off-site infrastructure by adopting more formal systems of development fees and assessment districts.¹

At the time of this evaluation, Reno had progressed as far as the third stage in Stegman's scenario. In the last 22

years, the population of Reno has nearly doubled, growing from a town of about 70,000 people in the late 1960's to a city of over 140,000 people today. Most of this growth has occurred during the last 10 years. This era of rapid growth coincided with a time when federal and state governments were reducing aid for the construction of public facilities. The infrastructure that was being built was costing more and it was becoming increasingly costly and difficult for cities to borrow money. In the early 1970's, Reno used general funds to construct roadways and supplement monies collected in special assessment districts for the construction of other public improvements such as curbs, gutters and sidewalks, storm drain and wastewater systems and flood control facilities. Reno's general fund is comprised primarily of revenues generated through property and sales taxes, fees for services, licenses and permits and fines and forfeitures. In recent years the city's ability to construct infrastructure through general fund expenditures has become non-existent. At present, the general fund can barely support the day-to-day operations of the city.

Once it became clear that the city could no longer support the construction of infrastructure to meet the demands of growth, Reno began to expand its use of development exactions, requiring developers to provide both on- and off-site public improvements as conditions of development approval. The street, storm drain and wastewater systems in
recently developed areas have been established in this manner. The system of development exactions for on-site public improvements appeared satisfactory to both the City and the development community. There was and still is divided opinion concerning the equitability of exactions when they are used to obtain all or a portion of off-site improvements. The problem with an exaction system is two-fold. First, exactions are neither predictable nor reliable. To the extent that development exactions are informal and project specific, their application will vary according to the merits of a project and the expertise and judgement of the personnel of both the City and the project developer. Second, larger developments are burdened with disproportionate responsibility for public improvements. Small to mid-size projects often escape any participation in the provision of infrastructure. It is more difficult to calculate the various impacts of smaller projects than it is larger ones. Also, the return on investment for smaller projects is not large enough to absorb the significant capital expenditures associated with the construction of infrastructure.

In addition to the development exaction process for obtaining infrastructure, Reno has used special assessment districts to finance the construction of public improvements. Special assessment districts are so named because of their objective to confer upon a specific portion of the general population a special benefit. The assessments are used to
service and retire the tax-free municipal bonds which produce the financing necessary to construct the desired improvements in a given area. In general, special assessment districts may be formed only with the consent of a majority of the property owners in the area targeted for the improvements, and they can be used only to fund the construction of public capital items.

The issuance of general obligation bonds is another mechanism traditionally used in Reno to help finance the construction of public improvements. The service and retirement of general obligation bonds is supported through increased property taxes over the life of the bond. By State law, general obligation bonds must be approved by a majority of the voters in a general or special election. They may be used to finance the construction of new capital road facilities, or to provide for the maintenance of existing roads. General obligation bonds are a one-time source of revenue and are traditionally appropriate for construction of new facilities or one-time major maintenance. They do not appear to be an adequate source for ongoing maintenance programs.

The methods of financing infrastructure so far discussed were used by the City to provide new roadways in developing areas. These methods, taken together, were inadequate to finance the City's needs. An evaluation of alternative methods indicated that a system of impact fees would help meet the City's growing needs.
CHAPTER 2

EVALUATING THE LEGAL ISSUES

Central to Reno's efforts to develop and implement a system of impact fees was the question of legality.

Most of the states where courts have upheld the validity of impact fee legislation do not have express enabling statutes to impose impact fees; Nevada was in that majority. An analysis conducted by the City Attorney's office and a consulting attorney concluded that the courts would probably recognize the authority of the City to adopt impact fee legislation. A test of Reno's authority to impose impact fees under the existing Nevada Revised Statutes (NRS) and the Reno City Charter never occurred as the 1989 Nevada Legislature adopted specific legislation authorizing impact fees. The adopted legislation was modeled after impact fee law in Texas. The legislature was convinced that the law addressed the basic points of challenge established through case law across the nation. As long as a system was developed in adherence to the law, it could not be successfully challenged. The statute would have to be invalidated to invalidate a specific system.

The following discussion, excerpted in large part from a document entitled "Impact Fee Legislation, Legal Issues and Proposed Design Methodology," is provided to demonstrate the logic in reaching the conclusion that impact fees could be imposed under existing state statutes and City Charter.

In the circumstance where no express enabling legislation
exists, the courts have recognized implied land use regulatory powers either through constitutional, statutory, or charter home rule powers, or a mixture of all three.

In Nevada, the authority to adopt impact fee legislation is found in the Nevada Constitution, the Reno City Charter, and general state enabling legislation.

It has long been established that cities in Nevada have no powers except those delegated by charter or the state statutes creating them.

"...municipal corporations have no powers but those which are delegated to them by the charter or law creating them; that the powers expressly given and the necessary means of employing those powers constitute the limits of their authority."2

However, the powers granted both by general law and a charter extend beyond the express language in the charter or general laws, to those powers that are necessarily or fairly implied and incident to those powers expressly granted, and to those powers essential to the declared object of the corporation.

"But this does not mean that the municipality possesses only such powers as are expressly granted in its charter or the statutes. There are other powers necessarily or fairly implied in or incident to the powers expressly granted, and also certain powers essential to the declared object and purpose of the corporation not simply convenient, but indispensable, which may be exercised by the municipality."3


Article 8, Section 8 of the Nevada Constitution provides that the state shall empower cities by general laws or charter, as follows.

The legislation shall provide for the organization of cities and towns by general laws and shall restrict their power of taxation, assessment, borrowing money, contracting debts and loaning their credit, except for procuring supplies of water; provided, however, that the legislature may, by general laws, in the manner and to the extent therein permit and authorize the electors of any city or town to frame, adopt and amend a charter for its own government, or to amend any existing charter of such city or town.

Reno was incorporated under a new charter on July 1, 1973. The Reno City Charter gives the City broad authority to pass all ordinances necessary for municipal government provided they are not repugnant to the Constitution of the United States or the Nevada Constitution, or the Nevada Revised Statutes. The Legislature, through the Reno City Charter, declared that all provisions of the charter should be liberally construed to carry out the express purposes of the charter. Specific mention of particular powers is not limiting on the authority of the City to carry out the general purposes of the charter.

Among the powers of the City Council set forth in the Charter is the power to "enact and enforce any police, fire, traffic, health, sanitary or other measure which does not conflict with the general laws of the State of Nevada." This would include development exactions in the form of impact fee legislation to encourage orderly land development by ensuring
that the necessary capital facilities are available to accommodate new growth and development.

The State of Nevada's "Planning and Zoning" laws (Nevada Revised Statutes, Chapter 278) further support the City's authority to adopt impact fee legislation. Chapter 278 authorizes the establishment of a planning commission in cities. The law mandates that the planning commissions prepare and adopt a comprehensive long term general plan for the physical development of the City. The City is charged with putting the adopted master plan into effect and is specifically authorized to adopt and use such procedure as may be necessary for this purpose. This includes the use of impact fee legislation.

Statutory language supports Reno's authority to adopt impact fee legislation through the implementation of its comprehensive long term general plan and the adoption of land use regulations that develop a timely, orderly and efficient arrangement of transportation and public facilities and services.

There are, however, provisions in N.R.S., Chapter 354, in the "Local Government Budget Act", that created concern. Section 354.5989 imposes limitations on the increase of fees and licenses, and provides that:

1. ...a local government shall not increase any fee for a license or permit or adopt a fee for a license or permit, including without limitation ever license or permit issued for revenue or regulation or both, such as...building and zoning permits, except as
permitted by this section...

6. The provisions of this section apply to any licenses or permit for any purpose regardless of the fund to which the revenue from it is assigned. An ordinance or resolution enacted by a local government in violation of the provisions of this section is void.

This section limits a local government's discretion to raise revenue in circumvention of the limitations imposed by the 1981 tax shift from local property tax to sales tax revenue. The purpose of impact fee legislation is to encourage orderly land development by ensuring the necessary capital facilities to accommodate that new growth and development, not to raise revenue. Section 354.5989, N.R.S. should not apply. The Nevada Legislature neither stated nor contemplated that a form of development exaction would be included in its definition of "fees and licenses." This is the case in Reno, where impact fee legislation would serve as a much fairer alternative to the City's existing development exaction system.

