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The Transportation Utility Fee

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ABSTRACT
This paper presents a new approach to financing transportation facilities through a transportation utility fee (TUF) that encompasses some characteristics of an impact fee. A utility fee is assessed on all property within an established district based upon the estimated use of the utility. Although TUFs are currently used in a number of applications, their design and application has been limited in categories of expenses to be covered, geographic scope, and comprehensiveness of assessment. This paper reviews the concept and history of utility fees and identifies their shortcomings then resolves them in a new concept. The approach has the potential to provide a stable revenue source for ongoing transportation system operation, maintenance, repair, and replacement needs often underfunded by existing revenue sources. The paper reports on research performed for the Florida Department of Community Affairs.

INTRODUCTION
The idea of TUFs is not new but historically their design and application has been limited in categories of expenses to be covered, geographic scope, and comprehensiveness of assessment. An expanded transportation utility fee (TUF) that encompasses some characteristics of an impact fee may provide a different approach to financing transportation facilities. This paper reviews the general concept of utility fees, summarizes the early history of TUF-like approaches in Florida and Oregon, identifies shortcomings, and presents a general model for a transportation utility fee that is somewhat a hybrid of a transportation utility fee and an impact fee.

Utility Financing
Several kinds of publicly-provided utilities are financed through through user fees collected in “enterprise funds.” Generally, the fees cover all utility costs to avoid the need for using general tax revenue for the utilities; the user fees themselves are based on the amount of the used. Enterprise funds are self-sufficient and managed separately from other general operating budgets of local governments. They are a “closed system” in that system costs and revenues are accounted for wholly within the enterprise itself. Utility fees are generally composed of three parts: Capital facilities, maintenance, and administration.

Capital facilities include central facilities and distribution networks. Examples of central facilities include wastewater treatment plants and water processing systems including intake, storage, and treatment. Generally, central facilities serve all users proportionately; the cost per gallon of treatment is usually the same among different land uses. For a given treatment capacity, costs are fixed per unit of treatment.

Distribution networks include the lines, pumps, and other facilities that connect central treatment facilties to users. The per unit cost of distributing facilities can vary by localized installation costs (rocky slopes compared to well-drained flat ground, for instance), distance between users and central facilities, and density of users. Capital facility expansion and rehabilitation are also included in this category.

Maintenance includes minor repairs of all capital facilities. While the cost of maintaining and repairing central systems can be assigned to all users proportionate to their use, distribution network costs can vary by location, distance, and density as noted above.

Administrative costs are usually considered system-wide financing obligations.

Often, all or a portion of the central capital facility costs are recovered through connection, tap-on, or system development charges, or impact fees. In addition, some of the distribution network capital costs are recovered similarly. Utility rates are commonly established to recover unrecovered capital costs and costs related to maintenance and administration proportionate to all uses of the utility regardless of differences in cost burdens based on location, distance, or density.

Transportation Utility Fees (TUF)

The utility enterprise funding model is gradually being applied to finance transportation systems. Two Florida examples are instructive: Orlando and Port Orange. As Ewing (*1*) observes:

Use of a TUF to fund road maintenance has one compelling advantage over the common alternative of reliance on property tax receipts from the general fund. With a property tax, a significant percentage of traffic generators pay nothing due to their tax-exempt status. In contrast, with a TUF, every local traffic generator pays to support the local road system. Some inequity creeps into a transportation utility fee schedule because road use usually is estimated rather than measured and because estimates are based on averages for entire classes of property. Still, this shortcoming may be less problematic than the exemption of entire classes of developed property from any financial contribution to road maintenance.

