A Local Funding Mechanism For Chapel Hill: Transit Impact Fees

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March 1st, 2008

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PART 1: OVERVIEW

Introduction

"The Town may adopt an ordinance to allow an applicant for development to offer, at the applicant's discretion, payments in support of the public transit system in lieu of providing transportation infrastructure improvements in order to satisfy a condition of approval of the proposed development."

In the 2006 NC General Assembly Session, a law was passed (Session Law 2006-103/House Bill 2724) amending the Town of Chapel Hill Charter to allow the Town to establish a payments-in-lieu system to collect funds for transit improvements in lieu of requiring roadway construction. With Chapel Hill simultaneously facing constrained budgets and a groundswell of demand for more and higher quality transit, there is an inherent need for additional funding mechanisms.

This paper will analyze the appropriateness of collecting payments-in-lieu of road construction to fund the transit system. How can this tool be implemented in Chapel Hill? In order to answer this question, a case study approach is used, examining other municipalities that have implemented similar transit funding tools, and comparing those municipalities and Chapel Hill.

While some research has examined transit funding, this paper is specific to Chapel Hill and may guide Chapel Hill planning staff and Town Council members as they consider several financing alternatives to fund local and regional transit plans currently being developed. The policy of the Chapel Hill Town Council is that roads will not be widened to expand automobile capacity. As population and employment grow, land use patterns will need to change and transit service must expand in order to induce a modal shift away from automobiles or else congestion will become a serious problem. It is under this background that the research explored in this paper is presented. It will provide recommendations that could ensure that the Town policy of not expanding automobile capacity accomplishes the ends it sets out to.

Throughout this paper, the term "transit impact fee" is used generally to describe the funding mechanisms for three case study municipalities' funding mechanisms, as well as the potential system for Chapel Hill. In actuality, each system has a slightly different name, but transit impact fee will be used as a general term to refer to all these systems collectively.

The following sections detail existing literature on the subject, provide an overview of the importance of this research for Chapel Hill, present case studies of San Francisco, California, Portland, Oregon, and Rockville, Maryland's usage of these fees, and then synthesizes and analyzes these case studies in order to provide recommendations for how Chapel Hill can successfully implement a transit impact fee.

Why Transit Impact Fees?

In the last several decades, the U.S. has undergone a massive shift in spatial structure guided by two parallel forces of population *concentration* in metropolitan areas and population *decentralization* into lower density suburbs peripheral to cities. These changes have had profound effects on the costs and abilities of cities to provide public services (transportation, water, schools, etc.) to their citizens. Moreover, with a Rustbelt-to-Sunbelt population shift underway, these challenges are particularly pronounced in the South.

As cities have struggled to maintain public services, policy tools such as impact fees, concurrency requirements, and adequate public facilities ordinances have emerged as viable ways to ensure that developers pay for the effects new development will have on public services. While transportation has generally been one category of impacts incorporated in these policies, the meaning of transportation to extend beyond roads to transit, pedestrian and bicycle modes is relatively novel.

This broadening of the definition of transportation has occurred in large part due to the realization of the negative effects sprawling development has had on urban areas, concern over rising levels of automobile congestion and deteriorating air quality, and understanding that we cannot build our way out of congestion with more roads. With many municipalities making public commitments to reduce carbon emissions, and automobiles one major source of emissions, policymakers have turned to transit as a viable alternative to the single occupant vehicle.

As traffic congestion becomes an increasing problem, regions are turning to a wide range of transit solutions. BRT is an option being considered on many of the major travel corridors in Chapel Hill.

Figure 1: Cars in Traffic on I-40, Eugene, Oregon's new Bus Rapid Transit

However, in order to shift travel from automobile to transit, the level of transit service must be greatly improved. With travel by car generally much quicker and more reliable than travel by transit, large scale improvements must be made to transit systems in order to compete more effectively with the automobile. Many metropolitan areas have introduced major transit improvements and many more have been planned; however, the demand for improved transit services is much greater than the amount of money available from the federal government to fund these improvements.

With travel by car generally much quicker and more reliable than travel by transit, large scale improvements must be made to transit systems in order to compete more effectively with the automobile.

At the same time, developers are beginning to realize the premium many people are willing to pay to live in denser, new urbanist and transit oriented developments. One major expense developers face in the entitlements process is the cost of mitigating traffic impacts by adding capacity to roads. With some research suggesting that people make less trips by car in new urbanist developments (Khattak and Rodriguez, 2005), there is potential for developers and municipalities to work together to improve transit options instead of expanding road capacity.

Given this backdrop, transit impact fees may become an increasingly popular mechanism to generate local funding sources for transit. By funding transit improvements that otherwise could not be afforded, they can facilitate a wide variety of positive outcomes, from reductions in the number of people who travel by single occupant vehicle and decreases in traffic congestion to improved air quality and reduced carbon emissions.

Literature Review

The success of transit impact fees is dependent on whether the ends it sets out to achieve do actually have the desired effect of generating revenue to make transit improvements. This section summarizes existing literature on transit funding.

There are substantive reports on state and federal transit funding (Survey of State Transit Funding 2005, Mallet 2007). However, literature devoted to local transit funding tools such as transit impact fees is much more limited. Transit impact fees are mentioned in many Transportation Research Board (TRB) publications as a possible funding tool (Cambridge Systematics 2006, Hendricks 2002, TCRP Report 31 1998); however, they have not been the subject of significant empirical research. According to the abstract of yet-to-be completed TRB research on local funding mechanisms for transit,

> "It has been more than 20 years since significant research has been conducted on local and regional (i.e., non-federal and non-state) funding for public transportation. No information is available that describes funding mechanisms from local and regional sources beyond the revenue amounts reported in the NTD [National Transit Database] for key categories of transit operating and capital funds" (Stanley 2006).

There is also a currently unfulfilled TRB Request for Proposals on "The Use of Fees or Alternatives to Fund Transit" (www.trb.org). Thus, there is a newly generated interest in and an existing dearth of empirical research on transit impact fees or similar types of local funding mechanisms.

Context

Chapel Hill's transit system is quite successful. It carries over 5 million passengers annually. The success of the system is due in large part to the presence of UNC, and the strict limitation on parking on campus. For these reasons a major segment of Chapel Hill Transit riders are composed of students, faculty and staff who either live in Chapel Hill or commute from other locations in the Triangle to one of the Town park and ride lots. Additionally, Chapel Hill Transit has operated fare free since 2000 and has seen significant ridership increases as a result of this policy.

Overall ridership for Chapel Hill Transit has declined slightly in the 2007-2008 service year due to reductions and modifications to routes and service hours necessitated by budget constraints

Yet, Chapel Hill Transit is constrained by budget limitations. While the efficiency of the system in terms of passengers/revenue hour has continued to increase, overall ridership has declined slightly in the 2007-2008 service year, as reductions and modifications to routes and service hours have been implemented to meet budget requirements. Chapel Hill Transit is funded by three partners: the Town of Chapel Hill, the Town of Carrboro, and the University of North Carolina. Each partner contributes funding based on

population, and each partner may request new routes, but must pay the full operating expenses for the first year of the proposed new service. Figure 2 displays the current system coverage.