As further evidence that Section 354.5989, N.R.S. does not apply to development exactions, the impact fees exacted are proportionate, based on the impact of the new land development activity and can vary by geographical location or year. This type of variable fee is not prohibited under the Section.

Section 354.59895, which places certain limitations on the imposition of service charges, also caused concern. The
Section provides that:

1. A local government may increase any service charge which was in effect on July 1, 1981, or whose imposition was approved after that date pursuant to this section, to the extent:

   (a) Necessary to comply with any covenant relating to securities to whose repayment revenue from the service charge is pledged; or
   (b) Reasonably necessary to meet the actual expense of providing the service, including the upkeep of any property so used.

2. A local government must submit any other proposal to increase a service charge to the executive director of the department of taxation for approval, and the local government or any person who may be required to pay the charge may, within 30 days after the executive director makes his decision, appeal from his decision to the Nevada Tax Commission. A local government must submit any proposal to impose a new service charge to the tax commission for its approval.

Few cases on impact fees or in-lieu fees, have mixed the term service charge with impact fees, and those that have, all deal with water or sewer fees. In none of the modern cases recognizing the validity of regulatory impact fees for other forms of capital facilities (roads, parks, schools, etc.), has there been any characterization of an impact fee as a service charge. An impact fee is a form of a development exaction imposed on new development to encourage orderly land development by ensuring that the necessary capital facilities are available.

Because the term service charges includes administrative, operating and maintenance expenses, it is clearly distinguished from impact fees imposed against new development
for capital facilities. The City's attorneys concluded that this distinction between impact fees and service charges, renders Section 354.59895, not applicable to the authority question.

In 1988, the Nevada Department of Taxation requested an opinion from the Nevada Attorney General's Office regarding the applicability of the two sections of concern in the Nevada Revised Statutes. The conclusion of the Attorney General was:

Development impact fees, which developers must pay to receive local government permission to build, are subject to the limitations of NRS 354.5989. If such development impact fees are one-time fees to be spent entirely on capital improvements, they are not service charges and are not subject to the limitations of NRS 354.35895.

It became apparent to City of Reno officials that, in the absence of specific enabling legislation, impact fees would likely be challenged in the courts. Enabling legislation was introduced at the next legislative session. The legislation was adopted and Reno could move forward with its program development without threat of litigation on constitutional grounds.
CHAPTER 3

LAYING THE TECHNICAL FOUNDATION

There are six steps to laying a solid technical foundation upon which to build a sound impact fee program.

1. Projecting population
2. Land use assumptions
3. Projecting traffic volumes
4. Establishing a level of service standard
5. Determining existing deficiencies
6. Determining future improvements

The first three steps are interrelated and necessarily performed in sequence. The last two are directly dependent upon step 4. The following provides a detailed analysis of each of these procedures as they were conducted during the development of Reno's impact fee system.

1. Projecting population - For the purposes of the impact fee program, the Reno analysis established two consecutive five-year planning periods: 1988 to 1993 and 1993 to 1998. These interval projections are significant for two reasons. First, the enabling legislation discussed in Chapter II contains specific language requiring projections of changes in population and land uses over a period of at least ten years. Second, the legislation requires a projection of the demand for capital improvements or facility expansions required to serve new development over a period not to exceed ten years.

The population projections used to develop the Reno
impact fee program are based upon projections for Washoe County developed by Sierra Pacific Power Company using the Sierra Pacific Washoe County Econometric Model (SWCEM). The SWCEM models the population of Washoe County within a cohort survival framework by linking population with a description of the underlying structure of the Washoe County economy. The City chose to use these projections after analysis of several other available population projections.

The decision to use the SWCEM was based on the consensus that the model more accurately reflects growth trends in the area, and it is built on more reasonable national economic assumptions about the future. In the short term, the wisdom of that decision is borne out by the less than one percent variance between SWCEM projections and the Census conducted in 1990, and the City's own projections based on building permit data. A strict cohort survival model for the projection of Reno's population yields only a one percent variance over the long term.

The SWCEM projects population for Washoe County as a whole, and is not capable of projecting population for Reno by itself. It was necessary to devise a method for determining the City's share of the County population over time. Through analysis of building permit data, it was determined that, since 1981, Reno comprised 51.17 percent of the total Washoe County population. For the purposes of projecting land use in the next step, it was assumed that this
percentage would remain constant. The target populations for Reno for 1993 and 1998 reflect a 51.17 percent share of the control totals for Washoe County.

2. Land use assumptions - The objective of the five- and ten-year projections was to allocate future land uses to various areas of the City. The Washoe County Regional Transportation Commission (RTC) has developed a system to subdivide the City into Traffic Analysis Zones (TAZ's). TAZ's are areas containing relatively homogeneous land uses and recognized as producers and/or attractors of vehicle traffic. The RTC has identified 430 separate TAZ's in the Truckee Meadows and North Valleys areas. Of these, 277 are included, either wholly or in part, within the corporate boundaries of Reno. Using their traffic distribution modeling technique, the RTC can determine the amount of traffic generated by any one development within any TAZ and distribute that traffic throughout the street network. This is critical for the purposes of developing an impact fee system for streets. The impacts of growth can be assessed with regard to the need and the costs for new or expanded roadways. From that information a reasonable and equitable per-unit cost for new development can be established.

The first step in the process for projecting land uses was to develop a current land use inventory. It was necessary to establish appropriate land use categories in coordination with the RTC and the Washoe County Department of Comprehensive
Planning. This was important because the data base was to be used for region-wide planning efforts being conducted by those agencies. The land use categories and their components in the current land use inventory are described below:

**RESIDENTIAL**

**Single family**

-- single family residences which are detached dwelling units (one per lot);

-- two detached single family residences located on one lot; or

-- attached dwellings with separate entrances, connected only by a vertical common wall, in which each dwelling unit is situated on a separate lot.

**Multi-family**

-- residential properties with two or more attached housing units; or

-- condominiums, townhouses and duplexes.

**Mobile Home**

-- mobile homes used as permanent residences, including mobile home parks.

**RETAIL COMMERCIAL**

-- All retail and commercial areas such as shopping centers, mini-marts, gas stations, etc.

**OFFICE**

-- office buildings, except those which are located within large shopping centers.

**TOURIST COMMERCIAL**

-- hotels, motels and casinos; or

-- hotels/motels with gaming, in the downtown area; or

-- hotels/motels without gaming, in the downtown
area; or

-- hotels/motels with or without gaming, outside of the downtown area.

PUBLIC FACILITY

-- properties which are owned by public service institutions and operated for a public purpose; or

-- publicly owned property which is not likely to be developed and is effectively vacant, e.g. water towers, substations, drainage areas, etc.; or

-- all other developed and developable properties owned and operated by public service institutions, e.g. government offices, cemeteries, public parking lots, etc.

RECREATION

-- public parks, swimming pools, resorts, golf courses, etc.

SERVICE

-- product distribution centers and warehouses (does not include mini storage warehouse complexes).

MANUFACTURING

-- small industrial areas involved in manufacturing; or

-- large manufacturing or other industrial centers.

VACANT

-- property containing no improvements.

In order to conduct the inventory, the City was subdivided into the TAZ's developed by RTC. The land use data for the base date of November 30, 1987 were recorded for each parcel within each of the TAZ's in the City. The number of units for each type of residential land use in each TAZ, and the number of acres for each type of non-residential land use
in each TAZ comprised the data base.

To ensure the greatest degree of accuracy possible in the land use data, several resources were used to conduct the inventory. The most heavily used resources were the County Assessor's files and aerial photographs. Other resources included the R.L. Polk City Directory, building permits, neighborhood plans, the Department of Planning and Community Development's Approved But Not Built Projects List, Zoning Atlas, project files and in-the-field checks.

