

# Developing Defensible Transportation Impact Fees

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Rapid growth in many parts of the country, combined with budgetary pressures at the federal and state levels, has increased the importance of pursuing alternative funding sources for the construction of transportation infrastructure, particularly roads. The belief that development should pay its own way is becoming prevalent in many communities. Transportation impact fees are being used to address both of these issues. An impact fee affects three groups: developers, new residents, and existing residents. Each group has an interest in ensuring that a proposed fee is affecting it equitably. Developers and new residents do not want to pay more than their share of infrastructure requirements and, conversely, existing residents do not want to subsidize growth. A methodology for developing a defensible transportation impact fee must address a number of issues. Among these are: quantifying the benefits that are derived from new transportation infrastructure; identifying the recipients of the benefits; and calculating the size of an equitable impact fee. A methodology is described that employs an equity-based approach utilizing net-present-value techniques and addresses the legal criteria of "rational nexus."

Impact fees (often referred to as exactions or development fees) had their origin in California during the economic boom that followed World War II. By the late 1970s, impact fees were being used by numerous jurisdictions, particularly in California and Florida. During the 1980s, additional states passed legislation authorizing local communities to impose impact fees. In 1989, for example, the conservative Virginia legislature gave certain urban counties permission to impose, after July 1, 1990, impact fees for roads. The legislation also allowed these counties to add a surtax to the state income tax for the explicit purpose of funding new road projects. Vermont, one of the most rural states in the nation, also passed impact fee legislation to become effective on July 1, 1989.

Although there is some concern that impact fees have been abused in certain communities, such fees, particularly for roads, are gaining acceptance. During the 1980s, numerous urban areas, particularly outer suburbs, have experienced rapid growth in traffic volumes. Local electorates are aroused by these higher volumes and the accompanying congestion. These localities are anxious to find new means of financing their infrastructure requirements. Increasing long-term municipal debt is unpopular with voters, who fear such debt will result in higher property taxes. Transportation impact fees are becoming an attractive alternative or supplement to traditional debt financing.

In the following sections, we discuss key issues, describe a methodology for calculating benefits, address the adequacy

of existing revenue flows, show how the "lumpiness" of road projects can be treated, and, in the final section, present a model for implementing the methodology.

## KEY ISSUES

Transportation impact fees are becoming the largest single source of local revenue from developers and, for developers, the largest infrastructure cost outside the boundaries of their own projects. In most communities, developers are required to construct water lines, sewer lines, and streets to serve new housing or commercial space they are constructing and to dedicate these facilities to the locality following construction. However, charging for transportation improvements outside the confines of their project is a relatively new phenomenon outside California and Florida.

The recent proliferation of transportation impact fees raises numerous issues such as legal concerns, issues relating to equity, and the establishment of impact fee area boundaries, which must be addressed if they are to be used successfully.

## Legal

In all states, including California and Florida, there has been recognition that to apply impact fees, the community must be able to demonstrate that the fee will directly benefit those asked to pay the fee. This is the so-called "rational nexus" that distinguishes legally between a fee and a tax. Were a developer to demonstrate that the entire community benefits equally from an impact fee, or that the community cannot distinguish between benefits received by existing community residents and a proposed development, the fee would be considered a tax and would have to be levied on all individuals or businesses. Further, such a tax could not usually be levied without authorizing state legislation.

The legal tests vary significantly on the degree of linkage that has to be demonstrated between the payment of a fee and the benefits derived. A very strict test, that a fee is "specifically and uniquely attributable" to a project, is required in New York State for the imposition of transportation (and other) impact fees. On the other hand, California requires only that a "reasonable relationship to the public welfare" be demonstrated. The degree of linkage varies in other instances as well. For example, in Montgomery County, Md., payment of impact fees allows a developer to advance his project through the subdivision approval stage because the fees indirectly expand the road system capacity in the immediate vicinity of his proj-

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ect. This is accomplished by giving the area funding priority in the capital budget.

