

way Research Project of Purdue University in cooperation with the Indiana Department of Highways and FHWA.

REFERENCES

1. K.C. Sinha, T.F. Fwa, E.A. Sharaf, A.B. Tee, and H.L. Michael. Indiana Highway Cost Allocation Study: Final Report. Report FHWA/IN/JHRP-84/20. Joint Highway Research Project, Purdue University, West Lafayette, Ind., Oct. 1984.
2. Final Report on the Federal Highway Cost Allocation Study. FHWA, U.S. Department of Transportation, May 1982.
3. T.F. Fwa and K.C. Sinha. A Rational Approach for Allocation of Highway Routine Maintenance and Rehabilitation Costs. *In* Proceedings of the North American Pavement Management Conference, Toronto, Ontario, Canada, March 19-21, 1985.
4. L. Lane. A Railroad View of Weight-Distance Taxes. *AASHTO Quarterly*, Vol. 63, No. 3, July 1984, pp. 32-37.
5. Transportation Revenue: Draft Policy Statements. Transportation Coordinating Board, Indianapolis, Ind., Dec. 6, 1984.
6. K.C. Sinha et al. Indiana State Highway Reciprocity Study. Final Report JHRP-83-15. Joint Highway Research Project, Purdue University, West Lafayette, Ind., Oct. 1983.

The authors are solely responsible for the content of this paper.

Publication of this paper sponsored by Committee on Taxation, Finance and Pricing.

Transportation Impact Fees: The Florida Experience

RALPH D. SANDLER and EDWARD T. DENHAM

ABSTRACT

Transportation impact fees are now being considered in communities throughout Florida and have recently been enacted in four Florida counties. In view of its obvious appeal, this new tax is expected to be the subject of experiment by communities throughout the country. The purpose of this paper was to explore this new source of transportation revenue by using the Florida experience as a point of departure. Judicial standards on which impact fees are based are discussed, and a fee system that has become a model in Florida, having survived judicial challenge, is examined in some detail. A means to estimate the economic incidence of an impact fee is demonstrated and the use of the impact fee as a growth management tool is examined.

Government at all levels faces financial uncertainties. During the 1970s, the rising cost of government was attributed to a combination of general inflation and rapid increases in the cost of energy. Although the pressure of these factors has abated in recent years, it remains, particularly in urban areas experiencing rapid growth. The Reagan administration shift to federalism has reduced revenue pass through for state and local governments. At the same time, pressure to further relieve the property tax has intensified as controls like Proposition 13 abound throughout the country. This has resulted in a search by local government for alternative revenue sources.

In response to this search, local governments

have begun experimenting with a variety of revenue-raising devices that are capable of both achieving political support and withstanding legal challenges. Several of these devices, including dedications, fees in lieu of dedications, and impact fees, have met with moderate success over the last decade. An increasing number of local communities in Florida now believe that new residents or developers, or both, should bear a fair share of the infrastructure cost required to provide additional services demanded. This interest is not exclusive to Florida. The states of California, Washington, and Arizona have had a history of legislative enablement and judicial support for impact fees and mandatory dedications (1).

The fiscal impact fee, in particular, has generated a great deal of excitement recently in Florida and throughout the country. Impact fees are a one-time charge collected by local government from new development in order to generate revenue for capital

R.D. Sandler, Business and Management Department, Spring Hill College, 4000 Dauphin Street, Mobile, Ala. 36608. E.T. Denham, Florida Department of Transportation, 605 Suwannee Street, Tallahassee, Fla. 32201.

funding necessitated by that development. There are several advantages associated with the use of impact fees (2). Those who directly benefit from the capital funding project are the ones who pay for those facilities. Impact fees are relatively easy to administer because they are collected from one individual at one time. To the extent that they are a form of user charge, it has been suggested that they have the potential for imposing a degree of market discipline on resource-allocation decisions (2).

Impact fees have been used to recover all (or in most cases part) of the cost of recreational facilities, sewers, fire and police stations, water supply systems, and medical facilities. Although transportation impact fees have only recently generated interest, they are now being considered in communities throughout Florida and have recently been enacted in four Florida counties (Palm Beach, Sarasota, Lake Hillsborough, and Broward). In view of its obvious appeal, this new tax is expected to be the subject of experiment by communities throughout the country. The purpose of this paper will be to explore this new source of transportation revenue by using the Florida experience as a point of departure. Several specific issues will be discussed.