Using the city-wide totals for each type of non-residential land use, and the population of the City at the time of the inventory, the amount of each type of land use needed to serve the target population was calculated. The following example illustrates the process:

A. City-wide totals for each non-residential land use category:

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing (Mftg)</td>
<td>805.81</td>
</tr>
<tr>
<td>Retail Commercial (R/C)</td>
<td>1,112.82</td>
</tr>
<tr>
<td>Service (Serv)</td>
<td>513.11</td>
</tr>
<tr>
<td>Office (Off)</td>
<td>373.50</td>
</tr>
<tr>
<td>Public Facility (PF)</td>
<td>88.28</td>
</tr>
<tr>
<td>Recreation (Rec)</td>
<td>405.67</td>
</tr>
</tbody>
</table>

B. Calculate a current persons/acre ratio for each land use category:

1. Official 1987 State population estimate = 120,669

2. 

\[
\begin{align*}
\text{Mftg} & = \frac{120,669}{805.81} = 149.75 \text{ persons/acre} \\
\text{R/C} & = \frac{120,669}{1,112.82} = 108.44 \text{ persons/acre} \\
\text{Serv} & = \frac{120,669}{513.11} = 235.17 \text{ persons/acre} \\
\text{Off} & = \frac{120,669}{373.50} = 323.08 \text{ persons/acre} \\
\text{PF} & = \frac{120,669}{1,366.93} = 88.28 \text{ persons/acre}
\end{align*}
\]
C. Determine 1993 target population for Reno:

1. SWCEM population forecast for Washoe County in 1993 = 282,193

2. City of Reno target population = 51.17% of Washoe County = (0.5117) \times (282,193) = 144,398

D. Project 1993 acreage based on target population and persons/acre ratio:

ASSUMPTION: Persons/acre ratio will remain constant.

\[
\begin{align*}
\text{Mftg} & = \frac{144,398}{149.75} = 946.26 \text{ acres} \\
\text{R/C} & = \frac{144,398}{108.44} = 1,331.59 \text{ acres} \\
\text{Serv} & = \frac{144,398}{235.17} = 614.02 \text{ acres} \\
\text{Off} & = \frac{144,398}{323.08} = 446.94 \text{ acres} \\
\text{PF} & = \frac{144,398}{88.28} = 1,635.68 \text{ acres}
\end{align*}
\]

E. Additional amount of each type of non-residential land use by 1993, based on target population and constant persons/acre ratio:

\[
\begin{align*}
\text{Mftg} & = 946.26 - 805.81 = 140.45 \text{ acres} \\
\text{R/C} & = 1,331.59 - 1,122.82 = 218.77 \text{ acres} \\
\text{Serv} & = 614.02 - 513.11 = 100.91 \text{ acres} \\
\text{Off} & = 446.94 - 373.50 = 73.44 \text{ acres} \\
\text{PF} & = 1,635.68 - 1,366.93 = 268.75 \text{ acres}
\end{align*}
\]

Using the total number of units of each residential land use type city-wide, the number of each housing type needed in 1993 was calculated. The following example will show how this was accomplished.

A. Determine 1993 target population for Reno:

1. SWCEM population forecast for Washoe County in 1993 = 282,193

2. City of Reno target population = 51.17% of Washoe County = (0.5117) \times (282,193) = 144,398

B. Determine relationship of household population to total population:

From 1980 Census of the population: 97% of population resided in households.
C. Project household population in 1993:
1. \((1993 \text{ population}) \times (\% \text{ population in households}) = \text{ household population.}\)
2. \((144,398) \times (.97) = 140,066\)

D. Project household size:

1980 Census = 2.24 persons/household.

Assumption: Reno's 1982 Master Plan assumed that household population in Reno would increase to 2.3 persons/household. However, more recent information indicates that household size is declining nationwide. These two factors were assumed to average out, leaving average household size in Reno approximately the same in 1993 as in 1980.

E. Project number of households in 1993:
1. \((\text{household population})/(\text{persons per household}) = \text{ number of households.}\)
2. \((140,066)/(2.24) = 62,529 \text{ households.}\)

F. Determine 1987 percentage breakdown of dwelling unit types:

<table>
<thead>
<tr>
<th>Type of Unit</th>
<th># of Units</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>23,620</td>
<td>41.67%</td>
</tr>
<tr>
<td>Multi-family</td>
<td>29,551</td>
<td>52.14%</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>3,509</td>
<td>6.19%</td>
</tr>
</tbody>
</table>

G. Estimate the 1987 occupancy rate for each type of unit:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>95.9%</td>
<td>96.2%</td>
<td>96.0%</td>
<td>96.0%</td>
</tr>
<tr>
<td>Multi-family</td>
<td>87.8</td>
<td>90.1%</td>
<td>89.5%</td>
<td>89.5</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>97.3%</td>
<td>97.5%</td>
<td>96.9%</td>
<td>96.9</td>
</tr>
</tbody>
</table>

H. Project the 1993 occupancy rate for each type of housing unit:

Assumption: The 1993 estimate was based upon the average of the 1989, 1985 and 1987 occupancy rates
by type of unit because it was considered to best reflect occupancy rates over time.

I. Calculate the 1987 percentage breakdown of households by unit type:

1. (number of households) x (occupancy rate) = number of households by unit type.

2.

<table>
<thead>
<tr>
<th>Unit Type</th>
<th># of Units</th>
<th>Occupancy Rate</th>
<th>Number of Households</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>23,620</td>
<td>96.0%</td>
<td>22,675</td>
<td>43.17%</td>
</tr>
<tr>
<td>Multi-family</td>
<td>29,551</td>
<td>89.5</td>
<td>26,448</td>
<td>50.36%</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>3,502</td>
<td>96.9</td>
<td>3,400</td>
<td>6.47%</td>
</tr>
<tr>
<td>Total</td>
<td>56,680</td>
<td></td>
<td>52,523</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

J. Project the number of households by type of unit for 1993:

1. Number of households in 1993 = 62,529 (from E. above).

2. | Unit Type     | % of Total | # of Households |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>43.17%</td>
<td>26,994</td>
</tr>
<tr>
<td>Multi-family</td>
<td>50.36%</td>
<td>31,490</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>6.47%</td>
<td>4,045</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
<td>62,529</td>
</tr>
</tbody>
</table>

K. Project the number of housing units by type for 1993:

<table>
<thead>
<tr>
<th>Unit Type</th>
<th># of Households</th>
<th>Occ. Rate</th>
<th># of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>26,994</td>
<td>.960</td>
<td>28,119</td>
</tr>
<tr>
<td>Multi-family</td>
<td>31,490</td>
<td>.895</td>
<td>35,184</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>4,045</td>
<td>.969</td>
<td>4,174</td>
</tr>
<tr>
<td>Total</td>
<td>62,529</td>
<td></td>
<td>67,447</td>
</tr>
</tbody>
</table>

The methodology for projecting residential units and acres of non-residential land uses needed by 1998 was identical to that illustrated above.

The additional acres of non-residential land use, and
number of residential units needed by 1993 had to be allocated to the areas where the growth was expected to occur. The Approved But Not Built Projects List (ANB) prepared in September of 1988 by the Department of Planning and Community Development, provided the methodology for allocating the projected growth for 1993 and 1998 to TAZ's. That document provides a listing, continually updated since 1982, of projects that have been approved by the City but are not yet completed. Projects listed in the ANB were located according to which TAZ they are in and placed in the appropriate land use category for that TAZ if they were expected to be completed by the end of 1993. Large projects on the ANB list, primarily residential subdivisions, shopping centers and office parks, were added to the 1993 or 1998 projections based either upon known phasing plans, knowledge regarding the pace of construction or specific conditions of project approval regarding completion time.

The Annexation Plan element of the Reno Master Plan was used to estimate the boundaries of the City in 1998. This estimate serves as the basis for determining the service area for the 1998 projections. The land uses currently occupying those lands expected to be annexed by 1998 were added to the 1998 land use assumptions according to their location by TAZ. Those lands that were vacant at the time of the analysis and slated for future annexation were assumed to be vacant upon annexation.
3. Projecting traffic volumes - In order to identify and project future traffic demand on Reno's major road system, a forecasting model identified as MINUTP was used. The MINUTP model was developed by a private corporation in the mid 1980's as a standard predictive model that could be tailored to reflect local roadway conditions. MINUTP is an advanced gravity-type model that projects traffic volumes for individual road segments. The model establishes trip generation rates for each land use category. Given the amounts of the various land uses within each TAZ, the model predicts the traffic volumes generated within each TAZ. The model uses zone connectors from each TAZ to the street system. As traffic leaves a TAZ, the model distributes the traffic throughout the system. Theoretically, all traffic produced or attracted by land uses within any TAZ can be tracked throughout the street system. The MINUTP model was used to determine the net effect of development on each segment of the arterial and collector street network in terms of the increase in the base 1987 traffic volumes.