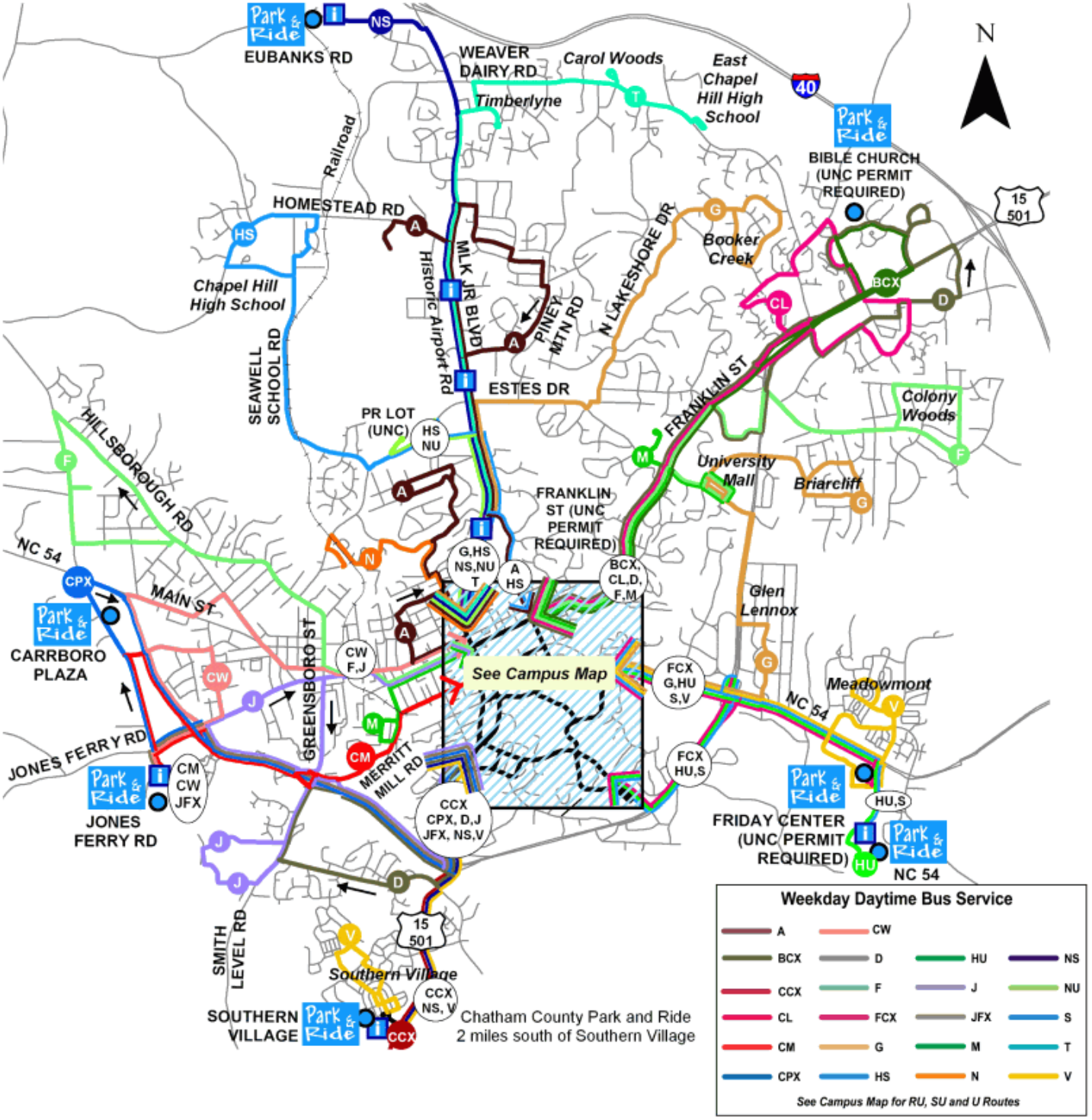


Figure 2: Chapel Hill Transit System Coverage Service Year 2007-2008

Town Policy

The Town of Chapel Hill has adopted a policy of not expanding roads to provide additional automobile capacity

At the same time that Chapel Hill Transit is struggling to maintain its existing level of service, the importance that it attract new riders is increasing dramatically. The Chapel Hill Town Council has a policy of not expanding roads to provide additional automobile capacity. With the automobile road network that is in place now essentially what it is always going to be, and with increases in population and employment expected, it is inherent that a modal shift is induced spurring existing automobile drivers to ride transit, walk, or bicycle to destinations. Given the distance many people commute to work, the car-to-transit shift is the largest potential source of this modal shift.

One area where the expansion of transit is particularly important is in Northern Chapel Hill. Under a backdrop of intense development pressure, the Town passed a 6-month development moratorium in May 2007 in the northern part of Chapel Hill and created a small area plan to facilitate transit oriented development. A citizen task force worked with planning staff and consultants to develop a vision and a series of objectives for development in the northern area. The intent is to foster transit-friendly development such as at a high enough density to support transit and with mixed uses to encourage use throughout different hours of the day. The result of this process is a small area plan that has been adopted into the Comprehensive Plan as Town policy.

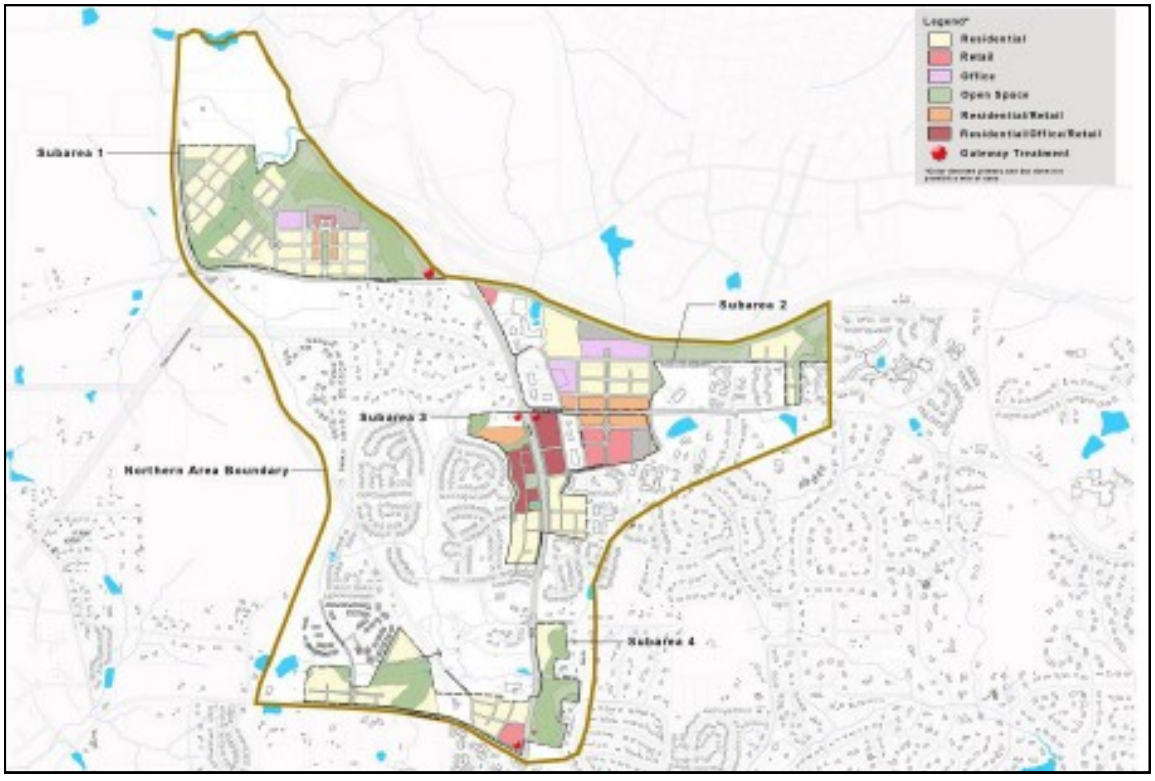


Figure 3: Northern Area Task Force Report Conceptual Land Use Plans

Future Planning

Given the elevation of the importance of transit embodied in Town policy, several efforts, both regional and local, are underway to expand the transit system. The Special Transit Advisory Committee (STAC) has been meeting in the aftermath of the failed Triangle Regional Rail proposal to advise the region's elected officials on how to evaluate future transit investments. Several corridors in Chapel Hill are included in this study including US 15-501, Highway 54, Martin Luther King Jr. Blvd. and Jones Ferry Rd. in Carrboro.