First, transportation impact fees should be evaluated in view of a number of legal considerations. The judicial standards on which impact fees are based in many states depend on the reasonableness of such fees in serving the police power objectives of health, safety, and welfare. These standards foster a judicial concern for the satisfaction of a number of strict legal requirements that will be discussed.

Second, the ordinance establishing transportation impact fees in Palm Beach County has survived judicial challenges and has become a model in Florida. Important features of this ordinance will be described, including its system of fees.

Third, the economic incidence, or who ultimately bears the burden, of the transportation impact fee is an important public policy issue that will be explored.

Fourth, tax systems are often established in order to exert a constructive influence on behalf of public policy objectives. Many public officials in Florida are concerned with the development stress associated with rapidly increasing population, sprawling settlement patterns, and a fragile natural environment. It has been suggested that transportation impact fees, when used in conjunction with a legally binding comprehensive plan, can be an effective growth management tool.

LEGAL ISSUES

Impact fees are generally subjected to a two-tiered constitutional attack (3). First, they are challenged as unauthorized by state statute or constitution. Second, if statutory authority is found, the local ordinance establishing the impact fee is either challenged as an unreasonable regulation exceeding policy power authority or as a disguised tax.

Whether impact fees are taxes or not is critical in shaping their legal environment. The choice a court makes will often determine their validity. If labeled a tax, the impact fee will be invalidated unless specific statutory authorization exists. Alternatively, if the impact fee is viewed as a police power regulation, broad legislative delegation will suffice. The principles of law applicable to impact fees operating under the police power umbrella are in sharp contrast to those relating to impact taxes, which depend on powers of taxation (4).

Impact taxes are viewed solely as a revenue device. Their purpose is to raise revenue to help de-

fray the general cost of government. In the process, they must be nonconfiscatory and nondiscriminating, but otherwise they can be set at relatively arbitrary levels and used for any general fund purpose (4).

For fees, the chief concern of the courts, beyond the question of statutory enablement, is the reasonableness of the impact fee in serving the police power objectives of health, safety, and welfare. This fosters a concern for the relationship between how the fee is levied and expended on the one hand and whether the developer who pays the fee benefits from the facility on the other. The judicial criteria by which the courts judge whether impact fees are reasonably related to the broad objectives of police power vary across state jurisdictions. Three distinct tests of reasonableness are evident in case law but have already been fully discussed elsewhere (2-4) and therefore will not be addressed in this paper.

In many jurisdictions, Florida included, the legal parameters have been established by the courts and the focus of attention of public officials has shifted from the legal validity issues toward how to draft impact fee ordinances that are acceptable to the courts. Offering guidelines for the design of impact fees is difficult because legal standards differ according to the jurisdiction in question. Nevertheless, some generally applicable standards can be formulated. The following basic list has been suggested for Florida but should have considerable applicability to other states as well (3,5):

1. An impact fee ordinance should expressly cite statutory authority for local government regulation of the substantive area selected.
2. A need for the service or improvement resulting from new development should be demonstrated.
3. The fee charged must not exceed the cost of improvements required by the new development.
4. The improvements funded must benefit adequately the development that is the source of the fee (even if nonresidents of the development also benefit).
5. In place of a rigid and inflexible formula for calculating the amount of the fee to be imposed on a particular development, a variance procedure should be included, so that the local government may consider studies and data submitted by the developer to decrease his assessment.
6. Last, the expenditure of funds should be localized to the areas from which they were collected.