The first step in the modeling process was to operate the model using 1987 base land use and demographic information, existing road network travel speeds, and the number of travel lanes on each facility. The results from the first model run were twenty-four hour volumes. These were compared to existing traffic counts to ensure that the model analysis was consistent with true conditions. Once the calibration of the
model was completed, the model was operated to predict traffic volumes in 1993 and 1998.

The output for each year modeled (1987, 1993 and 1998) was a map of the arterial and collector street network with average daily traffic (ADT) plotted for each street segment.

4. Establishing a level of service standard - Once existing and future ADT for each street segment and intersection was determined, it was possible to calculate at what level of service (LOS) each segment was or would be operating.

The concept of level of service, as it relates to transportation facilities, is defined in the 1985 Highway Capacity Manual as "A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers." A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six level of service standards are defined and given letter designations, from "A" (best operating conditions) to "F" (worst operating conditions).

Level of service is often quantified by determination of a volume to capacity ratio (V/C). The V/C is a measurement of the amount of the total capacity of a roadway which is being used by traffic. It is simply the volume of traffic on the roadway divided by the capacity of the roadway. A V/C of
1.00 represents complete utilization of available roadway capacity.

Generalized definitions for each LOS designation, and the V/C associated with each, are provided below:

**LOS A:** Represents free flow; individual users are unaffected by the presence of others in the traffic stream; excellent level of comfort, convenience and freedom to maneuver. V/C is less than or equal to 0.60.

**LOS B:** In the range of stable flow; presence of other road users begins to be noticeable; comfort and convenience levels less than at LOS "A" because presence of other road users affects individual behavior. V/C is 0.60 - 0.70.

**LOS C:** In the range of stable flow; operation of individual users significantly affected by interaction with other users. V/C is 0.70 - 0.80.

**LOS D:** Represents high-density, but stable flow; users experience severe restriction in speed and freedom to maneuver; poor levels of comfort and convenience. V/C is 0.80 - 0.90.

**LOS E:** Represents operating conditions at or near the capacity level; all speeds reduced to a low, relatively uniform value; freedom to maneuver is difficult, with users experiencing poor comfort and convenience and frustration; unstable operations are frequent, where small increases or minor perturbations to the traffic flow can cause breakdown conditions. V/C is 0.90 - 1.00.

**LOS F:** Represents forced or breakdown conditions; exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point; roadways store queues behind such locations, with traffic often advancing in stop-and-go "waves." V/C > 1.00.

Sources: 1985 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209; V/C (volume to capacity) ratio ranges from TRB Circular 212.

As one would expect, specific capacities of different
roadway types will vary by community, given varying roadway construction standards, intersection configurations and land use and traffic patterns.

Throughout the nation, local jurisdictions have adopted LOS standards or goals for development of a safe and efficient transportation system. Generally, the adopted LOS standard is either LOS "C" or "D", or a multiple of LOS depending on the specific circumstances and needs of the community. Most urbanizing communities establish LOS "D" or multiple LOS standards. Generally, a multiple LOS standard provides for specific street segments and intersections to operate at lower levels of service than the balance of the street network. There are cases where jurisdictions adopt less stringent level of service standards. Sacramento County, California, for example, has adopted LOS "E", where the jurisdiction simply seeks to avoid V/C ratios greater than 1.00.

The decision to adopt either LOS "C" or "D" is generally made based on quality of life cost considerations. Adoption of LOS "C" is generally driven by a desire to maintain a perceived better quality of life. Compared to LOS "D", LOS "C" results in less delay to motorists, less traffic congestion and better traffic flow. These characteristics translate into less vehicle emissions, an important consideration in the Reno area. However, the achievement and continued maintenance of LOS "C" at peak hour represent's financial commitments that most communities are either unable
or unwilling to meet.

In adopting a level of service standard for transportation facilities, one phenomenon of urban mobility must be understood. Most people are inclined to travel a route between origin and destination over roadways that they perceive to require the least travel time (but not necessarily the least distance). This perceived shortest time route may change depending on the time of the day, particularly during peak travel times, when traffic becomes congested at various locations. As a perceived minimum time path becomes congested with other vehicles, drivers will divert to less congested alternative routes. The point at which drivers alter routes due to delays and congestion depends on the individual driver, his behavior in traffic and his knowledge of alternate routes. The delays associated with LOS "C" traffic conditions are not of a magnitude that would lead the typical driver to seek an alternate route. LOS "D" would, in some instances, encourage drivers to seek alternate routes.

Before the development of the impact fee system, Reno used the City of Reno Interim Traffic Guidelines to establish level of service policy. These guidelines specified that land development proposals requiring a traffic report include a dedication of right-of-way at critical intersections where 20-year projections indicated a LOS "D" or worse condition. The guidelines also required the following:

- mitigation of project impacts if the existing intersection would operate at LOS "D" or worse;
- mitigation of project impacts if the project traffic would cause an intersection to exceed LOS "C"; and
- mitigation of project impacts if the project traffic would cause a change of 3 percent or more in the V/C ratio and/or LOS measurement of average stopped delay, when LOS "D" or worse is anticipated in the near future.

These guidelines were established to avoid exceeding LOS "C". Reno's policy requiring new development to mitigate traffic impacts was consistent with those of other area agencies, including Washoe County and the Regional Transportation Commission. The Level of Service "C" standard of operation, however, was not an officially adopted standard. The Interim Guidelines and their intent were the continual subject of much debate between the City and the development community. The issue of equity regarding the traffic mitigations, if any, required for small projects and those required for larger projects was generally at the root of the debates. The process of developing the impact fee system provided Reno with the opportunity to formally establish a level of service standard for the street network. The system provides equitable treatment of all development in maintaining the adopted standard.

In determining the LOS standard to be established for Reno's streets, four different levels of service were analyzed: LOS "C", LOS "D", Multiple LOS "C/D" and Multiple LOS "D/E". The focus of each analysis was to determine the cost to the City to bring the existing street network up to
the specified LOS. The level of service ultimately adopted
in Reno is called LOS D/E. Under this level of service, the
City's network of arterial and collector streets is required
to be improved and maintained at LOS D, with the exception of
specific roadways and intersections for which LOS E was
established.

5. Determining existing deficiencies - Once a level of
service standard was established, it was possible to determine
how the existing system measured up to that standard. It was
necessary to do this because deficiencies existing in the
roadway network prior to the imposition of impact fees must
be identified and corrected with funds other than impact fees.
Most impact fee legislation does not specify a time period in
which deficiencies must be corrected. A community should,
however, be able to establish a plan and identify the funding
sources to be used.

In evaluating the existing conditions of Reno's major
street system, analysis was conducted for both signalized and
unsignalized intersections, and arterial and collector street
segments. Over an 18-month period, information regarding
intersection and segment geometrics was compiled. The data
base included the following information:

**Street Segments.** Segment length, facility type, curb-
to-curb width, right-of-way width, number of through
lanes, parkway and sidewalk width, median/center turn
lane type and width, parking, travel speeds and traffic
volumes from RTC MINUTP model runs.

**Intersections.** For each leg of an intersection:
orientation, parkway and sidewalk width, length and width
of auxiliary lanes, information on channelizing islands, number of through lanes, number and length of left turn lanes, width and length of center medians, right-of-way width, type of intersection control (signal, stop, yield or uncontrolled) and traffic volumes.

Traffic volumes. A.M. and P.M. peak hour turning movements at all signalized intersections, daily count data at all unsignalized intersections determined to be near the standard warrants for signalization, and additional daily counts on selected roadways where no existing data was available to allow comparison to RTC model output. Peak hour data also included truck and bus counts, right turns on red, and pedestrian movements.

Once this data base was compiled and organized, it was possible to analyze the efficiency of operation of both intersections and arterial and collector street segments, as described below:

Intersections. The analysis of both signalized and unsignalized intersections was conducted using the Highway Capacity software from the McTrans Center at the University of Florida. A section of Reno's busiest arterial street was also analyzed using the arterial analysis portion of the Highway Capacity software. The calculated travel speed was compared against the actual travel speed determined in a study of the corridor and found to be acceptable. Also, intersection delay data obtained from model runs for a signal timing study in Reno were compared against the Highway Capacity model output. These numbers were in close agreement, lending confidence in the Highway Capacity software output.