Additionally, The Towns of Chapel Hill and Carrboro and the University of North Carolina have initiated the development of a Long Range Transit Plan to identify and prioritize future improvements in the Chapel Hill Transit system. Of particular importance is transit service to and from the future satellite campus Carolina North both from the UNC main campus/downtown and from the major entry points from Chapel Hill (I-40 and NC-86, 15-501 both from the south and the north, and Highway 54 from the east and the west). Options being considered include upgrade of these corridors to a Bus Rapid Transit (BRT) type of system, as well as utilization of the existing rail corridor connecting UNC to Carolina North. The findings of the LRTP will be described in greater detail in the final section of this paper.

As policy-makers are informed by these studies and the best corridors for future investments are identified, the next step will be to identify funding sources for these investments. The transit impact fee is one possible tool to generate this funding.

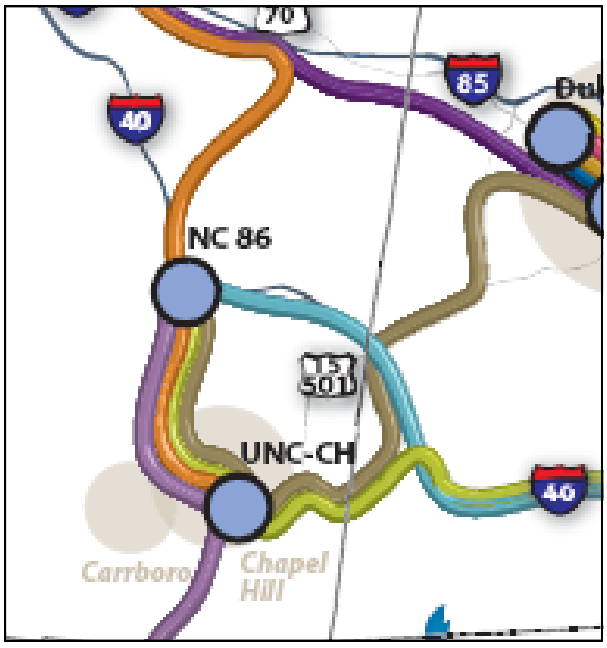


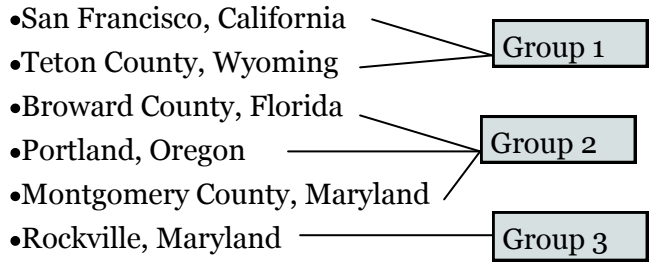
Figure 4: Close-Up of Chapel Hill/Carrboro Travel Corridors Being Studied by the Special Transit Advisory Committee

PART 2: CASE STUDIES

This section will present three case studies, each of which provides lessons that can be applied to the development of a transit impact fee for Chapel Hill. Each case study overviews relevant state legislation (where applicable), the city ordinance, and methodology. At the end of each case study, unique elements of that municipality's approach are summarized.

How were the case studies selected?

There was a very limited pool of potential case study municipalities to choose from due to the relatively uncommon nature of the transit impact fee. An initial search yielded the following potential municipalities:



These municipalities can be divided into three groups. Group 1 consists of San Francisco and Teton County, which both have the most straightforward transit impact fee tool, meaning a fee charged to developers that goes directly to transit. In Group 2, Broward County, Portland, and Montgomery County all have more general approaches which require developers to pay for the impacts they will have on the transportation system generally, but specifically including the transit impacts. Finally, in Group 3 is Rockville, Maryland, which includes evaluation of transit impacts within the Transportation Impact Analysis required as a part of its Adequate Public Facilities Ordinance. One municipality from each Group was chosen for in depth analysis: San Francisco was chosen over Teton County because of the nature of Teton County's transit system, specifically oriented towards tourist skiers. While San Francisco also has a large tourist market for its transit system, it also carries a heavy number of commuters every day. Additionally, San Francisco was the first city to implement a fee. Out of Group 2, Portland was chosen because its fee is implemented at city level, rather than the county level. In the final category, Rockville, Maryland was chosen by default. The places with the most clear transit impact fee policies are large cities; yet while their transit funding policies are helpful to learn from, the disparity in size between them and a town like Chapel Hill is huge. For this reason, Rockville was chosen for its comparable size and comparable place within a larger region (for Chapel Hill, the Triangle, for Rockville, the DC metro area).

Case Study 1: San Francisco's Transit Impact Development Fee

Figure 5: Cable Car and Bus in San Francisco

San Francisco's Transit Impact Development Fee was established in May 1981 setting a $5 fee per square foot of new office development in downtown to fund transit expansions. The city of San Francisco is granted "home rule" authority by the state of California, so they were able to adopt this fee without needing to have this authority specifically delegated to them by the state. The fee was intended to cover the entire cost of providing transit over a 45 year useful life of an office building. The ordinance was updated in 2004 to expand the fee to include both commercial and office development, and to be applied in all of San Francisco instead of just downtown. The ordinance update was based on a 2001 study that concluded that new development would increase demand for transit and increase congestion, which would require MUNI to expand service to maintain its base service standard. This section will discuss requirements set out in the city ordinance, the methodology used to calculate the fee, and then summarize key lessons for Chapel Hill.

Table 1: Key Facts On San Francisco's Transit System

2005	San Francisco
Transit System Receiving Improvements	MUNI: San Francisco Municipal Railway
Types of Transit Service Available Through This System	Bus, light rail, streetcar, cablecar
Annual Transit Ridership (Unlinked Trips)	216,918,351
Average Weekday Unlinked Trips	688,699
Annual Local Capital Funds Expended	$79,390,000
Annual Total Capital Funds Expended	$123,987,000
% of Capital Covered By Local Funds	64%
Annual Local Operating Funds Expended	$254,186,096
Annual Operating Funds Expended	$475,580,696
% of Operating Covered By Local Funds	53.45%

City Ordinance

Chapter 38.1-37.14 of the San Francisco Administrative established the Transit Impact Development Fees . See sidebar, "San Francisco City Ordinance Highlights" for the key provisions of the ordinance.

San Francisco City Ordinance Highlights

When Fee is Applied
The fee is imposed on non-residential developments greater than 3,000 square feet. The Director of Transportation at MTA will give credit against the fee for square feet of use being eliminated by the new development by determining an adjustment factor (the ratio of the fee for the existing use to the proposed use) multiplied by the decrease in square feet

Methodology
The city commissioned a rate study (TIDF study) to calculate how growth will affect demand on the transit system, and how the fee would need to be adjusted to accommodate this growth. The ordinance adopts the methodology established in this study, with some modifications. It calculates a base service standard, which is the average annual cost per transit trip, and then sets the rate based on the number of new trips each type of land use is expected to generate. The details of this methodology will be discussed in the next section.

Implementation Authority
The Director and Board of MTA will review the Rate Schedule every five years and recommend whether the rate should be increased, decreased or remain the same.