PALM BEACH COUNTY IMPACT FEE SYSTEM

In 1979 Palm Beach County, Florida, enacted an ordinance that established a system of transportation impact fees (Fair Share Contribution for Road Improvement, Ordinance 79-7, as amended by Ordinances 81-4 and 85-10). From September 1979 through June 1985, this system of fees generated approximately \$13.5 million in transportation revenue (according to the Finance Department, Palm Beach County). The ordinance, as amended, sets forth a schedule of impact fees that are based on trip generation by type of land use activity, the cost of constructing additional highway lanes, and lane capacity. The collected funds are deposited in the trust fund of a designated impact zone, 40 of which were created by the ordinance. The zones were drawn from a base of circles within a 6-mi radius and then modified to fit major geographic, traffic, and planning boundaries within the county. The use of the zone ensures that the developer paying the fee will receive a benefit from the road improvement. The funds collected can only be used for the purpose of constructing or improving roads and bridges on the major

road network system. Fees collected must be expended within the zone and during a reasonable period of time (6 years) or returned to developers.

Impact fees are assessed at the time the building permit is issued for any new land development activity within the county and municipalities that have adopted the ordinance. In addition, the county encourages developers to make road improvements themselves, which are fully credited against the impact fee.

The fee schedules are based on the following formulas:

$$\text{Residential fees} = (1/2 \text{ external trips}/1 \text{ lane capacity}) \times (\text{cost to construct 1 lane for 3 mi}) \quad (1)$$

$$\text{Nonresidential fees} = (1/2 \text{ external trips}/1 \text{ lane capacity}) \times (\text{cost to construct 1 lane for 1 mi}) \quad (2)$$

The ordinance includes different formulas for residential and nonresidential development. Many of the nonresidential trips are captured from traffic already on the road. Therefore, the formula for nonresidential development requires a fee sufficient to replace the capacity of only 1 mi of road versus 3 mi of road for residential development.

An external trip is one that originates from or is destined for the development site and that affects the major road network system. One-half of the external trips is taken to account for a 50 percent split in the direction of traffic.

As an illustration, the following data from the Palm Beach ordinance are used to calculate the fee on a single-family home (under 2,000 ft²) using Formula 1:

External trips:	10
Road capacity:	7,000 vehicles a day
Construction cost (1 lane for 3 mi):	\$1,125,000
Trip distribution:	50 percent
Transportation impact fee:	\$804

Table 1 provides a selected list of impact fees that were taken from Palm Beach County Ordinance 85-10 and calculated from the foregoing formulas.

ECONOMIC INCIDENCE

When local officials decide to institute a new tax mechanism, an important issue to be considered is the economic incidence of the tax, or who ultimately bears the tax burden. There are important legal distinctions between a tax and a fee; however, the economic effects of a tax and a fee are the same and thus the terms are used synonymously in the field of economics and in the remainder of this paper. The economic incidence of a tax can differ significantly from those who have the legal responsibility for payment. As with any tax, the economic incidence of a transportation impact fee depends on supply and demand, structural aspects of a particular housing market, and the time period during which supply adjustments may occur (6, pp.353-435). In this particular section the question of who may ultimately pay for the fee as it affects the residential housing sector will be addressed.

The housing industry is assumed to be competitive and for purposes of this analysis is defined in terms of units of housing services. In Figure 1, the horizontal axis represents the quantity and the vertical axis, the price per unit of housing services in a given market. In addition, SS is the supply schedule before the fee and DD the demand schedule. Following the analytical framework of Musgrave (6) in Figure 1, OC is the output before the fee and OB the price before the fee. With the imposition of the impact fee, which is a unit fee (u), the supply schedule shifts from SS to S'S' and output declines to OE. The buyer-occupant pays the gross price, which rises to OF, and the builder-landowner receives the net price, which has fallen to OK. The community establishing the impact fee collects revenues equal to the rectangle KLGJ, which can be divided into BHGF, the buyer's share, and KLHB, the share of the fee burden to be paid by the builder. The division of the burden will depend on the absolute value of the elasticities of demand and supply (6, p.428). Thus,

$$S_b/S_d = |E_s/E_d| \quad (3)$$

where

- S_b = buyer's share of fee,
- S_d = developer's share of fee,
- D_s = elasticity of supply, and
- E_d = elasticity of demand.