Segment capacity. to evaluate street segments for current levels of service, it was necessary to convert the 24 hour traffic volumes estimated from the MINUTP model runs to segment capacities. A review of the available literature indicated the existence of several estimated capacities based on 24 hour volumes for arterial and collector roadways. Two methods were used to determine the segment capacities. The results of the analysis using both methods were averaged to arrive at segment capacities per lane per day. Since signalized intersections generally control the maximum volume obtainable on roads, both methods centered on some type of intersection analysis.

The first method made use of the Highway Capacity model
output. The total approach volume to an intersection was divided by the total number of approach lanes to arrive at an average number of approach vehicles per lane. The calculated average volume was then divided by the volume/capacity ratio from the Highway Capacity model to arrive at an average capacity for through travel lanes on adjacent intersections. This analysis was performed for over 300 intersections in the City.

The second method used to calculate street segment capacities involved the use of control signal cycle lengths and directional splits occurring at an intersection. The basic method involved calculating the amount of green time available on the street and then calculating the maximum flow rate that could occur on the street. Both available green time and lost time due to start up delay and the yellow and all red phases were considered in the formula. This method produced a maximum capacity at an intersection under ideal conditions. To compensate for actual driving conditions, five percent was subtracted from the obtained values to account for delays due to buses, trucks, parked vehicles and pedestrians. Again, this analysis was performed for over 300 intersections in the City. Finally, the results of the two methods were averaged to arrive at an average segment capacity for the LOS being analyzed.

As previously indicated, this analysis was performed for four different level of service standards. Once the existing level of service of each segment and intersection was determined, it was possible to identify the improvements necessary to achieve any of the four levels of service and the associated costs. The results in terms of number of segments and intersections, lane miles of new roadway, and total costs to achieve each LOS are summarized in Table 1. Many of the improvements needed to correct the existing deficiencies at each level of service have committed funding sources such as development exactions, Nevada Department of Transportation,
TABLE 1
COSTS TO CORRECT EXISTING DEFICIENCIES

<table>
<thead>
<tr>
<th></th>
<th>MLOS</th>
<th>LOS &quot;C&quot;</th>
<th>LOS &quot;D&quot;</th>
<th>LOS &quot;D/E&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td># of segments</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td># of intersections</td>
<td>26</td>
<td>34</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td># lane miles</td>
<td>10.6</td>
<td>10.8</td>
<td>9.5</td>
<td>5.4</td>
</tr>
<tr>
<td>Total costs</td>
<td>$15,101,470</td>
<td>$32,686,900</td>
<td>$18,081,700</td>
<td>$19,364,950</td>
</tr>
<tr>
<td>Identified funding</td>
<td>$7,242,440</td>
<td>$7,242,440</td>
<td>$6,978,400</td>
<td>$7,558,900</td>
</tr>
<tr>
<td>City responsibility</td>
<td>$7,859,030</td>
<td>$25,444,500</td>
<td>$11,103,350</td>
<td>$12,065,020</td>
</tr>
</tbody>
</table>

RTC or bond issue financing. The total amount of these funding sources is indicated in the "identified funding" row of the table. The row titled "City responsibility" represents the amount the City would have been required to expend to correct existing deficiencies at each LOS.

6. Determining future street network improvements - Once the existing deficiencies in the street system, and the improvements necessary to correct them were identified at each of the analyzed levels of service, the next step in the process was to determine the costs of future street network improvements needed to accommodate growth and maintain each of those service standards. The methodology for this analysis was identical to that used to determine the existing deficiencies, the improvements necessary to correct them, and the costs for those improvements. The results of this analysis, in terms of the number of segments and intersections, lane miles of new roadway, total costs to
maintain each LOS, and the shortfall to be paid through the collection of impact fees are shown in Table 2. The numbers given are for the first five-year planning horizon. This is significant because this would be the five-year capital improvements plan required by the enabling legislation and serve as the basis for the derivation of the impact fee, which will be discussed in the next chapter.

TABLE 2  
COSTS TO MAINTAIN EACH LEVEL OF SERVICE THROUGH 1993

<table>
<thead>
<tr>
<th></th>
<th>MLOS</th>
<th>LOS &quot;C&quot;</th>
<th>LOS &quot;D&quot;</th>
<th>LOS &quot;D/E&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td># of segments</td>
<td>86</td>
<td>87</td>
<td>87</td>
<td>52</td>
</tr>
<tr>
<td># of intersections</td>
<td>76</td>
<td>78</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td># lane miles</td>
<td>67.2</td>
<td>90.2</td>
<td>91.8</td>
<td>48.4</td>
</tr>
<tr>
<td>Total costs</td>
<td>$91,725,500</td>
<td>$94,549,400</td>
<td>$103,743,800</td>
<td>$50,502,250</td>
</tr>
<tr>
<td>Identified revenues</td>
<td>$52,852,500</td>
<td>$52,852,200</td>
<td>$51,818,100</td>
<td>$23,710,500</td>
</tr>
<tr>
<td>Shortfall</td>
<td>$38,873,300</td>
<td>$41,697,200</td>
<td>$51,925,700</td>
<td>$26,791,750</td>
</tr>
</tbody>
</table>
To ensure that the impact fees in Reno do not exceed a proportionate share of the costs the City will incur to accommodate new development, a modified needs-driven system was developed to calculate the fees. The system was based on the demand new individual land use types place on the City's major road system. The modified needs driven system looks at the volume of new traffic the City must accommodate because of growth and new development, in the context of the specific capital facility improvements needed for that travel over the next five years. The fees collected can be expended on any of the identified capital road facility improvements, provided that such expenditures result in a benefit to new development. This approach creates direct linkages between new development, specific facility needs, and the fees paid.

The formula used to calculate the fees allocated road costs to new growth and development by land use types. The travel demand created by each land use type and the cost for additional capacity were evaluated. To ensure there is no double charging, tax monies each land use type is expected to pay for the construction of facilities needed to meet its demand are deducted.

To analyze the demand a particular unit of development will place on the City's street system, five analyses were conducted. First, the travel the individual development unit
is expected to place on the City's street network (attributable new travel) was determined. Second, the physical quantity of new roadways, in terms of lane-miles required to accommodate that travel was determined (new lane miles of road).

Third, the cost of acquiring the necessary rights-of-way to construct the needed additional road capacity and the cost of constructing the needed road improvements were calculated (total cost).

The fourth step was to determine what each land use type will pay toward the cost of this additional road capacity in motor fuel and other taxes (credits). This was to ensure that no overlapping or double charging occurs.

The fifth step was to subtract the credits from the total costs of the new capital road facilities demanded by the land use to arrive at the recommended impact fee (net cost).

The formula for calculating the impact fees using these variables is as follows:

\[
\text{ATTRIBUTABLE NEW TRAVEL} = \frac{(\text{Vehicle Trips Per Day} \times \text{Average Trip Length}) \times (\% \text{ NEW TRIPS})}{2}
\]

\[
\text{NEW LANE MILES OF ROAD} = \frac{\text{Attributable New Travel Capacity Per Lane Mile (Vehicles Per Day)}}{5,387 \text{ ADT}}
\]

\[
\text{RIGHT OF WAY COST} = (\text{New Lane Miles of Road}) \times (\text{Right-of-Way Cost Per Lane Mile})
\]
CONSTRUCTION COST =
(New Lane Miles of Road) x (Construction Cost Per Lane Mile)

TOTAL COST =
(Construction Cost) + (Right-of-Way Cost)

CREDITS =
{{[(Attributable Travel x Days Per Year)/ Miles Per Gallon] x Capital Portion of Motor Fuels Tax} x Present Value Factor

WHERE THE PRESENT VALUE FACTOR =
Sum From 1 TO 25 of (1 / (1.07 ^ n))
(where n is the year from 1 TO 25)

NET COST =
(Total Cost) - (Credits) = IMPACT FEE

Attributable Travel was calculated by multiplying the number of trip ends generated by the particular unit of development on a daily basis, times the average trip length. The result was reduced by one-half to adjust the number of trip ends to trips (ADT), and then multiplied by the percent new trips. The reduction by one-half of the trip ends generated times the trip length corrects for over-counting. Trip generation rates are expressed in terms of trip ends, not trips. (e.g. one trip from home to work has two trip ends, one leaving home and one arriving at work). The percent new trips factor was included to consider trip diversion and multiple trip purpose.