Impact fees for roads typically require, as in Vermont, that a level of service be established. Further, such a fee cannot be imposed when existing facilities are sufficient to accommodate new development. Thus, if a new project only absorbs excess capacity, an impact fee may not be legal, at least in some states. Nor can such fees be imposed on new development to expand existing roads to meet prior demand.

Impact fees can also be challenged constitutionally on the basis of equal protection. However, courts have usually not accepted the argument that, because developments prior to the imposition of the fee did not have to pay their fair share of road costs, its imposition is a violation of the equal protection clause. Regardless of the legal test, impact fees must be expressly earmarked and spent for the purpose for which they are charged. If funds are not expended within a reasonable period, such as 6 to 10 years, they frequently must be refunded along with accumulated interest.

### Equity

Equity has both legal and economic implications. Legally, any impact fee methodology has to take this concept into account. A sound fee must allocate costs reasonably across all users based on benefits received. Nonetheless, in most instances, communities have the power to exempt certain types of development from transportation impact fees if it is in the public interest. In Vermont, the state allows localities to exempt affordable housing from impact fees, the retention of existing employment, or the generation of new employment. This broad exemption policy could be interpreted to include virtually all commercial and industrial development, as well as moderate income housing. In reality, it is unlikely that localities will find it politically acceptable to exempt commercial developers unless there are significant public benefits from the application of such a policy. In Virginia, however, legislation is silent on the issue of exemptions.

The development and application of a methodology that derives an equitable impact fee have several advantages. Perhaps the most important is to reduce the likelihood of costly litigation. If a substantial fee is levied and perceived to be inequitable, its application may be challenged in court.

Establishing equity requires a sophisticated process that incorporates methods to ensure the absence of "double payments," as well as "double counting." Another major concern is the derivation of costs directly linked to the traffic associated with a project. In an effort to address these concerns, some communities provide developers with the option of undertaking their own impact analysis. If this independent study derives a fee that is more equitable than the established standard, the community may accept the alternative impact fee. To avoid lengthy equity disputes, most communities apply impact fees that recover only a portion of the calculated cost. The process of discounting costs has the merit of discouraging litigation, but may not provide the revenue necessary to meet needed infrastructure expansion. Nonetheless, communities believe that the present state of the art of impact fee development is less than an accepted science. Communities believe that a conservative approach will reduce the risk of litigation.

The objective of our methodology is to create a process that will establish impact fees that meet legal tests and are also equitable to all parties.

### Impact Fee Zones

The first test a community has to meet in establishing an impact fee is that there is a deficiency in traffic capacity, and that this deficiency cannot be met from existing revenue sources. In Massachusetts, a court ruled that a jurisdiction has to be divided into impact fee zones that localize benefits to meet this criteria.

The methods employed to establish geographic areas designated as "impact fee zones" vary. A few communities designate their jurisdiction political boundaries as the zone. This approach, however, may not localize benefits, because any development within the community is subject to transportation impact fees. Geographically small communities that are in their early stages of growth are the most likely to designate their boundaries as impact fee collection zones. Montgomery County, Md., selects only those areas that have substantial deficiencies in areawide traffic capacity. These are areas that will require significant levels of road construction in future years. Typically, such areas have considerable unimproved land currently zoned for development; and to accommodate this construction, the road system would have to be expanded. In these areas, current levels of service (LOS) standards are already below acceptable standards. Therefore, additional development, in the absence of new road projects, would further deteriorate traffic conditions. Freeway construction projects serving primarily through traffic are not subject to payments from local benefit assessment fees. These projects are generally financed exclusively by the public sector.

### BENEFIT CALCULATIONS

The first step in the calculation of benefits is to establish LOS standards and project transportation demand by land use and category. If the analysis finds that one project, or a group of likely developments over an extended time period (e.g., 20 years) will cause the LOS to be exceeded, a set of benefit calculations have to be initiated to establish that the impact fee meets legal, equity, and other criteria. Thus, the second step in the process is to estimate the cost, over an appropriate period, of bringing the road network to the established LOS given the projected new development.