TABLE 1 Transportation Impact Fees for Various Types of Land Development in Palm Beach County, Florida

Land Development Activity	Official Daily Trip Generation Rate	Fee (\$)
Residential		
Single family (<2,000 ft ²)	10 per dwelling unit	804
Single family (>2,000 ft ²)	13 per dwelling unit	1,045
Multifamily	7 per dwelling unit	562
Mobile home	5 per dwelling unit	402
Nonresidential		
Hospital	15 per bed	402 per bed
General recreation	3 per parking space	80 per parking space
Nursing home	3 per bed	80 per bed
Motel	14 per room	375 per room
General office		
100,000 ft ² or less	18 per 1,000 ft ²	482 per 1,000 ft ²
Greater than 200,000 ft ²	11 per 1,000 ft ²	295 per 1,000 ft ²
General retail		
80,000 ft ² or less	100 per 1,000 ft ²	2,679 per 1,000 ft ²
Greater than 1,500,000 ft ²	29.8 per 1,000 ft ²	799 per 1,000 ft ²

Source: Palm Beach County Ordinance 79-7, Fair Share Contribution for Road Improvement, as amended by 85-10.

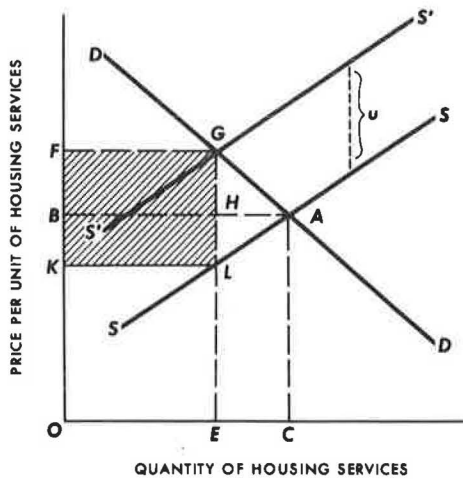


FIGURE 1 Economic incidence of a transportation impact fee.

Price elasticity is the percentage change in quantity demanded or supplied divided by the percentage change in price. A high elasticity of demand means that consumers will react to a small price increase by cutting back sharply on quantity demanded, presumably in favor of substitute goods or services. Low elasticity of demand, or inelasticity, means that consumers will pay higher prices with little reduction in quantity demanded, presumably because they have very few close substitutes. When the percentage change in quantity over the percentage change in price equals 1, the condition is referred to as unity. With an elastic supply schedule, production will increase substantially in response to a modest price increase, whereas under inelastic supply conditions production will increase relatively little.

Given Equation 3, the buyer's share of the fee will clearly be larger the less elastic the demand is and the more elastic the supply. With inelastic demand the buyer of housing services is less able to avoid the fee by substituting other housing, whereas with elastic supply the builder, especially over time, is able to adjust production by shifting his resources into other areas.

According to Weitz (7), this is exactly the type of housing market found most often in urban areas. For example, empirical estimates of the price elasticity of demand for all housing in urban areas (8,9) have been around unity or below, whereas studies of the supply side of the housing industry have found very high price elasticities. In one study, Muth (10) concludes that the price elasticity of supply is 5.5. Under these conditions, the buyer-occupant would probably bear most of the tax burden. As an illustration, the buyer's share of the \$804 tax burden on a single-family house (<2,000 ft²) in Palm Beach County would be \$680. This crude approximation was derived by using Equation 3 and the absolute value of the demand and supply elasticity given previously ($E_s = 5.5$ and $E_d = 1$).

GROWTH MANAGEMENT

Growth management is a term that is difficult to define clearly. It is often discussed as if it were a singular concept, yet the wide variety of recommendations made on its behalf can usually be assigned to two distinct categories: (a) the management of

the nature, location, and timing of growth or (b) the management of the impacts of growth.

The first category includes land use planning controls, transportation investment decisions, and water resource controls. Land use planning controls such as staging plans, public facility ordinances, and point-permit developer incentive plans are used to both encourage and discourage development. Transportation investment decisions are used to deny access to environmentally sensitive areas or provide enhanced access to declining urban areas. Water resource controls are equally effective in discouraging or preventing development in undeveloped or environmentally sensitive areas. Although public discussion of growth management often focuses on the first category (affecting the location and timing of growth), public officials are often more interested in the second category--managing the impacts of growth.