Improvements Allowed
The funds may be used to increase revenue service hours reasonably necessary to mitigate the impacts of new non-residential development on public transit and maintain the applicable base service standard including:

- Capital costs associated with establishing new transit routes
- Expanding transit routes
- Increasing service on existing transit routes
- Procurement of related items such as rolling stock
- Design and construction of bus shelters, stations, tracks, and overhead wires
- Operation and maintenance of rolling stock associated with new/expanded transit routes or increases in service on existing routes
- Capital or operating costs required to add revenue service hours to existing routes
- Administration, enforcement, and defense of ordinance

Methodology

The methodology used to determine fee rates is based on the Transit Impact Development Fee Study (TIDF study) conducted in 2001. One purpose of this study was to determine whether the limitation of the fee to only office development and only for downtown development was appropriate. Another purpose was to determine how high the fee would need to be in order to improve transit to meet the additional demand generated by new development. The TIDF ordinance was updated based on this study, with some modifications. The general approach used was to determine the incremental cost each additional transit trip costs per year and multiply it by the amount of new trips each different economic activity type will generate. The calculations can be summarized in the following five steps. For further detail of these steps see sidebar, San Francisco TIDF Methodology, pages 12-13.

Step 1: Develop Trip Generation Rates

Step 2: Calculate MUNI's Net Annual Cost Per Service Hour

Step 3: Determine the Net Annual Cost Per Trip

Step 4: Determine Base Service Standard Rates for Each Category

Step 5: Adjust Fee Based on Stakeholder Input

Table 2: San Francisco's Transit Impact Development Fee Revenues

Fiscal Year	*Total Collections**
1995	$1,140,000
1996	$129,000
1997	$3,300,000
1998	$2,270,000
1999	$740,000
2000	$5,520,000
2001	$2,950,000
2002	$7,880,000

*not including interest

San Francisco TIDF Methodology

Step 1: Develop Trip Generation Rates
San Francisco's TIDF methodology starts by comparing trip generation rates for different economic activity categories. Because there are different types of land use within one economic activity category, composite trip rates were developed. These were based on the ITE trip generation rates, and the proportion of different types of land expected for that economic activity category. The TIDF study concluded that trip generation rates do not vary based on geographic area so the fee should be expanded from only downtown development to all development.

Step 2: Calculate MUNI's Net Annual Cost Per Service Hour
In this step, operating costs and capital expenses are factored in to determine total annual costs. The ordinance uses the operating cost for the most recent fiscal year (2003), and the average annual capital cost for the last 5 years to calculate a total annual cost of $642 million. Next, MUNI's revenue sources (fare box and federal and state grants) are subtracted from total annual costs. Additionally, non-vehicle maintenance and general administration costs are subtracted to comply with a potentially applicable California law that prohibits including costs for facility maintenance and operations in a fee imposed on a developer for a public capital facility improvement (California Government Code Section 65913.8). Net annual costs less these sources are $328 million. Finally, the net annual cost per revenue service hour is calculated by dividing the net annual cost by the average daily revenue service hours. This cost, $32,614, is how much it costs MUNI on average to provide one hour of service every day for a year.

Step 3: Determine the Net Annual Cost Per Trip
The study calculates the annual transit cost per new trip generated. It estimates total daily trips from both automobile and transit modes, using the rates determined in step 1 and city-wide employment data. Total daily trips are then divided by the average daily revenue service hours to determine the ratio of daily revenue service hours provided compared to total daily trips. This ratio (revenue service hours per 1,000 trips) is 1.1136 hours and is used to determine the net annual cost per trip (automobile and transit) by multiplying it by the cost per service hour determined in Step 2. The net annual transit cost per daily trip is $36.32.

Step 4: Determine Base Service Standard Rates for Each Category
The base service standard is the ratio of the number of revenue service hours to the number of trips generated by all non-residential land uses. Trips generated per gross square foot depend on the economic activity category of any particular development. Thus, different net annual costs/gsf are determined for each category. This step combines the trip rates developed in step 1 with the cost per trip determined in step 3. Cost per square foot ranges from $0.35 for the production/distribution/repair category to $6.06/gsf for the retail/entertainment category. Then, these rates are adjusted using a net present value factor of 36.32 that takes into account inflation and a 45-year useful building life. The base service standard rates vary from $11.63 for production/distribution/repair to $202.10 for retail/entertainment.

Step 5: Adjust Fee Based on Stakeholder Input
Due to the fact that the TIDF is just one of many costs associated with new development, and to ensure that the fee does not exceed the reasonable cost to fund additional transit improvements, the rates were set well below the base service standard rates calculated in the previous steps. The rate is set at $10/square foot for:

- Cultural/institution/education
- Management, information and professional services
- Medical and health services
- Retail/entertainment

And, the rate is set at $8/square foot for:

- Production/distribution/repair
- Visitor services.

Summary

The following are key elements of San Francisco's TIDF which will be considered in the analysis section of the paper following the other two case studies.

Parameters: The fee is only for non-residential development. It is assessed for the entire city, but originally was only assessed downtown.

Methodological approach: The fee is based on the base service standard, or annual transit cost per daily trip. This cost is determined based on total trips a new development generates, and does not separate trips by mode

Fee variation: All developments fall into 6 economic activity categories.

Trip Generation: Trip generation is based on the composite ITE trip rates for each type of land use within an economic activity category proportionally.

Planning Horizon: The fees are intended to cover the cost of providing transit over a 45 year building life.

Case Study 2: Portland's Transportation System Development Charges

Many cities within the state of Oregon use System Development Charges (SDC's) to generate funding for capacity-increasing infrastructure improvements, such as for transportation, water and sewer, or parks and recreation. This power is granted to municipalities by state statute, which a city can choose to implement by passing an ordinance. While many municipalities in Oregon have adopted transportation SDCs, Portland is the only one to use this revenue to make improvements for all modes including transit, instead of just for road projects. This section will summarize the state enabling legislation, the requirements of the city ordinance, the methodology for implementing the fee, and changes made to the ordinance this year.

Figure 6: Light Rail and Bus in Portland

Table 3: Key Facts On Portland's Transit System

2005	**Portland**
Transit System Receiving Improvements	TriMet: TriCounty Metropolitan Transportation District of Oregon
Types of Transit Service Available Through This System	Bus, light rail, streetcar
Annual Transit Ridership (Unlinked Trips)	104,546,141
Average Weekday Unlinked Trips	330,733
Annual Local Capital Funds Expended	$10,747,265
Annual Total Capital Funds Expended	$39,618,160
% of Capital Covered By Local Funds	27%
Annual Local Operating Funds Expended	$178,514,631
Annual Operating Funds Expended	$303,059,569
% of Operating Covered By Local Funds	58.90%

State-Enabling Legislation

The state statute authorizing TSDC's (ORS223.297-223.314) includes many requirements outlined in the sidebar, "Portland State Enabling Legislation Highlights".

Portland State Enabling Legislation Highlights

Type of Fee
SDC's can be either "Improvements Fees" for costs associated with capital improvements to be constructed, or "Reimbursement Fees" for costs associated with capital improvements already constructed, or under construction when the fee is established, for which the local government determines that capacity exists.

Methodology
Local governments must establish methodology for calculating each type of fee, which must meet several criteria linking new demand for services with the new capacity created with the funds from the fee.

Administrative Review
Local governments must set up a process for administrative review, where expenditure of SDC revenues can be challenged

Qualified Public Improvements
Local governments must provide credit to developers for "qualified public improvements" where the developer improves capacity beyond the additional capacity the development will require.

Spending Limitations
Fees collected can only be spent on capacity increasing capital improvements, those which increase the level of performance or service provided by existing facilities or provide new facilities.

Planned Improvements
Local governments must prepare a plan for capital improvements to be financed by the SDC.

City Ordinance

In July 1997, Portland enacted an ordinance establishing Transportation System Development Charges (17.15.020-17.15.160). The sidebar "Portland City Ordinance Highlights" (on page 17) details the key provisions.