In the early 1990s, Orlando, Florida, considered shifting its method of financing transportation from a general fund approach to an enterprise fund approach; this approach was not adopted. A key feature was that all transportation costs and revenues would be placed into an enterprise account separate from the general fund. A transportation utility fee would be assessed on all property within the city based on proportionate-share principles. The analytic framework is illustrated below with examples that follow. The Orlando TUF was based on the following formula:

$$Transportation\ Utility\ Fee = Unit\ Demand \times Trip\ Generation\ Factor \times Base\ Rate$$

Where

Unit Demand = number of dwelling units, square feet, or hotel rooms on a particular parcel
Trip Generation Factor = Total Average Daily Trips Per Unit
Base Rate = Average Yearly Costs based on Total Average Daily Trips

This would have resulted in the following annual fees by land use:

$$\frac{Average\ Yearly\ Costs\ @\ \$6{,}465{,}000}{Total\ Average\ Daily\ Trips\ @\ 2{,}108{,}443} = \$3.07/annual\ trip$$

The property tax bill for each property would include the TUF based on the following schedule:

TABLE 1 Orlando Transportation Utility Fee Proposal

Land Use	Daily Trips	Cost @ $3.07/Trip
Single family	10.44	$32.06
Multi- family	6.33	$19.44
Hotel room	9.03	$27.72
1000 SF office	12.87	$39.52
1000 SF commercial	69.15	$212.30
1000 SF industrial	5.62	$17.24

Source: Marie York, Center for Urban and Environmental Problems, Florida Atlantic University. (*1*)

Shortly after the Orlando study was completed, the City of Port Orange adopted a similar program. Ewing (*2*) notes that in June 1992, Port Orange, Florida, became the tenth U.S. city (and the first east of the Mississippi River) to adopt a TUF. TUF funds replaced a 0.287-mill subsidy from the city's general fund and eliminated the city's road maintenance shortfall. Over time, funds were expected to be used to pave dirt roads, build bike paths, and widen selected streets.

The Orlando TUF was never adopted because internal legal opinions indicated it may be viewed by the courts as an unauthorized tax. Port Orange came to the same conclusion and essentially never implemented its TUF program. The Florida Supreme Court found the fee to be a tax not authorized by general law. *(3)* The opinion states, “The circuit court cites to storm-water utility fees as being analogous to the transportation utility fee. However, storm-water utility fees are expressly authorized by section 403.031, Florida Statutes (1993). Similarly, various municipal public works and charges for their use are authorized by chapter 180, Florida Statutes (1993).” Addressing transportation facilities and services in the definition of public utilities in statutes is one way to resolve this concern.

The transportation utility fee concept has been slow to catch on nationally. Oregon is the nation’s leader in using it. In Oregon, a transportation utility fee, like a water or wastewater, is a monthly fee collected from each property based on its estimated use of the transportation system. Table 2 reviews TUFs in Oregon communities (effective 2003).

TABLE 2 Transportation Utility Fees in Oregon Communities, 2003

City	Population	Gross Annual Revenue	Monthly Fee for Detached Residence	Annual Revenue Per Road Mile	Annual Revenue Per Capita
Ashland	19,490	$734,000	$5.12	$3,966	$26.55
Eagle Point	4,665	$80,000	$3.00	$1,958	$58.31
Eugene	140,000	$5,700,000	$2.90	$10,000	$24.56
La Grande	12,885	$200,000	$4.00	$2,326	$64.43
Medford	59,990	$2,900,000	$4.64	$9,767	$20.69
Phoenix	3,970	$60,000	$1.55	$3,294	$66.17
Springfield	52,000	$1,000,000	$1.75	na	$52.00
Talent	5,065	$62,400	$1.96	$3,120	$81.17
Tualatin	21,235	$620,000	$2.92	$10,532	$34.25
Wilsonville	12,985	$482,713	$4.48	$9,851	$26.90

Source: Adapted from Springer and Ghilarducci (*3*).

The basic formula used in these communities is:

$$TUF = \frac{Street\ Maintenance\ Cost - Revenues}{Estimated\ Daily\ Trips} \times ITE\ Daily\ Trips/Land\ Use$$

In all cases, TUF revenue is used for road maintenance and operations, thereby freeing up state gasoline tax revenue for capital expansion. Many jurisdictions also supplement capital expansion revenue with “system development charges” which are akin to impact fees.)

A recent variation on Oregon’s TUF experience is that of the Lake Oswego “Street Maintenance Fee” (SMF) that is dedicated to the maintenance and repair of the City's transportation system. This fee is a monthly assessment on property owners within the city proportionate to use of the transportation system. It is based on the number of trips generated by each land use and is collected through the City's monthly water, wastewater, and drainage utility bill.