### Establishing LOS and Development Projections by Land Use

An early task in determining a transportation impact fee is to establish a LOS standard for the areas designated as "impact fee zones." The LOS a community finds acceptable varies and often reflects their present experience. In low-density communities outside large metropolitan areas, even service level "C" may be considered unsatisfactory. In higher-density metropolitan areas, levels "D" or "E" may be a reasonable standard. Once an LOS is selected, the additional traffic a

particular project generates has to be calculated to determine if its use of the road system will exceed the LOS.

Communities need to estimate future transportation demand over an extended time period (such as 20 years) in each of their transportation zones to facilitate the task of determining the applicability of impact fees. This task can be established by several methods. The most common estimating method is based on zoning "build out." That is, on the basis of existing zoning, the local planning department estimates the potential maximum number of dwelling units, square footage of retail space, office space, and commercial/industrial structures that zoning allows to be constructed. The problem with this approach is that the actual level of future building activity may be unrelated to what zoning permits. For example, just because a particular area is zoned for high-density offices or retail trade does not necessarily mean that sufficient demand will be present for such construction to take place.

An alternative approach to zoning build out is an economic analysis that estimates annually the level of demand by land use. Such projections incorporate anticipated migration to and from the area, natural increase, change in personal income, likely employment expansion, and related indicators of future economic activity. These data, in turn, can form the basis for projecting the level of future building activity. In some instances, the projected demand exceeds what existing zoning allows; in other cases, activity will be less than zoning can accommodate. If existing zoning is insufficient, the locality has to consider rezoning or, alternatively, use existing zoning as a means to limit growth.

Economic projections are subject to considerable uncertainty. One problem is that in most instances, communities imposing impact fees are part of a larger metropolitan area. As such, land use policies of nearby communities have an effect on future activity. The imposition of fees itself can affect the level of future development unless all jurisdictions in the region apply such fees. Nonetheless, using projected economic activity is, in most instances, preferable to zoning as a measure of future activity for purposes of transportation planning, because it takes expected demand for various land uses into account.

Once a community projects the most likely level of future activity, transportation planners must estimate the road network that will be necessary to accommodate new development and, concurrently, maintain a satisfactory level of service. Impact fees cannot be utilized to improve traffic to a level that is above the established standard or to improve existing conditions.

### Estimating Added Traffic Load

Each existing road system carries a given level of traffic. In a designated transportation district or zone, total traffic is comprised of through traffic (neither origin or destination points are within district) and traffic that originates and/or terminates within the zone. This traffic, in turn, can be grouped by origin and destination by land use. For example, a shopping mall within the zone may attract persons from a radius of 30 to 40 miles, well beyond transportation district boundaries. Thus, the destination of trips is within zone, but most trips originate outside. In neighborhood shopping centers, most

shoppers live in the immediate area. Thus, both origin and destination are within the zone.

Communities can estimate the number and length of trips from national data (such as ITE calculations) or by the use of local surveys. The two approaches can lead to significant differences in projected traffic volume. For example, a study in Montgomery County, Md., found that traffic mean trip generation rates reported by ITE were in some cases 40 percent more than rates based on an internal study.

Once a community selects the basis for estimating the number of trips and their length, several steps must be taken to determine the cost of improving the transportation system to meet the needs of a new development. This added cost, in turn, is related to the benefit level received by the development. The following example illustrates the process of estimating additional traffic generated by adding a single family residential unit within a typical county:

Average Daily Trips per Person	2.5
No. Persons per Unit	3.1
No. Trips per Unit ( $2.5 \times 3.1$ )	7.75
Average trip length	8.2 miles
Total Miles per Day	63.6
Adjustment Factors:	
(a) Double Counting	50%
(b) Percent New Trips	100%
Net New Miles per Day	31.8
Vehicle Capacity per Day per Lane-Mile	7,000
No. Units Served per Lane-Mile ( $7000 \div 31.8$ )	220

In the above example, the average miles traveled by a resident of a typical single-family detached unit is 63.6 miles per day. Applying the same approach, we can estimate the number of miles driven by residents in other housing units, including apartments and mobile homes. Traffic associated with commercial facilities, such as shopping centers, offices, and restaurants, is typically expressed in terms of trips generated by 1,000 ft<sup>2</sup> of space.