Portland City Ordinance Highlights

Improvements allowed
The SDC can be used to fund capacity increases for arterial, boulevard, and collector roads, multi-modal transportation improvements and associated bus pull-outs, transit shelters, sidewalks, bicycle and pedestrian facilities, street lighting and stormwater drainage control facilities, and other public facilities specified in the City of Portland Transportation Capital Improvement Plan

Relationship between development and fee
The SDC is a fee for service (rather than a tax) and the amount is directly related to the proposed use, intensity, and density of the development

Methodology
The methodology used to calculate fees is set by the Transportation System Development Charges Rate Study, which can be amended by City Council resolution.

Credits
Transit Oriented Developments and Low-Income Housing developments will be eligible for a credit towards the fee, given the high priority of these types of developments

When fee is applied
Fees for all new developments will be calculated by comparing trip generation rates for the existing and proposed uses, and their associated SDCs. If the proposed use is greater than 115% of the existing use, the developer must pay the difference in SDC.

Implementation authority
The Manager of the Bureau of Transportation Engineering and Development is delegated authority to implement the ordinance and appoint an SDC program Administrator

Methodology

Portland uses a much different process to calculate the fee than San Francisco. The fee is based on the amount of money the city needs to collect over the next ten years to increase the capacity of the transportation system based on population and employment growth projections. The rates are set for different land uses based on the number of trips that land use will generate. This section summarizes the methodology dictated in the 2007 City Rate Study. Many of the steps in the methodology make calculations for each mode separately. Given the purpose of this case study, the summary, outlined in the sidebar "Portland SDC Methodology" (pp. 18-19) focuses mainly on the transit calculations.

Portland SDC Methodology

Step 1: Choose the Project List
Portland uses a formal process to determine which projects will be funded with the revenue generated by the SDC. First, it reviews all the projects on the city's Transportation System Plan and determines which are capacity-increasing and designed to accommodate employment and population growth. In this step, 500 projects in the plan were reduced to 215 potentially qualifying projects. These remaining projects are ranked based on five criteria, those which: 1) support bicycle, pedestrian, and transit modes; 2) improve the movement of freight and goods; 3) reduce congestion, improve access, and/or circulation; 4) are a community and businesses priority; and, 5) have strong potential leverage. Based on these criteria, 43 projects were selected to fund over the next 10 years, estimated to cost $415 million.

Step 2: Allocate Mode Cost for Each Project
Each project on the list is then analyzed to determine what portion of the cost can be directly attributed to each mode. Road infrastructure that would be used for both automobile and transit were divided up based on the share of peak hour transit passengers (versus automobile person trips) relative to total passenger trips. Indirect costs are distributed among the modes based on the proportion of direct costs attributed to each mode.

Step 3: Determine Growth Portion of Project Costs
For each mode, a "deficiency value" is calculated, which states how much of the additional capacity will be consumed by existing demand. Each mode's deficiency value is calculated differently. For transit, the average maximum load factor, (the ratio of passengers to seats on the bus) in the PM peak hour was used. For projects where the load factor was less than 1, all additional capacity can be attributed to growth. In other words, if there are currently enough seats for everyone on the bus, there is currently no deficiency, and the entire cost of the new facility can be attributed to growth.

Step 4: Determine City Portion of Each Project
In this step, "through trips", which neither begin nor end in the city of Portland, are excluded because the development generating these trips cannot be charged a fee. These trips are calculated by conducting a "select-link" trip analysis using Portland's travel demand model. This approach involves choosing a roadway segment, and analyzing the proportion of trips on that segment that start or end in Portland.

Step 5: Calculate Portland Growth Costs
By combining the calculations in Steps 2-4, the cost of each project directly attributable to growth within the city of Portland can be determined for each mode separately. Of the $415 million in project costs, $267.8 million can be funded by TSDCs, and of that, $42.2 million for transit projects.

Step 6: Forecast New Trips Generated by Each Mode
This step uses the travel demand model to calculate growth in total trip ends (origin or destination) within the city, and the mode share of these trips. The model predicts an 11.6% increase in total daily person trip ends (based on a 12.1% increase in employment and a 12.5% increase in households). Additionally, it predicts a 2017 mode share of 82% motorized, 10% transit, and 8% non-motorized.

Step 7: Calculate the Cost per Trip End
The cost per trip end is calculated by dividing the costs eligible for TSDCs (calculated in Step 5) by the increase in the number of daily trip ends attributable to growth (calculated in Step 6). This calculation is done separately for each mode. For transit, this calculation finds that the cost per daily person trip end is $376.

Step 8: Determine Person Trips Generated by Various Types of Development
This step makes modifications to the ITE *Trip Generation* methodology to determine the trip rate by type of development. The ITE trip rates by type of development were converted from vehicle to person trips based on assumptions used to match Portland's geographic conditions. An average vehicle occupancy of 1.13 was used based on a review of region-wide traffic count data. A motorized mode share of 90% was used to represent conditions typical in locations where ITE trip generation surveys are conducted. Combining these factors resulted in a factor of 1.26 used to convert vehicle trips into total person trips (for all modes). Next "pass by" trips are subtracted since these trips are not generated by the new development. The pass-by percentage used is based on ITE data. Finally, this trip rate is divided by mode, based on the modal split calculated in the travel demand model.

Step 9: Produce Rate Schedule
The rate schedule is produced by taking the person trip rates/mode calculated in Step 8, and multiplying them by the cost per trip end for each type of mode calculated in Step 7.

The Transportation System Development Charge (TSDC) program has collected $49.7 million since its implementation in October of 1997. Of the projects completed, approximately $7 million has been spent on transit improvements and there is an additional $5.2 million currently being spent on additional transit projects.

Politics and the Update Process

The original TSDC ordinance was adopted in 1997, with requirements that it be updated every 10 years. The 2007 update process was completed this summer. The city charged a Citizen's Advisory Committee (CAC) to advise them with the process. Additionally, the city commissioned a consultant to conduct the City Rate Study (the methodology discussed on the previous page), and an economic analysis of how the fee effects development and how the fee compares to fees in other Oregon municipalities and in other West Coast cities.

CAC Recommendations

The CAC met 12 times between February 2006 and May 2007. CAC appointees included many stakeholder groups including representatives from neighborhood groups, the homebuilders association, and members of advocacy groups for pedestrians, for bicyclists, and for retailers. Over the course of 12 meetings, they developed the following recommendations for the City Transportation Commissioner.

- Phase out the TOD discount to help increase revenue (in first 10 years, the projected revenue was much less than the amount needed to fund projects on the list)
- Apply principles of geographic and modal equity in determining projects to be funded
- Keep the rate comparable to the existing rate, rather than triple it as the 2007 City Rate Study recommends

Additionally, they recommended the project list that was ultimately adopted (as described in Step 1 of the Methodology).

"Is there a way to offer less onerous charges to business that are in other ways hampered by their smaller scale, to help level the playing field for locally-based ownership relative to national and global big-box development?"

"SDCs should be used near the areas being developed. When a neighborhood undergoes development, SDCs should be used locally so that the people enduring the changes can point to improvements being done locally as a result of development."

-Public Open House Comments During the SDC Update Process

Economic Analysis

The economic analysis conducted included a comparison of Portland's SDC's relative to other Oregon cities. For all land use categories, Portland's rate is about average or lower. Additionally, a literature review on the effect of TSDCs on the amount of development was conducted. Because there are so few municipalities that have a fee similar to the TSDC, the literature review summarizes more generally the effect on impact fees on development. The review concluded that municipalities that collect impact fees continued to grow; that is, the impact fee did not halt development. However, no study has isolated how the amount of development changed based on the adoption of the impact fee, and it is near impossible to isolate this effect in an empirical study.