Unlike other TUFs, Lake Oswego’s SMF uses trips and trip lengths for non-residential land uses. Before the fee was implemented an inventory of the existing use of all parcels in the City was conducted. Institute of Transportation Engineers (ITE) trip generation rates were used to determine trip generation values for each land use. Land uses were categorized into groups for establishing maintenance fee rates. Adjustments were made to the trip generation rates to account for pass-by trips for each group. In addition, nonresidential groups included basic trip length considerations:

- Single Family (Detached)
- Multi-family
- Group 1 - Land uses with less than 29 vehicle-trip-miles per day per 1,000 sf. of building space
- Group 2 - Land uses with more than 29, but less than 90, vehicle-trip-miles per day per 1,000 sf. of building space
- Group 3 - Land uses with more than 90 vehicle-trip-miles per day per 1,000 sf of building space

The fee itself is based on the following formula:

$$Street\ Maintenance\ Fee = \frac{Street\ Maintenance\ Cost - Revenues}{Estimated\ Daily\ Trips} \times ITE\ Daily\ Trips/Group$$

Where

Street Maintenance Cost is the budget for maintaining streets but not capital expansion (that is paid in part through a road "system development charge" which is a road impact fee). The cost is calculated as the full cost necessary to maintain the street system properly and avoid deferred maintenance for lack of funds.

Revenues are projected revenues from state, regional, and local sources.

Estimated Trips are for year of analysis using the City's inventory of land uses multiplied by ITE's trip generation rates applicable to each group.

ITE Daily Trips/Group is the number of trips for each unit of land use (one dwelling for residential and 1,000 square feet for nonresidential).

Lake Oswego's fee for each land-use group was thus:

Single-family detached residential (per unit)	$3.75/month/unit
Multi-family residential (per unit)	$2.68/month/unit
Non-Residential Group 1	$2.30/month/1,000 square feet
Non-Residential Group 2	$5.17/month/1,000 square feet
Non-Residential Group 3	$19.31/month/1,000 square feet

Transportation utility fees may become increasingly popular as transportation system operating and maintenance revenues become more stressed. The methods used to establish them are very simple and reminiscent of the early days of impact fees. The early TUF approaches and those used today throughout Oregon have notable limitations. First, they apply only to operations and maintenance of roads, and not all elements of the mobility system. Second, they usually rely on impact fees to expand the capacity of roads. Third, with few exceptions, the "denominator" is trips and not trip length which means they are average cost mechanisms that apply to all development regardless of location, density, and especially distance – thus, lower cost areas of a jurisdiction are essentially subsidizing higher costs areas. Nonetheless, every new financing approach usually starts with basic elements that once understood can be refined for the "next generation." Oregon, which probably leads the nation with TUF

experience, appears to be moving to a “next” generation approach. A leading example is considered next.

Next Generation Transportation Utility Fees

Springer and Ghilarducci (*3*) present a comprehensive approach to calculating TUFs for Clackamas County, one of Oregon’s largest counties. The county’s population is approaching 400,000 residents within a land area comparable to that of Delaware. The TUF, imposed in the county and five cities was intended to provide the total annual budget for the maintenance and operation of a variety of facilities or activities such as bridge maintenance, guardrails, road shouldering, road treatment, street lighting, traffic operations (operating and maintaining traffic signals, signs, and striping), utility billing, vegetation control.

To calculate the TUF, the total annual budget was estimated at $20 million, the numerator. The denominator was based on equivalent residential units defined as the average vehicles miles traveled (VMT) per single family detached unit. Nonresidential land uses were divided into 10 groups based on multiples of equivalent residential units. The basic analytic framework is illustrated in Figure 1. The sample monthly fee for selected land uses was:

Sample Land Use Type	*Monthly Fee ($)*
Single family detached dwelling unit	15
Neighborhood shopping center (50,000 sq ft lease area)	3,000
Apartment complex (200 units)	1,800
Elementary school (500 students)	550

Unlike gas tax increases which require voter approval, TUF programs in Oregon can be adopted administratively. They may be subject to local referendum if the governing body chooses that route. The Clackamas County Board of Commissioners referred the TUF program to the voters and on November 5, 2004 it was defeated by a margin of two to one. On the positive side, the TUF lost by a smaller margin than a previous gas tax increase vote, which failed five to one.