The daily trip rate is the number of vehicle trip ends generated by a particular land use type on a daily basis. This information was taken from Trip Generation, 4th Ed., published
by the Institute of Transportation Engineers (ITE). In the absence of localized data, this source was considered the best information on average trip generation rates by land use. Daily trip generation rates by land use are shown in Table 3.

TABLE 3

AVERAGE DAILY TRIP RATES BY LAND USE

<table>
<thead>
<tr>
<th>LAND USE TYPE</th>
<th>AVERAGE DAILY TRIP RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>SINGLE FAMILY (Per Dwelling Unit)</td>
<td>10.06</td>
</tr>
<tr>
<td>MULTI FAMILY (Per Dwelling Unit)</td>
<td>6.50</td>
</tr>
<tr>
<td>MOBILE HOME (Per Dwelling Unit)</td>
<td>4.81</td>
</tr>
<tr>
<td>SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>ELEMENTARY/MIDDLE (Per Employee)</td>
<td>13.10</td>
</tr>
<tr>
<td>HIGH SCHOOL (Per Employee)</td>
<td>16.79</td>
</tr>
<tr>
<td>NON-RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL (Per 1,000 sq. ft.)</td>
<td>6.97</td>
</tr>
<tr>
<td>GENERAL OFFICE (Per 1,000 sq. ft.)</td>
<td>16.31</td>
</tr>
<tr>
<td>GENERAL COMMERCIAL (Per 1,000 sq. ft.)</td>
<td>166.35</td>
</tr>
<tr>
<td>HOSPITALS (Per Bed)</td>
<td>11.75</td>
</tr>
<tr>
<td>NURSING HOMES (Per Bed)</td>
<td>2.60</td>
</tr>
<tr>
<td>HOTEL/MOTEL (Per Room)</td>
<td>2.76</td>
</tr>
<tr>
<td>RECREATION (Per Acre)</td>
<td>4.80</td>
</tr>
</tbody>
</table>

The calculation of the average trip length by land use type was based on travel demand modeling done by the Regional Transportation Commission of Washoe County. The gravity model distribution used in the modeling environment provides estimates of the average trip length by trip purpose, and the average travel speed. These model outputs were used to calculate the average trip length in miles and were adjusted, based on professional judgment, for the fact that the model
area includes an area larger than the City of Reno. Numerous surveys have been conducted to determine trip lengths of multi-purpose trips (ie: a trip to the bank is often a secondary trip, part of the primary trip). Using this compiled data, the trip lengths for many non-residential land uses were further adjusted. The average trip length, by land use type, used in calculation of the impact fees in Reno are identified in Table 4.

**TABLE 4**

**AVERAGE TRIP LENGTH BY LAND USE TYPE**

<table>
<thead>
<tr>
<th>LAND USE TYPE</th>
<th>AVERAGE TRIP LENGTH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>SINGLE FAMILY (Per Dwelling Unit)</td>
<td>5.33 miles</td>
</tr>
<tr>
<td>MULTI FAMILY (Per Dwelling Unit)</td>
<td>5.33</td>
</tr>
<tr>
<td>MOBILE HOME (Per Dwelling Unit)</td>
<td>5.33</td>
</tr>
<tr>
<td>SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>ELEMENTARY/MIDDLE (Per Employee)</td>
<td>1.50</td>
</tr>
<tr>
<td>HIGH SCHOOL (Per Employee)</td>
<td>2.50</td>
</tr>
<tr>
<td>NON-RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL (Per 1,000 sq. ft.)</td>
<td>5.42</td>
</tr>
<tr>
<td>GENERAL OFFICE (Per 1,000 sq. ft.)</td>
<td>4.98</td>
</tr>
<tr>
<td>GENERAL COMMERCIAL (Per 1,000 sq. ft.)</td>
<td>2.10</td>
</tr>
<tr>
<td>HOSPITALS (Per Bed)</td>
<td>5.40</td>
</tr>
<tr>
<td>NURSING HOMES (Per Bed)</td>
<td>5.40</td>
</tr>
<tr>
<td>HOTEL/MOTEL (Per Room)</td>
<td>5.29</td>
</tr>
<tr>
<td>RECREATION (Per Acre)</td>
<td>4.94</td>
</tr>
</tbody>
</table>

* Adjusted to reflect travel patterns (see page 42)

Many land uses, while attracting traffic, generate little, if any, new traffic. There are several reasons for this. First, the multiple purpose trip will tend to attract traffic to particular locations without generating new
traffic. Second, the capturing of an existing trip, such as stopping for a quart of milk on the way home from work, will not result in additional travel. Third, diverting a trip which already existed, such as taking the long way home from work to shop, will place limited new travel on the road system. Take, for example, the convenience store and the service station. The typical visit to these establishments, especially during the peak hour, are made by individuals who are going elsewhere such as home or work. If each were counted as a trip, the result would be an overstatement of the number of trips generated. This overstatement was corrected in Reno's impact fee analysis in two ways. First, a percentage reduction factor (percent new trips), was applied for trips to particular land uses which do not place additional travel on the roads. The percent new trips generated by each land use type are shown in Table 5.

**TABLE 5**

<table>
<thead>
<tr>
<th>LAND USE TYPE</th>
<th>PERCENT NEW TRIPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>SINGLE FAMILY (Per Dwelling Unit)</td>
<td>100%</td>
</tr>
<tr>
<td>MULTI FAMILY (Per Dwelling Unit)</td>
<td>100%</td>
</tr>
<tr>
<td>MOBILE HOME (Per Dwelling Unit)</td>
<td>100%</td>
</tr>
<tr>
<td>SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>ELEMENTARY/MIDDLE (Per Employee)</td>
<td>100%</td>
</tr>
<tr>
<td>HIGH SCHOOL (Per Employee)</td>
<td>100%</td>
</tr>
<tr>
<td>NON-RESIDENTIAL</td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL (Per 1,000 sq. ft.)</td>
<td>85%</td>
</tr>
<tr>
<td>GENERAL OFFICE (Per 1,000 sq. ft.)</td>
<td>85%</td>
</tr>
<tr>
<td>GENERAL COMMERCIAL (Per 1,000 sq. ft.)</td>
<td>25%</td>
</tr>
<tr>
<td>HOSPITALS (Per Bed)</td>
<td>100%</td>
</tr>
<tr>
<td>NURSING HOMES (Per Bed)</td>
<td>100%</td>
</tr>
<tr>
<td>HOTEL/MOTEL (Per Room)</td>
<td>90%</td>
</tr>
<tr>
<td>RECREATION (Per Acre)</td>
<td>100%</td>
</tr>
</tbody>
</table>
Second, the trip lengths for non-residential land uses were adjusted to more accurately reflect the travel patterns of individuals visiting those land uses. The adjusted trip lengths are those shown in Table 4.

After calculating the travel demand of individual land use types, the next step was to determine the actual amount of new roadway needed to accommodate each land use type. This was measured by the new lane miles the land use type requires based on the analysis of attributable travel. Needed lane miles of new roadway was calculated by dividing the attributable travel by the capacity of a lane of roadway.

In determining the cost of the roads demanded by new development, an average cost per lane mile was calculated. The analysis of average lane mile costs is shown in Table 6. The average weighted per-lane-mile cost was $471,747.