Changes from 1997 to 2007

The city council updated the ordinance largely based on the recommendations provided by the CAC. They modified to the ordinance to phase out the TOD discount, acknowledged the principles of modal equity in the adopted project list, and kept the rate roughly comparable to the existing rate, instead of increasing it by nearly a third, as the methodology in the City Rate Study suggested as necessary. In particular, there was concern that a higher rate would have a negative effect on small businesses. The Council acknowledged that the adopted fee will not be able to fund all the projects on the list.

Summary

Below are key elements of Portland's Transportation System Development Charge which will be considered in the analysis section of the paper following the next case study.

Parameters: The fee is for all development and throughout the entire city. The original 1997 ordinance allowed a fee reduction for transit oriented developments; however, the 2007 update of the ordinance plans to phase out the reduction over the next four years.

Methodological approach: The fee is based on the cost of capacity increasing transportation projects to be funded in the next ten years. The methodology works backwards from the amount of money needed to fund these projects to the cost of additional trips based on output provided from the region's travel demand model regarding population and employment growth, modal split, and variation in trip generation by land use categories

Fee variation: The rate schedule includes 36 different ITE defined land use categories.

Trip Generation: Trip generation is calculated based on ITE rates combined with local data for car occupancy rates and transit modal split derived from Portland's travel demand model.

Planning Horizon: Projects to be completed over the next ten years to improve transportation capacity are intended to be funded by this mechanism.

Case Study 3: Rockville's Adequate Public Facilities Ordinance

Figure 7: Buses in Rockville

The City of Rockville adopted an Adequate Public Facilities Ordinance (APFO) on November 1st, 2005. The purpose of the ordinance is to ensure that adequate public facilities and services are provided concurrently with new development and redevelopment. The ordinance regulates five different public facilities: transportation, schools, fire and emergency service protection, water supply, and sewer service. Because the transportation element of the APFO includes specific requirements regarding capital transit improvements, it was selected as a case study. However, it is important to note that this ordinance operates quite differently than the other two: the burden is on the developer to construct transit amenity improvements instead of to pay a fee to the municipality to make improvements. The Transportation APFO facilitates transit improvements in two ways: directly, by requiring certain transit improvements on site; and, indirectly, by receiving credits against the number of automobile trips that must be mitigated by making additional transit improvements on site or off site. This section summarizes the requirements of the ordinance and the methodology used to determine transportation improvements the developer must make.

Table 4: Key Facts on Rockville's Transit System

2005	Rockville
Transit System Receiving Improvements	Mongtgomery County RideOn
Types of Transit Service Available Through This System	Bus
Annual Transit Ridership (Unlinked Trips)	25,044,002
Average Weekday Unlinked Trips	82,560
Annual Local Capital Funds Expended	$0
Annual Total Capital Funds Expended	$2,868,339
% of Capital Covered By Local Funds	0%
Annual Local Operating Funds Expended	$0
Annual Operating Funds Expended	$83,971,466
% of Operating Covered By Local Funds	0

City Ordinance

The City of Rockville's Master Plan visions a shift from an auto-centric to a multi-modal transportation system. The transportation component of the APFO addresses this goal by setting levels of service for all modes. The sidebar, "Rockville City Ordinance Highlights" discuss the details of this ordinance.

Rockville City Ordinance Highlights

Process
The City will establish a Level of Service for each facility, which will provide a threshold beyond which any additional impact on the facility will need to be mitigated. A development must be determined adequate based on these levels of service before it is approved.

Exemptions
Certain uses are exempt from APFO requirements: accessory apartments, houses of worship, personal living quarters, wireless communications facility, nursing homes, housing for the elderly and physically handicapped, publicly-owned or operated uses, and minor subdivisions (3 residential lots).

Comprehensive Transportation Review Methodology
In order to fulfill the transportation component of the APFO, a developer must complete the Comprehensive Transportation Review (CTR) which includes five components: an examination of existing conditions, a site access and circulation analysis, an automobile traffic analysis, a non-auto off-site analysis, and proposed mitigation and credits.

Variation by Geography
The City has established Transit-Oriented Areas (TOAs) and non-Transit Oriented Areas (non-TOAs) with different transportation thresholds. TOAs are within .7 miles of accessible walking distance from existing and programmed Metro and MARC stations and programmed fixed-guideway transit stations on dedicated transit rights-of-way. Developments in TOAs have higher thresholds for automobile congestion, and gain larger credits for transit improvements.

Methodology

The Comprehensive Transportation Review (CTR) is the methodology a developer must complete in order to gain approval of transportation adequacy. For each mode, the developer must mitigate transportation impacts which surpass the established threshold level of service. Certain transit improvements are required in the methodology, and other ones are encouraged by giving a credit against the number of automobile trips that must be generated. The "Rockville CTR Methodology" sidebar displays some of the requirements of the Transportation Report that the developer must submit to demonstrate adequacy. However, it only discusses those relevant to transit improvements since others are beyond the scope of the purpose of this case study.

Rockville CTR Methodology

Part 1: Site Access
There are different transit facilities required to be built on site depending on the projected daily transit ridership at the site (0-10 requires a concrete bus stop pad, 11-25 requires a bus stop pad and a bench, more than 25 requires a pad, bench, and shelter). Projected daily transit ridership on site is determined using existing ridership data provided by the Department of Public Works and Transportation (DPW&T) and the Washington Metropolitan Area Transit Authority (WMATA), plus new ridership from development.

Part 2: Automobile Traffic Analysis
In this step, the developer must examine the effect of the proposed development on peak hour trips and determine roads and intersections with a failing level of service. The number of intersections that must be included within the study is based on the number of new peak hour trips projected. Trip generation rates are based on the Montgomery County Department of Park and Planning Local Area Transportation Review guidelines, which have developed local trip generation rates for common land use categories. Other land use categories use ITE trip rates. This step follows a conventional traffic impact assessment methodology: calculate total trip generation for the new development, subtract pass-by trips to determine new trips, calculate existing trips on the facility, calculate new peak hour trips by adding existing trips to new, use these numbers to evaluate adequacy of different facilities. This step also allows a "modal split" reduction of up to 15% of new trips if the Traffic and Transportation Division determines that the development will have a significant number of transit trips.

Part 3: Non-auto Off-Site Analysis
Developments that will generate more than 30 peak hour auto trips must include a non-auto off-site analysis. The off-site analysis must evaluate accessibility from the proposed development to activity centers within a certain radius of the site. The length of the radius and the number of routes that must be evaluated increases with higher numbers of new peak hour trips generation. Applicants must inventory the available transit service along these routes including the location of bus routes, frequency of service, hours of operation, existing daily ridership levels, bus stops, amenities at existing and programmed bus stops, lighting features, and availability of schedules or real time transit information. Additionally, all signalized and major un-signalized intersections within the non-motorized off-site study area must be rated for safety based on a series of indicators included in the methodology.

Part 4: Mitigation Plan
The developer must submit a plan to mitigate all impacts found in parts 2 and 3. Mitigation can take the form of roadway improvements, non-auto improvements, or the creation of a transportation demand management program. A developer receives credits in the form of trip reductions for many transit improvements including a concrete pad at bus stop, bus bench, bus shelters, bus pull-offs (where appropriate), multimodal transit centers (waiting area and transit resource information person), transit information kiosks, transit information boards, and for subsidization of a stop, portion of a bus route, or extension of service (for all possible reductions and amount of credit see Table 5).

Outcomes

Rockville's APFO is relatively new (adopted in 2005) and for this reason the outcomes of it are harder to assess. It has potential to generate transit improvements, and so far has resulted in the installation of many transit amenities such as waiting pads and shelters . However, the level of improvements seen in San Francisco and Portland have not yet occurred.