Gross miles driven require two adjustments to minimize the likelihood of double counting. This problem can be illustrated as follows. The estimate of miles driven by occupants of the single-family home includes work trips, which account for nearly one-half the daily miles driven. But if, for example, the home resident takes a job in a newly constructed office building whose developer is also being charged for trips by office workers, payment for the same trip may be collected twice. In reality, it is not feasible to know where occupants of new housing may work, but an equitable system has to consider this issue. In our example, the problem is resolved by reducing gross daily miles by one-half to take the double counting phenomenon into account. This adjustment is appropriate when dealing with a large geographic impact area within which a vast majority of trips take place—those to work, shop, school, entertainment, and to obtain services. When the designated impact fee area is geographically smaller or land uses are limited by zoning, reducing the mileage by 50 percent may result in undercounting. For example, if the designated area includes mostly single-family housing, no payments would be received from nonresidential development that attracts residents. Therefore, the adjustment for overcounting has to take into account the likely place of employment for residents of new housing within the area.

Another adjustment is to take into account trips that are not new. A certain proportion of trips may be diverted-link

or pass-by trips. For example, a person on his way home from work may stop to purchase a loaf of bread or a carton of milk. The stop may be on the way, or the detour may only add one mile to a much longer commute. If so, total miles driven need to be adjusted for this factor. Several investigators have addressed this issue, and adjustments can be made to reduce the risk of double counting trips.

### Cost to Bring Existing Road System to LOS Standard

In some instances, the existing road system may not be adequate to meet LOS standards. That is, there may be an existing shortfall, necessitating a future stream of capital outlays to provide an adequate level of services to existing residents and commercial/industrial establishments. It is important at this point to distinguish between improvements required to meet the needs of existing residents and improvements triggered by new development. The former cannot be paid for through impact fees.

Past economic activity in a community is linked to a flow of annual investments. For example, a community may have approved a road bond issue, with proceeds used to fund road projects within a specific "impact fee" zone. The debt service forms a stream of annual payments to be paid for and by current residents. Concurrently, these capital projects, when undertaken, may create excess capacity as a result of scale economies and engineering factors. The cost of carrying excess capacity is normally absorbed by existing residents until the excess capacity is utilized by new development, which would "buy" their capacity in the form of impact fee payments.

### Cost to Upgrade System to Accommodate New Development

If excess capacity for the LOS considered the standard exists and is used to meet the needs of new development, the benefits of this excess capacity should be assigned to new development projects. The benefits accruing to new development are the pro-rata costs to construct the excess capacity. In most instances, these costs are met by tax revenue gains accruing to the community as a result of new development. The fact that a community has excess capacity suggests that existing revenue sources are sufficient to meet the transportation needs of the jurisdiction. Had these sources been insufficient, LOS standards would not have been met. Therefore, it is unlikely that impact fees could be justified when excess capacity is present. (It may also be that as a result of engineering factors and economies of scale, a community has excess capacity, although the revenue flow is insufficient to meet debt service payments. In such a case, an impact fee may be defensible.)

In most metropolitan jurisdictions, large-scale new development will necessitate capital improvements to the road system to accommodate new growth. In this case, the benefits accruing to new development would be the cost of previously constructed excess capacity, combined with the cost of new capital improvements. Once benefits are determined, the revenues a jurisdiction can anticipate from new development must be calculated and the size of impact fees determined.

### ADEQUACY OF EXISTING REVENUE FLOWS

As noted earlier, if communities, utilizing existing revenue sources at current tax rates, can provide sufficient facilities to accommodate new development, impact fees for transportation cannot usually be charged. The vast majority of roads continue to be funded by government. Thus, local and state governments in fiscal 1986 spent \$23.2 billion on highway construction projects. But localities spend only 21 percent of this amount. On a per household basis, \$273 was spent on construction, with \$57 from local sources. Most federal funds for roads are channeled through states. Therefore, the \$23 billion includes federal funding, with the exception of special projects, such as roads leading to military facilities.