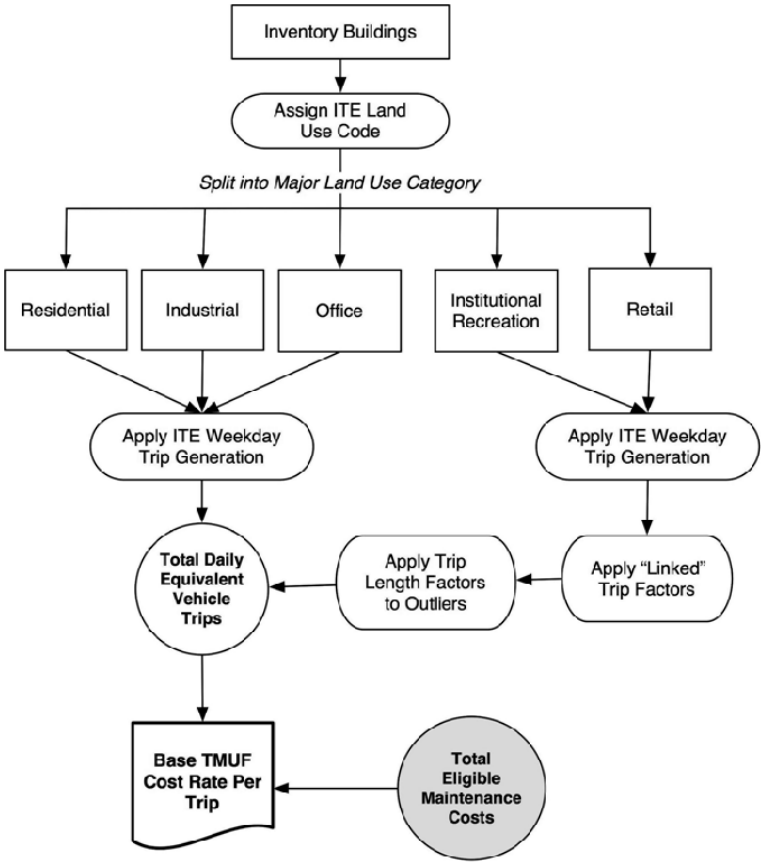

FIGURE 1 Parcel-level trip generation process (TMUF - Transportation Maintenance Utility Fee) (*3*)

Conceptual Transportation Mobility Fee

What is proposed here conceptually is a "transportation mobility fee" (TMF). The TMF would combine basic elements of TUF approaches but adapt them based on the well-developed methods for calculating road impact fees. Florida is a national leader in designing road impact fees with many of its innovations being adopted across the nation. The conceptual model would need to be adapted to local circumstances. Various administrative issues would need to be considered as well.

The TMF could replace all local-source transportation-related revenues such as local option gas taxes and impact fees. As a practical matter, however, TMF revenues would likely be considered supplemental to such existing revenue sources to assure use of the broadest range of revenues possible. One reason is that more rather than fewer revenues sources hedge against economic cycles that could alter revenue streams from any given source. In addition, this TMF could apply to all transportation-related faculties and activities including but not limited to such broad categories as roads and bridges, transportation-related drainage, sidewalks and bikeways/pedways, and public transit.

TMF revenue could be used to fund capital, operations and maintenance, and administrative costs. Unlike TUF programs in Florida and elsewhere, but like road impact fee programs, the program could consider variations in costs of all transportation components considering location, distance and density.