Table 5: Maximum Trip Credit Rate for Non-Auto Facilities

New Peak Hour Site Trips Generated	30-100		101-200		More than 200	
Facility[1]	TOA *Credit per Facility*	Non-TOA *Credit per Facility*	TOA *Credit per Facility*	Non-TOA *Credit per Facility*	TOA *Credit per Facility*	Non-TOA *Credit per Facility*
Shared bicycle/ped. path at least 8' wide, 130' long	4	3	5	4	6	5
Sidewalk at least 4' wide, 130' long[2]	3	2	4	3	5	4
Bicycle lane at least 4' wide, 130' long [2,3,4]	3	2	4	3	5	4
Indoor shower for bike commuters	3	2	4	3	5	4
Curb extension at intersection[5]	1	1	1	1	1	1
Bike Locker (holds 2 bikes)	2	1	3	2	3	2
Bike Rack (>5 bike slots)	2	1	3	2	3	2
Concrete Pad at Bus Stop[6]	2	1	2	1	2	1
Bus Bench[6]	2	1	3	2	4	3
Bus Shelters[6]	5	3	6	4	7	5
Bus pull-off[7]	2	1	3	2	3	2
Multimodal Transit Center[9]						
Enclosed (Indoor)	N/A	N/A	25	20	30	20
Covered (Outdoor)	N/A	N/A	20	15	25	15
Transit Information Kiosk[10]	10	10	15	10	20	10
Transit Information Board[11]						
Real-Time	7	7	12	12	17	17
Static	1	1	2	2	2	2

[1] "Per facility" refers to the number of credits granted per installation of one facility of the indicated type. Credits are applied above and beyond minimum requirements for adequate public facilities or what is otherwise required on-site.
[2] When a sidewalk or bike facilities installed is not an exact multiple of 130' long, remaining fractions will be pro-rated.
[3] Facilities must link to existing or programmed portions of the bicycle network in the Bicycle Master Plan. Total width, length, and location will be determined by the Traffic & Transportation Division at time of development approval, based on development type and size.
[4] Bicycle lanes that require street lane widening will be credited the same amount as shared bicycle/pedestrian paths.
[5] This facility must decrease the distance pedestrians must travel to cross a street.
[6] Other than those required in the non-auto study area. Concrete pads must be installed before a bench or shelter is installed. Locations based on ridership numbers and by determination of the Traffic & Transportation Division.
[7] Bus pull-offs are not desirable along roads classified as arterial due to speed and volume of traffic. Installation of pull-offs will be determined by the Traffic & Transportation Division and in coordination with Montgomery County Department of Public Works & Transportation.
[8] Subsidization of a bus stop, portion of a bus route, or extension of service where service is scheduled to be eliminated by Montgomery County Department of Public Works & Transportation due to low ridership or other factors.
[9] A facility that is a dedicated space for transit information with a public waiting area. Commercial lobbies do not qualify. Must include no less than 1 seat for a transit resource person and no less than 5 seats in the public waiting area. Must be within .7 mile (3696 feet) of at least two bus stops and/or Metro stations.
[10] A facility with transit information and a resource person but no public waiting area.
[11] A facility that includes maps and schedules (when possible) of transit services.

Summary

Below are key elements of Rockville's transportation component of its Adequate Public Facilities Ordinance. These will be compared to Portland and San Francisco in the next section of the paper.

Parameters: The ordinance is applied to all new developments. Developments in designated Transit Oriented Areas have higher levels of acceptable automobile congestion before new trips must be mitigated, and receive greater credits for non-automobile improvements.

Methodological approach: There are certain transit improvements that the developer is required to construct on site. Other than that, the developer determines which (if any) transit improvements they would like to make in order to reduce the number of automobile trips they must mitigate. See Table 5 (page 27)

Variation: There is no variation because each developer conducts a traffic impact assessment to determine the effect on transportation facilities. This step is where variation will occur based on differences in projected trip generation from the new development.

Trip Generation: Trip generation is calculated based on developer initiated traffic studies which utilize Montgomery County trip rates for major categories and ITE trip rates for other land use categories.

Planning Horizon: The automobile analysis requires mitigation at the year of build-out, or in 5-year increments through build-out for phased developments.

Synthesis of Case Study Approaches to Funding Transit Improvements

In this section, the similarities and differences between the three case studies are explored. Similarities indicate potentially successful elements of the tool, which may also be successful in designing Chapel Hill's transit impact fee. Where the design of the tool differs between the municipalities, reasons for those differences are explored to determine which municipality's approach may be most useful in Chapel Hill. In order to successfully explore these similarities and differences, the unique demographic and transportation context of each municipality is first presented.

Context

San Francisco and Portland both have relatively large urban populations, about ¾ of a million and ½ million, respectively. Rockville has a population of about 60,000, which is much closer to Chapel Hill's 50,000, or Chapel Hill/Carrboro's combined 65,000. Additionally, with Rockville as part of the greater Washington DC area, and Chapel Hill as part of the greater Triangle area, both are smaller cities that are part of major metropolitan areas.

There are also differences in the transportation system in each municipality. San Francisco and Portland both have well developed transit systems including light rail, streetcars, and buses. These systems are run by municipality owned-transit agencies: MUNI in San Francisco and TriMet in Portland. Rockville is served by DC Metro's light rail, as well as the Montgomery County-run bus service, RideOn. However, Rockville itself does not directly operate any transit service. Chapel Hill's transit system consists only of buses, and is run by Chapel Hill (although it is also funded by the Town of Carrboro and the University of North Carolina).

Parameters:

Each municipality has different parameters for which developments must have the fee assessed (or develop mitigation plans). In San Francisco, the fee is only applied to non-residential development, whereas Rockville and Portland apply it to all new development. Portland and Rockville give exemptions in the amount of fee (or the amount of trips that must be mitigated) for transit-oriented areas. However, Portland's TOD credit is being phased out, similar to San Francisco's 2004 phase out of limiting the fee to only downtown development.

The fact that San Francisco and Portland have both removed fee limitations that were originally in place suggests such limits are detrimental. While these types of limits are put into place due to concern about the effect the fee may have on the amount of development, the result has been a limit in the amount of money collected. With the biggest challenge of these programs to collect

enough money to fund improvements, fee limits have been the biggest barrier to achieving this end. Rockville's ordinance has been in effect for only 2 years, compared to 25 years in San Francisco, and 10 in Portland, thus there likely is not enough direct experience with the ordinance to determine how successful their TOA credits have been.

At the same time, San Francisco has kept in place its limit of the fee to non-residential development. This is likely because San Francisco is such a major employment center. The fee is the only way to generate additional revenue to cover the costs from riders who live outside the city, while riders within the city may contribute to funding in other ways.

Methodological Approach

Each municipality takes a quite different methodological approach. Given that San Francisco and Portland both collect fees to finance transit infrastructure, and Rockville requires developer construction of infrastructure, there is much more in common between the former two. Yet their approaches to calculating the fee are still quite different.

San Francisco uses a base service standard approach by calculating the average annual transit cost of each city trip, and then determining the fee based on how many additional trips a new development will generate. In contrast, Portland's program starts with the big picture and works backwards. It starts with the amount of employment and population growth expected, and the amount of infrastructure planned to accommodate that growth. While the steps are an attempt to isolate only the costs of capacity-increasing projects, the assumption of these costs is based on population and employment projections and output of Portland's travel demand model. This contrasts with San Francisco's model, which focuses on the incremental cost of each additional trip a development will create, and the sum total of these incremental costs based on the total trips it generates. Portland's approach is more reliant on big picture assumptions than San Francisco.