In recent years, particularly in growing areas, localities have begun to assume a greater share of construction projects. For example, Fairfax County, Va., and Montgomery County, Md., prior to the early 1980s, depended primarily on state funds for highway construction. This pattern has changed in recent years. Montgomery County capital outlay for roads in 1985 totaled \$19 million, but the county is allocating \$71 million for such projects in fiscal 1990.

When existing funding is deemed insufficient to meet needs, impact fees can be considered as an additional revenue source. Impact fee derivations have to take into account revenues applied for road construction that a new development will generate over time. An example illustrates this process. Revenue data for motor-vehicle taxes have been converted on a revenue per gallon basis to simplify the example.

#### *Motor-related taxes (Year 1):*

Motor vehicle, titling, licensing, registration	\$ .17 per gal
State and federal gasoline taxes (shared by locality)	<u>\$ .13 per gal</u>
Total revenue from motor vehicle-related taxes and fees	\$ .30 per gal
Proportion of funds allocation for capital (balance for maintenance and other noncapital outlays)	33%
Contribution per gallon for capital	\$ .10
Number of miles driven per private vehicle	11,500 miles
Number of vehicles per unit	1.6
Total miles driven per unit annually	18,400
Number of gallons purchased (19 miles per gallon)	968
Revenue derived per unit	\$97

#### *Local tax revenue allocated for roads (Year 1):*

Real property tax per new unit	\$1,450
Local sales tax per new unit (based on income of residents)	\$230
Total	\$1,680
Proportion of local budget allocated for roads	12%
Total annual revenue for roads per new unit	\$208
Percent of road funds allocated for construction	31%
Funds available for construction	\$65

#### *Total available revenue (Year 1):*

Road-related taxes (including intergovernmental revenue)	\$97
Local general revenue	\$65
Total Public Funds	\$162

In this example, if 500 single-family dwelling units are constructed, the revenue available in Year 1 would be \$810,000. In subsequent years, the revenue flow for the same units would rise. In particular, property tax revenue due to property



appreciation may be rising by 10 percent each year. However, revenue from the state gasoline tax, which is based on gallons rather than price, may show no rise for several years.

If an additional 200 single-family units are constructed in Year 2, and public funds rise to \$180 per unit, the cumulative revenue flow from new development would be \$360,000 plus \$810,000 or \$1,170,000.

### "LUMPINESS" OF ROAD PROJECTS

Most road projects are "lumpy." That is, when considering developments individually, a road project is likely to add more capacity than is required by a particular development. Thus, excess capacity may be created. Care must be taken to ensure that new developments are not made to pay the entire cost of this excess capacity, because they are clearly not the sole recipients of its benefits. The approach taken in our methodology, because it views capital projects over a long (e.g., 20-year) horizon, avoids this problem by estimating future impact fees for future development within the planning horizon. Nonetheless, a financing problem may occur in smaller communities with limited funding where few new developments take place.

Two financing approaches are applied. In the first instance and consistent with the framework of our model, the local community may "front" the total cost, and user impact fees are collected over time to offset the project cost. The first developer who triggers the need by exceeding the LOS pays the share attributed to his project, and those who follow in future years reimburse the community for the remainder. Some communities, however, may not have the resources or be willing to front the cost. In Vermont, state legislation specifies that a municipality may require a fee for the entire cost of a capital project that will be used initially by only the first beneficiary. The municipality has to require that beneficiaries of future development pay an impact fee to the owners of the development on which the impact fee was levied.

The Vermont approach means that the first developer who triggers the need for a new project has to carry its full financial burden and financial risk if further development does not take place. Therefore, some assurance may need to be given that, if no development takes place within a specified time period, the community has to reimburse the original developer. Future developments should also be assessed the carrying cost, in addition to the proportionate share of the project cost. Otherwise, an unreasonable financing burden would be imposed on the first developer.