### Table 6

**Average Lane-Mile Costs**

<table>
<thead>
<tr>
<th>LANE</th>
<th>% OF TOTAL</th>
<th>COSTS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CONSTRUCTION</td>
<td>RIGHT-OF-WAY</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>MAJOR ARTERIAL</td>
<td>34.25</td>
<td>$4,201,249</td>
<td>$3,398,475</td>
<td>$7,599,724</td>
<td></td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>17.03</td>
<td>$10,953,665</td>
<td>$5,538,143</td>
<td>$16,491,809</td>
<td></td>
</tr>
<tr>
<td>COMMERCIAL COLLECTOR</td>
<td>0.37</td>
<td>120,473</td>
<td>40,384</td>
<td>160,857</td>
<td></td>
</tr>
<tr>
<td>RESIDENTIAL COLLECTOR</td>
<td>2.35</td>
<td>1,068,422</td>
<td>150,895</td>
<td>1,219,317</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td>54.00</td>
<td><strong>$16,343,809</strong></td>
<td><strong>$9,127,897</strong></td>
<td><strong>$25,471,706</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Costs Per Lane-Mile LOS D/E**

<table>
<thead>
<tr>
<th></th>
<th>CONSTRUCTION</th>
<th>RIGHT-OF-WAY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR ARTERIAL</td>
<td>$122,664</td>
<td>$99,226</td>
<td>$221,890</td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>643,198</td>
<td>325,199</td>
<td>968,397</td>
</tr>
<tr>
<td>COMMERCIAL COLLECTOR</td>
<td>325,603</td>
<td>109,146</td>
<td>434,749</td>
</tr>
<tr>
<td>RESIDENTIAL COLLECTOR</td>
<td>454,648</td>
<td>64,210</td>
<td>518,858</td>
</tr>
</tbody>
</table>
Table 6 (Cont'd)

WEIGHTED CONSTRUCTION COSTS PER LANE-MILE LOS D/E

<table>
<thead>
<tr>
<th></th>
<th>% OF TOTAL LANE-MILES</th>
<th>COST PER LANE-MILE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR ARTERIAL</td>
<td>63.43</td>
<td>$122,664</td>
<td>$77,806</td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>31.54</td>
<td>643,198</td>
<td>202,865</td>
</tr>
<tr>
<td>COMMERCIAL COLLECTOR</td>
<td>0.69</td>
<td>325,603</td>
<td>2,247</td>
</tr>
<tr>
<td>RESIDENTIAL COLLECTOR</td>
<td>4.35</td>
<td>454,648</td>
<td>19,777</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td></td>
<td><strong>$ 302,694</strong></td>
</tr>
</tbody>
</table>

WEIGHTED RIGHT-OF-WAY COSTS PER LANE-MILE LOS D/E

<table>
<thead>
<tr>
<th></th>
<th>% OF TOTAL LANE-MILES</th>
<th>COST PER LANE-MILE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR ARTERIAL</td>
<td>63.43</td>
<td>$99,226</td>
<td>$62,939</td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>31.54</td>
<td>325,199</td>
<td>102,568</td>
</tr>
<tr>
<td>COMMERCIAL COLLECTOR</td>
<td>0.69</td>
<td>109,146</td>
<td>753</td>
</tr>
<tr>
<td>RESIDENTIAL COLLECTOR</td>
<td>4.35</td>
<td>64,210</td>
<td>2,793</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td></td>
<td><strong>$ 169,053</strong></td>
</tr>
</tbody>
</table>

WEIGHTED TOTAL PER LANE-MILE COST LOS D/E

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WEIGHTED CONSTRUCTION COSTS PER LANE-MILE =</td>
<td>$302,694</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEIGHTED RIGHT-OF-WAY COSTS PER LANE-MILE =</td>
<td><strong>169,053</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td></td>
<td><strong>$ 471,747</strong></td>
</tr>
</tbody>
</table>

Once the average lane miles costs were calculated, they were multiplied by the amount of new lane miles of road demanded by each land use type, to determine the costs attributable to each land use type.

After the actual costs of providing additional capacity for each land use type are calculated, credits must be provided if it is expected that the land use type will be paying taxes for a portion of the capital road facilities needed to accommodate it.

In the City of Reno, this could potentially come through a) federal aid programs funded by federal taxes on motor vehicle fuels, b) state taxes on motor vehicle fuels, c)
special assessment or benefit districts, d) general obligation bonds and e) the City's General Fund. An analysis of each of these sources indicated that credits for three types of payments were required. These were taxes on motor vehicle fuels, road user charges, and debt service taxes on an existing general obligation bond and a proposed bond issue to correct existing deficiencies. Applying these payments to the credits portion of the impact fee formula, a capital gas tax credit and a bond credit were calculated. The total credits for each land use are shown in Table 7.

**TABLE 7**

<table>
<thead>
<tr>
<th>LAND USE TYPE</th>
<th>AVG. TRIP RATE</th>
<th>TRIP LENGTH</th>
<th>NEW TRIPS</th>
<th>CAPITAL GAS TAX CREDIT</th>
<th>BOND CREDIT</th>
<th>TOTAL CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SINGLE FAMILY (Per D.U.)</td>
<td>10.06</td>
<td>5.33</td>
<td>100%</td>
<td>$707.70</td>
<td>$475.04</td>
<td>$1,182.74</td>
</tr>
<tr>
<td>MULTI FAMILY (Per D.U.)</td>
<td>6.50</td>
<td>5.33</td>
<td>100%</td>
<td>$457.17</td>
<td>$313.29</td>
<td>$770.46</td>
</tr>
<tr>
<td>MOBILE HOME (Per D.U.)</td>
<td>4.81</td>
<td>5.33</td>
<td>100%</td>
<td>$338.59</td>
<td>$264.23</td>
<td>$602.82</td>
</tr>
<tr>
<td>SCHOOLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEMENTARY/MIDDLE (Per Emp.)</td>
<td>13.10</td>
<td>1.50</td>
<td>100%</td>
<td>$259.52</td>
<td>$37.02</td>
<td>$296.54</td>
</tr>
<tr>
<td>HIGH SCHOOL (Per Emp.)</td>
<td>16.79</td>
<td>2.50</td>
<td>100%</td>
<td>$554.52</td>
<td>$183.30</td>
<td>$737.82</td>
</tr>
<tr>
<td>NON-RESIDENTIAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL (1,000 sq. ft.)</td>
<td>6.97</td>
<td>5.42</td>
<td>85%</td>
<td>$423.55</td>
<td>$423.68</td>
<td>$847.23</td>
</tr>
<tr>
<td>GEN. OFFICE (1,000 sq. ft.)</td>
<td>16.31</td>
<td>4.98</td>
<td>85%</td>
<td>$911.90</td>
<td>$830.40</td>
<td>$1,742.30</td>
</tr>
<tr>
<td>GEN. COMM. (1,000 sq. ft.)</td>
<td>166.35</td>
<td>2.10</td>
<td>25%</td>
<td>$1,153.53</td>
<td>$877.05</td>
<td>$2,030.58</td>
</tr>
<tr>
<td>HOSPITAL (Per Bed)</td>
<td>11.75</td>
<td>5.40</td>
<td>100%</td>
<td>$838.06</td>
<td>$562.57</td>
<td>$1,400.63</td>
</tr>
<tr>
<td>NURSING HOME (Per Bed)</td>
<td>2.60</td>
<td>5.40</td>
<td>100%</td>
<td>$185.23</td>
<td>$99.70</td>
<td>$284.93</td>
</tr>
<tr>
<td>HOTEL/MOTEL (Per Room)</td>
<td>2.76</td>
<td>5.29</td>
<td>90%</td>
<td>$173.48</td>
<td>$88.71</td>
<td>$262.19</td>
</tr>
<tr>
<td>RECREATION (Per Acre)</td>
<td>4.80</td>
<td>4.94</td>
<td>100%</td>
<td>$312.68</td>
<td>$325.67</td>
<td>$638.35</td>
</tr>
</tbody>
</table>

The impact fee, or net cost for new roadways to accommodate a particular unit of development, is calculated by subtracting the total cost from the credits calculated above. Table 8 shows the impact fees presently being assessed against all new development in Reno.
## TABLE 8