Impact fees are an example of the second category and can be considered a fiscal approach, the impact of which is to shift a greater share of the cost of providing new public services to new residents or developers or both. In one sense, impact fees, along with benefit assessment districts, exactions, joint development, and other value capture approaches, are current examples of the pressure in public finance to find new revenue sources and to rely, wherever possible, on user fees. They are in effect a form of narrow-based taxation. Impact fees function more to accommodate growth than to manage it, by providing another source of revenue that can be used to invest in new infrastructure. It has even been suggested that local impact fees have reduced pressure on the property tax and helped to blunt resistance to new development (4).

Several features of the typical impact fee in Florida prevent its effective use in controlling the location of growth. For most of the ordinances in Florida, the fee structure does not permit discrimination among like categories. For example, all residential structures of a certain size, regardless of their location, are assessed the same fee. Fees currently collected in Florida are generally less than 1 percent of the development cost and thus are too low to affect location decisions, even if the structure of fees were allowed to vary across a community. Nor do the impact fee ordinances enacted in Florida currently have a mechanism that would allow government to control either the timing or nature of growth. Thus impact fees as currently established in Florida are basically neutral toward the nature, timing, and location of growth but are sensitive to the fiscal cost of growth.

SUMMARY

Local governments have begun experimenting with a variety of revenue-raising devices that are capable of both achieving political support and withstanding legal challenge. One such revenue device, the transportation impact fee, has generated a great deal of interest in Florida and, because of its obvious appeal, holds great promise as a new revenue source.

Evolving case law provides local officials with sufficient legal guidance to enact ordinances establishing transportation impact fees. In this regard, the ordinance establishing impact fees in Palm Beach County, Florida, has survived judicial challenges and become a model in Florida.

The economic incidence of a transportation impact fee is an important public policy issue. With price elasticity of demand at unity or below and the price elasticity of supply very high, it can probably be

anticipated that the buyer-occupant of a home will bear most of the tax burden.

Finally, impact fees are essentially fiscal devices and function poorly as a growth management tool for control of the nature, timing, and location of growth.

REFERENCES

1. J.E. Frank, E.R. Line, and P.B. Downing. Community Experience with Five Impact Fees: A National Study. Policy Sciences Program, Florida State University, Tallahassee, 1985.
2. P.B. Downing and J.E. Frank. Recreational Impact Fees: Characteristics and Current Usage. National Tax Journal, Dec. 1983, pp. 477-490.
3. J.C. Juergensmeyer. Funding Infrastructure: Paying the Costs of Growth Through Impact Fees and Other Land Regulation Charges. In The Changing Structure of Infrastructure Finance (J.C. Nicholas, ed.), Monograph 85-5, Lincoln Institute of Land Policy, Cambridge, Mass., 1985.
4. P.B. Downing and J.E. Frank. Recreational Impact Fees: A Discussion of the Issues and a Survey of Current Practice in the United States, with Guidelines for Florida Application. Policy Sciences Program, Florida State University, Tallahassee, 1982.
5. S.G. Connelly. Road Impact Fees Upheld in Non-Charter County. Florida Bar Journal 54, Jan. 1984, pp. 54-57.
6. R.A. Musgrave and P.B. Musgrave. Public Finance in Theory and Practice. McGraw-Hill Book Company, New York, 1973.
7. S. Weitz. Who Pays Infrastructure Benefit Charges? In the Changing Structure of Infrastructure Finance (J.C. Nicholas, ed.), Monograph 85-5, Lincoln Institute of Land Policy, Cambridge, Mass., 1985.
8. A.D. Witte. An Examination of Various Elasticities for Residential Sites. Land Economics, Vol. 53, Nov. 1977, pp. 401-409.
9. C.F. Sirmans and A.L. Redman. Capital-Land Substitution and the Price Elasticity of Demand for Urban Residential Land. Land Economics, Vol. 55, May 1979, pp. 167-176.
10. R.F. Muth. The Demand for Non-Farm Housing. In The Demand for Durable Goods (A.C. Harberger, ed.), University of Chicago Press, Chicago, Ill., 1960.

The contents of this paper reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views of the Florida Department of Transportation.

Publication of this paper sponsored by Committee on Local Transportation Finance.