### REVENUE AND BENEFIT CALCULATION

The revenues and benefits for a development must be compared to determine if the development is paying for the benefits it receives. Both the timing of revenue and benefit flows and the time value of money should be considered in this comparison.

This calculation requires that costs and payments be adjusted to reflect inflation and that net-present-value techniques be used to account for the time value of money (i.e., future cash flows discounted to their value in today's dollars). If these two factors are not addressed, it is unlikely that an equitable impact can be determined, because the utility value of money over time is not considered. When the comparison is properly made, an equitable impact fee can be determined.

### TRANSPORTATION IMPACT FEE MODEL

The following is a general description of a computer model that has been developed to calculate transportation impact fees based upon the previously described methodology. The model is made up of a main model and three support modules (see Figure 1). The modules forecast growth, analyze capital requirements, and estimate revenues. A summary of inputs and outputs is shown in Figure 1. The complexity of the mod-

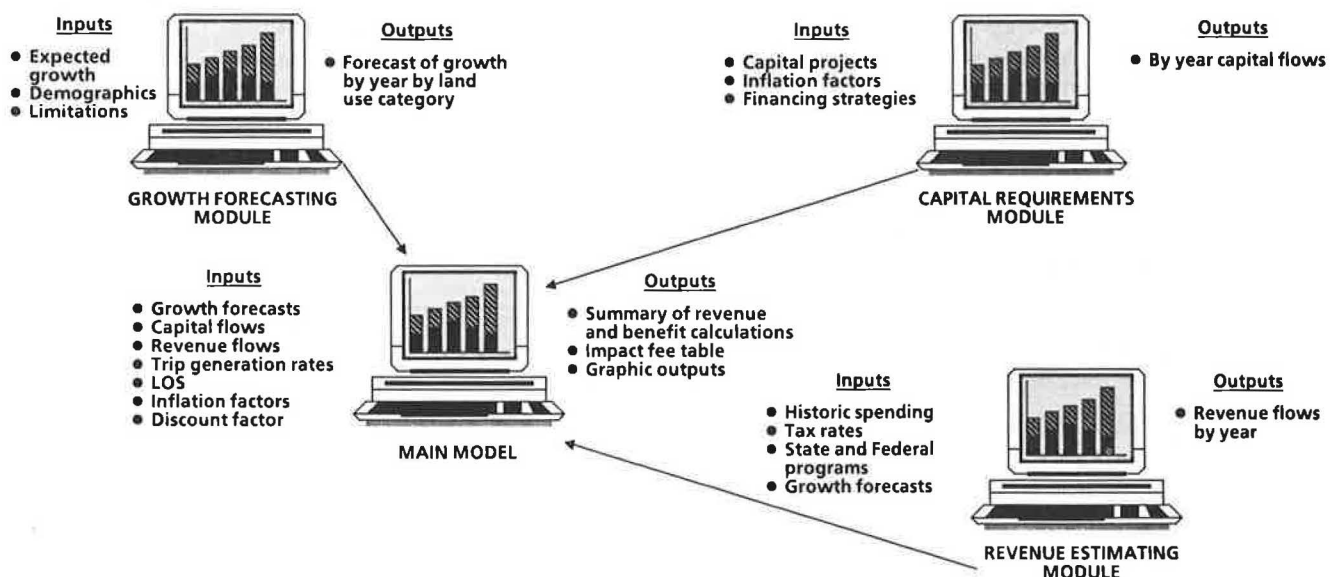


FIGURE 1 Impact fee model framework.