Location refers to the fact that, because of terrain or other features, some areas are simply more expensive to provide and maintain capital facilities than others. *Distance* means that in some areas of a jurisdiction more and longer trips are needed to access work and other destinations than in other areas. *Density* is important because, generally, the more densely settled an area the fewer vehicle trips that are needed and those that are made may be shorter. Ideally, a TMF would be designed to consider all these factors spatially; that is, lower cost areas would pay lower TMFs than higher cost ones. Fortunately, the *service area* concept used to design road impact fee programs can be applied to TMF design – something that has not been done for TUF programs anywhere. In addition, TMF design can include variation in demand on transportation systems based on more refined assessment of different land uses than traditional TUF programs.

The TMF program itself could have two principal elements: capital and operations (including maintenance and administration). Because the nature of demand for transportation facilities varies by facility, facility demand would be calculated in different ways. Two approaches may be recommended: VMT and functional population.

VMT calculations are commonly used to apportion road capital costs among different land uses. Florida is a national leader in developing and applying these kinds of methodologies. A generalized approach using this method is shown in Table 3. Here, the costs are apportioned to a service area which may, for TMF purposes, be called an assessment district. Nonetheless, where impact fees are used to generate revenue for transportation it may be advisable to use those service area boundaries.

TABLE 3 VMT-Based TMF

Expenditure	**Amount**
Capital Costs *(net of nonlocal, impact fee, and other dedicated revenue)*	$1,000,000
Operating Costs *(net of nonlocal and other dedicated revenue)*	$2,000,000
Total Expenditure	$3,000,000

Land-Use Apportionment

Residential	**Impact Units**	**VT/Unit**	**Total VMT[a]**	**VMT Share[b]**	**Land Use Financial Share[c]**	**Annual TMF Per Impact Unit[d]**
Single Family (dwellings)	10,000	50	500,000	74.07%	$2,222,222	$222.22
Apartments (dwellings)	5,000	30	150,000	22.22%	$666,667	$133.33
Nonresidential						
Office *(1k sq. ft.)*	500	10	5,000	0.74%	$22,222	$44.44
Warehouse *(1k sq.ft.)*	200	5	1,000	0.15%	$4,444	$22.22
Retail *(1k sq.ft.)*	500	30	15,000	2.22%	$66,667	$133.33
Institutional*(1k q.ft.)*	400	10	4,000	0.59%	$17,778	$44.44
Total	61,600		675,00	100.00%	$3,000,000	$180.72[e]

Notes:

a. Impact units times VMT/Unit
b. Total VMT for a given land use divided by total VMT for all uses summed
c. VMT Share times Total Expenditure
d. Land Use Financial Share divided by Impact Units
e. Average annual TMF per impact unit.

The TMF would calculated similarly to the property tax in that the projected budget would be the numerator and current land use impacts would be the denominator. For example:

$$\frac{Budgeted\ Capital + Operating\ Costs}{VMT\ Generated\ by\ Existing\ Uses} = \frac{\$3{,}000{,}000}{2{,}024{,}000\ VMT} = \$1.48\ per\ VMT$$

Capital costs would include routine repairs and rehabilitation, debt service (bond) payments, and expenses associated with future capital investment such as right-of-way acquisition, engineering, legal, planning and so forth. Capital costs would be net of nonlocal revenues (such as from the state or federal agencies), impact fees assessed

on new development to be used for the same facilities included in the TMF calculation, and other dedicated revenue (such as may be pledged from community improvement districts, special assessments, and the like). *Operating costs* include routine operations and maintenance apportioned to the service area, as well as the proportionate share of administrative and other overhead costs. These costs would be net of nonlocal and other revenue for this purpose (such as special assessments).

Calculating VMT-based TMF's would be based on standard impact fee methodologies already used throughout Florida. Local governments would be free to apply any number of such methodologies to their situation with one important adjustment - the VMT-based TMF would need to be adapted to the assessor records. Doing so may require aligning road impact fee schedules customarily based on Institute of Transportation Engineers' land use codes to assessor codes. In addition, the VMT for each assessor record should be calculated. While tedious initially, automation should not make the process time-consuming and once done need only be updated annually. Furthermore, because assessor records include the size of structures, VMT for each assessor code can be estimated on a per square-foot basis which when multiplied by the size of structure provides a proportionate-share relationship between the land use, VMT production, and demand on road facilities.