**SCHEDULE OF STREET PROJECT IMPACT FEES**
**CITY OF RENO**

<table>
<thead>
<tr>
<th>LAND USE TYPE</th>
<th>COST</th>
<th>CREDIT</th>
<th>IMPACT FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESIDENTIAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SINGLE FAMILY (Per D.U.)</td>
<td>$2,346</td>
<td>$1,182.74</td>
<td>$1,163</td>
</tr>
<tr>
<td>MULTI FAMILY (Per D.U.)</td>
<td>$1,516</td>
<td>$ 770.46</td>
<td>$ 746</td>
</tr>
<tr>
<td>MOBILE HOME (Per D.U.)</td>
<td>$1,122</td>
<td>$ 602.82</td>
<td>$ 519</td>
</tr>
<tr>
<td><strong>SCHOOLS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEM./MIDDLE (Per Emp.)</td>
<td>$ 860</td>
<td>$ 296.54</td>
<td>$ 563</td>
</tr>
<tr>
<td>HIGH SCHOOL (Per Emp.)</td>
<td>$1,838</td>
<td>$ 737.82</td>
<td>$1,100</td>
</tr>
<tr>
<td><strong>NON-RESIDENTIAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL (1,000 sq. ft.)</td>
<td>$1,404</td>
<td>$ 847.23</td>
<td>$ 557</td>
</tr>
<tr>
<td>GEN. OFFICE (1,000 sq. ft.)</td>
<td>$3,023</td>
<td>$1,742.30</td>
<td>$1,281</td>
</tr>
<tr>
<td>GEN. COMM. (1,000 sq. ft.)</td>
<td>$3,824</td>
<td>$2,030.58</td>
<td>$1,793</td>
</tr>
<tr>
<td>HOSPITALS (Per Bed)</td>
<td>$2,778</td>
<td>$1,420.93</td>
<td>$1,357</td>
</tr>
<tr>
<td>NURSING HOMES (Per Bed)</td>
<td>$ 614</td>
<td>$ 284.93</td>
<td>$ 329</td>
</tr>
<tr>
<td>HOTEL/MOTEL (Per Room)</td>
<td>$ 575</td>
<td>$ 262.19</td>
<td>$ 313</td>
</tr>
<tr>
<td>RECREATION (Per Acre)</td>
<td>$1,037</td>
<td>$ 838.55</td>
<td>$ 198</td>
</tr>
</tbody>
</table>
An Impact Fee Advisory Committee (IFAC), whose function was basically one of policy oversight, was established by the Reno City Council.

Initially, the IFAC consisted of representatives of the business and development communities, and the public-at-large. As the issues became more technical, the committee membership more heavily represented development interests.

As Reno's Street Project Impact Fee program was being developed, the IFAC raised many policy issues that the City Council was required to confront. The major issues the City Council was concerned with were:

1. Development of the system based on peak hour versus average daily traffic. Reno's initial efforts in developing an impact fee system for streets was to base the system on peak hour traffic volumes. It was felt that a peak hour system would provide for the most efficient operation of the network during the most congested times of the day. Another reason to establish a peak hour system was that the RTC traffic model was to be converted to a peak hour model. The Impact Fee Advisory Committee questioned the wisdom of using a peak hour system, arguing that it was over-designing the system to accommodate traffic during a one-half hour period that occurs only twice per day. The rest of the time, the system would be greatly under-utilized. The committee also
felt that at any of the levels of service analyzed, the costs for existing deficiencies, as well as the fees to be charged by land use, were prohibitive. Members also argued that no other community with a system of impact fees for streets used a peak hour system.

The City Council asked that an analysis using average daily traffic (ADT) be conducted. The results were decreased costs for existing deficiencies and slightly lower impact fees. These results guided the City Council in their decision to use ADT as the basis for the fees.

2. Level of Service standard for the street network. As noted in Chapter 3, establishing a level of service standard is very critical to developing the impact fee system for streets. Before the impact fee analysis, the City had implicitly established level of service "C", through the Interim Traffic guidelines, as the operating standard for the street system. The City's initial recommendation was to formally adopt LOS "C". The IFAC advised against this because of prohibitive costs. The committee also argued that without information on existing deficiencies, future improvements and costs, and fees to be charged under several different levels of service, it would be fiscally irresponsible for the Council to formally adopt a level of service. This debate resulted in a delay in adoption of the system until a decision was made regarding level of service.
3. Several benefit zones versus one city-wide service area. In developing an impact fee system, there are two reasons to zone the city into a set of distinct geographic areas. First, separate zones allow fees to vary with the costs of infrastructure in different parts of the city. Second, it satisfies the legal requirement imposed by some statutes and courts that fees be spent for the benefit of those who paid them.

Reno found that any scheme for creating more than one zone, or service area resulted in disproportionate fees between areas. This may appear to be an effective growth management tool, but Reno's policy was simply to provide a means for growth to help pay for itself; market forces should determine the direction and nature of growth.

The recommendation to establish the city as a single service area relied upon average trip length for various land uses. The longest average trip length, as noted in Chapter 4 was found to be 5.42 miles, approximately the distance across the city east-west and north-south. Interzonal usage balances because of land use patterns that provide commercial and employment opportunities in all areas of the city. By establishing one city-wide service area, fees would be more equitable and more accurately reflect the costs of building streets throughout the city.

4. Exemption of previously approved projects from the payment of impact fees. This was a major issue among the members of the IFAC and other representatives of the
development community as well. The basic argument was that projects with approvals granted prior to the enactment of impact fees should be exempt from the payment of fees. The assumption was that since approval for a project had been granted, the mitigations of traffic impacts were established through the project review and development exaction process.

The problem was that the required development exactions applied only to site-related traffic mitigations. For purposes of Reno's development exaction process, "site-related" meant those facilities and right-of-way dedications for direct access to the development. Direct access improvements included (a) driveways and streets leading to and from the development; (b) right and left turn lanes leading to those driveways and streets; (c) traffic control measures for those driveways; and (d) internal streets. The process did not recognize the impacts of development away from the immediate vicinity, nor could it do so legally.

This issue goes back to one of the reasons why impact fees were considered to be an alternative to the exactions process. Many developments, particularly the smaller ones, required no traffic mitigations, while the larger ones may have required a disproportionate amount.

The development community was concerned that to require the payment of impact fees for these previously approved projects would jeopardize their viability due to increased costs.
The argument against an exemption was that the city would collect a minimal amount in impact fees in the next few years because the exempt projects would be the ones pulling the building permits. Growth, and the demands it would place on the street system would continue, while the facilities necessary to accommodate those demands would not get built due to lack of funding.

The City Council resolved this issue with a compromise that provided exemption from the payment of impact fees for those previously approved projects for which traffic reports were required. If the magnitude of a previously approved project was not great enough to trigger the need for a traffic report prepared in accordance with the Interim Traffic Guidelines described in Chapter 3, the payment of impact fees would be required.

5. Methodology for financing existing deficiencies. As noted previously, once a level of service standard was established, the city was required to determine what street segments were operating below that standard, and what improvements and their associated costs were necessary to correct the deficiencies. The City then had to decide how to pay for the deficiency corrections. Impact fees cannot be used for such purposes. Through the impact fee analysis, the City identified over $12 million in improvements as necessary to correct the existing deficiencies at the adopted level of service. The only feasible option for raising the revenue to pay for the needed
improvements was to put a bond question before the voters of the city. In May of 1991, the voters approved a bond issue that included $12 million for the correction of the existing deficiencies in the street network.
CHAPTER 6

CONCLUSION

The Street Project Impact Fees program has been in effect in Reno since September, 1991. It is too early to tell whether the program will meet the City's expectations. To date, the City has collected approximately $200,000 in fees. This is well short of estimates of revenues made during program development. Five-year projections based on annual growth estimated revenues at approximately $20 million, or $4 million annually.

Several factors may be contributing to this shortfall. Foremost of these factors is the slowdown in population growth the city is presently experiencing. In the ten years prior to the last year, Reno grew at an average annual rate of about 2.9 percent. During the last year, however, Reno grew less than one percent. A commensurate reduction in construction activity reflects the economic conditions being felt throughout the nation.

Locally, many small businesses are closing their doors. The main employer, the gaming industry, is laying off employees and many are reducing, rather than expanding, the scope of their operations.

Banks and other lending institutions are being more cautious in making construction loans. This is especially true for multi-family developments and commercial enterprises.

The effect of the slowdown in the local economy, and the
decrease in the growth rate should not affect the City's ability to construct new roadways to accommodate growth. Since the impact fee system is growth-driven, no growth means no need.

Reno's Street Project Impact Fees program is to be reviewed and updated on an annual basis. If the trend continues toward decreasing growth rates, impact fees assessed against new development will decrease. Time will tell whether the City's program will do what it was designed to do; that is, to provide funding to build roads.
REFERENCES