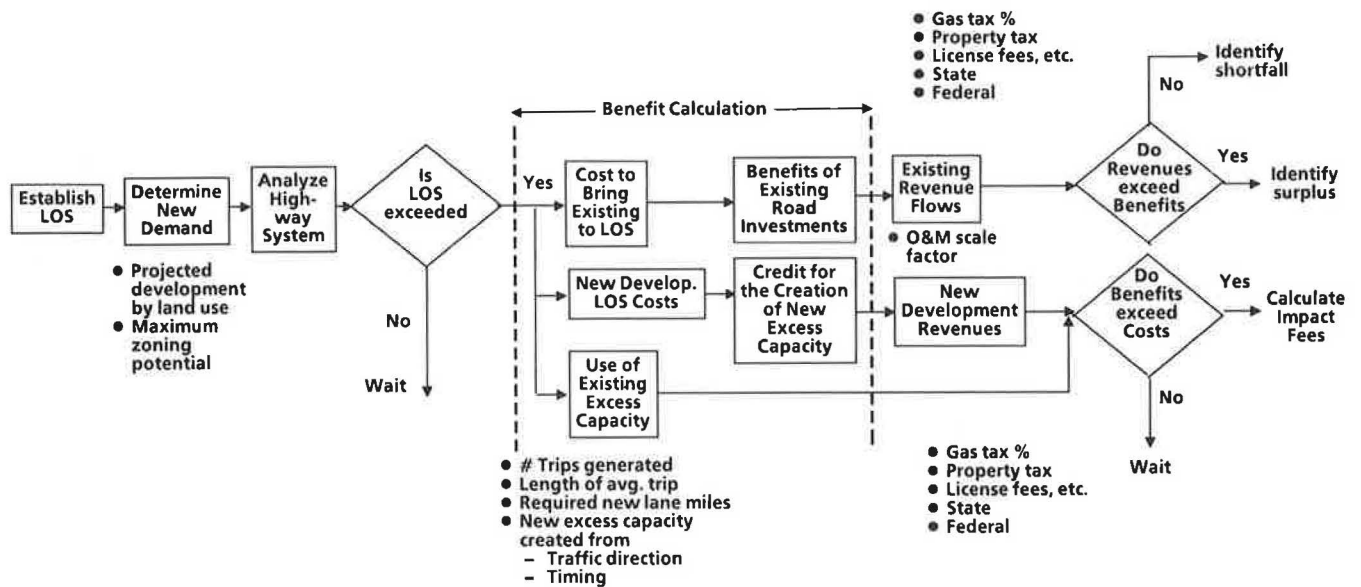


FIGURE 2 Impact fee methodology.

ules depends upon the size and complexity of the community to be analyzed. Small rural communities will generally have uncomplicated support modules, while the support modules of large urban communities will be nearly as complex as the main model itself.

The main model is where the majority of the calculations take place. The model has the capability of addressing the following issues:

- Variable trip generations rates by type of land use;
- Corrections for pass-by and diverted-link trips;
- Variable inflation factors;
- Variable (by year) growth rates;
- Variable mix of development (e.g., residential vs. commercial);
- Discount factors;
- Internal optimization routines to balance benefits and payments over a multiple-year period for both existing residents and new development; and
- Scenario analyses.

A summary of the methodology employed in the model is shown in Figure 2. The first step after determining impact fee zones is to establish a LOS standard. The new demand is then determined by either projecting development by land use or by the maximum zoning potential. The highway system is then analyzed to determine if the LOS standard is exceeded. This analysis is performed outside of the model. If the LOS

standard is exceeded, the model is used to determine the transportation benefits expected to accrue to both the existing residents and the new development. This calculation captures the cost to bring existing residents to the new LOS, benefits of the existing road system, cost to meet LOS standards for the new development, charges for the use of existing capacity, and credits for the creation of new excess capacity. Once benefits are calculated, the transportation revenues are determined by considering contributions from gas taxes, property taxes, licenses and fees, and state and federal programs. The final step is to use net-present-value techniques to compare the yearly revenue and expenditure flows. Benefits and payments are equalized by establishing a system of equations with multiple unknowns and using the Newton-Rapson technique to find a solution. This solution yields impact fees that are equitable for both existing residents and new developments.

The strength of this approach is that it permits complex capital programs and growth scenarios to be analyzed in a detailed manner. The proposed methodology meets conceptual concerns that other techniques assume away by using average rates supplemented by large reductions in the calculated fee. We believe that this approach provides communities with the capability of determining equitable impact fees while simultaneously ensuring that the interests of existing residents are protected.

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