While the VMT-based TMF works well for roads, it may not be appropriate for other transportation functions such as sidewalks, bicycle pathways, transit, and so forth. For these facility, the functional population approach may be used. Functional population is defined as the effective population being served over the course of a day. For example, if 100,000 people live and work in a community, and if another 60,000 commute into the community to work an 8-hour (one-third day), the functional population is 100,000 + (60,000 x 1/3) = 120,000.

An example is found in work pioneered by Dr. James C. Nicholas for Aventura, Florida. In this case, Dr. Nicholas applied the "functional population" concept to calculate a one-time mitigation fee on all new development that would be used to help fund the operations and maintenance of the city's transit system. Florida may lead the nation in the use of functional population to calculate impact fees. Its application to non-VMT facilities is an easy extension as used in Aventura and provided in the example of Table 4.

TABLE 4 Functional Population-Based TMF

Expenditure	**Amount**
Capital Costs *(net of nonlocal, impact fee, and other dedicated revenue)*	$250,000
O&M Costs *(net of nonlocal and other dedicated revenue)*	$500,000
Total Expenditure	$750,000

Land-Use Apportionment

Residential	**Impact Units**	**FP/Unit[a]**	**Total FP**	**VMT Share**	**Land Use Financial Share**	**Annual TMF Per Impact Unit**
Single Family	10,000	1.50	15,000	60.24%	$451,807	$45.18
Apartments	5,000	1.00	5,000	20.08%	$150,602	$30.12
Nonresidential						
Office	500	2.00	1,000	4.02%	$30,120	$60.24
Warehouse	200	0.50	100	0.40%	$3,012	$15.06
Retail	500	6.00	3,000	12.05%	$90,361	$180.72
Institutional	400	2.00	800	3.21%	$24,096	$60.24
Total	16,600		24,900	100.00%	$750,000	$45.18[b]

Notes:

a. Illustrative functional population (FP) per unit. For residential, this would assume that a person effectively occupies their home 60% of a typical day: for an average household of 2.5 persons, the functional population for the average unit is 0.60 x 2.5 = 1.50.

b. Represents an average annual TMF per impact unit (not a total).

Using assessor records for functional population-based TMFs can be accomplished using the same approach described above for the VMT-based TMF. Because they relate demand based on common units of impact across all land uses, the two approaches may be combined into a master TMF assessment, as shown in Table 5.

TABLE 5 Total TMF Assessment

Expenditure	**Amount**
Annualized Capital Costs	$1,250,000
Annual O&M Costs	$2,500,000
Total Expenditure	$3,750,000

Land-Use Apportionment

Residential	**Impact Units**	**Annual TMF Per Impact Unit**	**Monthly**
Single Family	10,000	$267.40	$22.28
Apartments	5,000	$163.45	$13.62
Nonresidential			
Office	500	$104.69	$8.72
Warehouse	200	$37.28	$3.11
Retail	500	$314.06	$26.17
Institutional	400	$104.69	$8.72
Total	16,600	$225.90[a]	$18.83[a]

a. Average cost.

Summary

The fiscal challenges of the past generation have stimulated innovation. A major challenge is the taxpayers increasing reluctance to support general taxation increases to pay for services. There is a growing mood to apportion government charges based on the benefits of service received. Impact fees help to satisfy this objective for capital expansion as do utility rates for water and wastewater facilities based on consumption. The “transportation mobility fee” concept as outlined in this paper melds both approaches into a new method to pay for transportation services.

REFERENCES

(1) York, Marie. Center for Urban and Environmental Problems, Florida Atlantic University.
(2) Ewing, Reid. 1994. Characteristics, Causes, and Effects of Sprawl: A Literature Review. Environmental and Urban Issues 21, 2: 1-15.
(3) State of Florida, v. The City of Port Orange, Florida, 650 So.2d 1, 19 FLW S563, 1994 Fla. SCt 8286
(4) Springer, Carl D., and John Ghilarducci. Transportation Utility Fee, Oregon Experience. Transportation Planning Applications Committee. 2004. Available online: http://trb.metapress.com/content/w31r857151081j70/fulltext.pdf

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