Additionally San Francisco's approach uses an estimation of total trips in the city and total trips a new development is anticipated to generate without distinguishing transit trips from automobile trips in its approach. However, the inherent assumption in using the current costs of providing transit relative to the total number of trips in the city is that the relationship will remain the same as new development is added. That is, the modal split will remain the same, or the cost for transit relative to total trips will remain the same. In contrast, Portland isolates modal split in its methodology, both in determining the costs of the infrastructure attributable to each mode, and in projecting the modal split of new trips generated.

There is one major similarity between Portland and San Francisco. Both greatly reduced the fee rate from what the methodology determined to be the amount necessary to fund all necessary transit improvements to what seemed politically feasible given concerns about unnecessarily high barriers to development.

Rockville's approach shifts some of the burden from the municipality making calculations at the time of implementation of the ordinance to the developer determining what mitigations must be implemented based on traffic impact studies conducted at the time a development is proposed. Rockville has 2 main methodological elements relevant to transit improvements: 1) the type of on site transit improvements required based on threshold levels of new transit riders projected; 2) the number of credits given for automobile trips generated based on off-site transit improvements.

Variation

San Francisco and Portland approach the variation in fee rate based on proposed land use in varying degrees of complexity. San Francisco has 6 "economic activity" categories whose trip generation rates were studied before calculating the fee. In the end, those 6 categories combine into only 2 different possible fee rates $8/square foot or $10/square foot. In contrast, Portland uses 36 different categories based on the ITE-defined categories of land use, all with different rates. Because Rockville requires the developer to calculate trip generation themselves, land use is not used as a proxy for trip generation as it is in Portland and San Francisco. Yet, in following a pretty standard traffic impact assessment procedure to calculate trip generation, Rockville's APFO varies in a similar way to Portland's.

Trip Generation

Trip generation projections are key to the calculation of the fee. San Francisco and Portland use the prototypical ITE Trip Generation methodology and mode share out of their regional model. However, San Francisco collapses the many land use trip rates into economic activity category trip rates. And, Portland makes some modifications to the process based on local data (modal split, and car occupancy rates). Transit trip generation is calculated by taking the person trip rate and dividing it by the projected transit modal share in 2017. Portland assumes an increase in transit share over the next ten years. This modal split assumption is reliant on a very large and complex modeling process. Rockville charges the developer with calculating trip generation using local trip generation rates developed by Montgomery County for many common land uses.

Capital vs. Operating Expense

San Francisco's fee can be used to pay for either capital or operating expenses. Portland's fee can be used for only capital improvements, and Rockville's mitigation can include either capital and/or operating expenses. Portland's limitation to capital expenses is dictated by the Oregon state statute: this is the same as the North Carolina state statute governing any potential impact fee for Chapel Hill.

Planning Horizon

A final way the municipalities vary is in their program's planning horizon. San Francisco's fee is intended to cover a 45 year useful building life. Portland's fee is updated every 10 years based on projected employment and population growth. Rockville's ordinance does not have a time component. The automobile analysis requires mitigation at the year of build-out, or in 5 year increments through build-out for phased developments.

Table 6 on the following page summarizes the similarities and differences between the three case studies approaches to transit impact fees.

Table 6: Comparison Table of Case Studies

San Francisco	Portland	Rockville
No	Yes	No
Originally just office, as of 2004, all non-residential	All types	All types
Money in the form of a fee	Money in the form of a fee	Construction of on-site transit amenities, and mitigation which can include additional construction of transit improvements or money for operating assistance
A base service standard is determined based on net annual cost/trip, multiplied by 45 year building life adjusting for inflation, and fee schedule is determined based on trip generation rate for different types of land use	Based on amount of money city needs to collect over the next 10 years to build more capacity in the city's transportation system to accommodate growth-related trips, and the projected amount of growth in households and employment over next year. Rates are set for different land uses based on number of trips the proposed land use will generate according to nationally compiled statistics	Based on number of new transit trips generated, plus developer creates mitigation plan that may include transit improvements that give a credit against auto-trip mitigation e.g. bus pull-off, real-time transportation info, subsidization of a route, etc.
ITE	ITE with some local modifications	ITE
Both	Capital	Both
Transit Only	All Modes	All Modes
Originally only assessed downtown, as of 2004, extend to all of San Francisco	TOD discount, but being phased out	TOD discount
45-year building life	10 years	Through development build-out or in 5-year increments
Only assessed for non-residential development	Fee goes towards all transportation modes, not just transit	No required fee, but required improvements to mitigate new trips
Factors to determine fee have to do with building life, and cost per transit trip	Factors to determine fee have to do with growth and number of transportation improvements Portland expects to build	Automobile traffic impacts can be mitigated with transit improvements in certain parts of the city

PART 3: LESSONS FOR CHAPEL HILL

This section is divided into 3 parts. It begins with an overview of two Town of Chapel Hill studies currently underway. The outcomes of these studies will have direct implications for a transit impact fee in Chapel Hill. Then, the recommended method of calculating the fee, using data that will be available upon completion of the studies is presented as well as legal considerations.

Town Studies

There are two studies that the Town of Chapel Hill is conducting which have direct implications for the potential for a transit impact fee: 1) the preparation of a long range transit plan and 2) a study of transit trip generation. This section will discuss each of these projects in detail; the subsequent section will recommend how outcomes of these projects can be synthesized to implement a transit impact fee in Chapel Hill.

Long Range Transit Plan

The decision to undergo a long range transit planning process was based on the general desire to plan for the future of the transit system and specifically how transit can expand and improve to accommodate the future UNC satellite campus, Carolina North. The objectives of this project are the following:

1. Evaluate a range of transit alternatives and make recommendations for transportation investments for major transportation corridors serving the Chapel Hill-Carrboro area.
2. Evaluate community and air quality impacts of alternative transit strategies.
3. Develop a financial plan intended to implement the selected transit improvements.
4. Assess the need to revise anticipated land use patterns to support the implementation of the recommended transit strategies.
5. Prepare a process for monitoring implementation and impacts of the adopted Plan.

Objectives 1 and 3 are particularly relevant for a potential transit impact fee. Consultants have worked with the Towns of Chapel Hill and Carrboro and UNC to develop different scenarios of transit investments. The top two scenarios were plugged in to the regional travel demand model (the Triangle Regional Model) to determine their affects both on transit ridership and the levels of traffic congestion.

At this point, the model is still being refined and the final corridors are still being selected. Ultimately ridership on the proposed system and the cost/rider will be determined. This final cost/rider figure will be vital data for the calculation of the transit impact fee.

Figure 8: Chapel Hill Transit Bus

Transit Trip Generation Study

In addition to the long range transit plan, another project for which the Town is currently soliciting Requests for Qualifications is a study of transit trip generation rates. This project will begin later this spring, and this research paper may inform the process. One element of the project will be to conduct a study of transit trip generation rates among different types of land use. By observing the number of transit riders along the major transit corridors from varying types of development, a local transit trip generation rate can be estimated. These rates are critical in order to assess a fee proportional to the impact.

How to calculate the payment

The section will describe the recommended methodology for calculating the developer transit payment, given the lessons of the case study municipalities, and Chapel Hill data availability from the two consultant studies discussed in the previous sections. This process can be summarized in the following 5 steps:

Step 1: Adopt a long range transit plan

This step is the Portland approach, which starts with a plan of the improvements they want to make and works backwards to the cost to get them. Because the Chapel Hill ordinance limits the payments to fund capital improvements only and not operating, the San Francisco approach of starting with the current cost of one trip is not feasible because the current local capital costs for Chapel Hill Transit are extremely low.

Step 2: Determine the cost/trip for the planned transit improvements, by corridor

Both the San Francisco and Portland approaches determine a cost/trip. Because the study underway is calculating the cost/trip by corridor, this information can be used to vary the cost based on the location of the development, so those on more expensive travel corridors bear more of the cost. This could avoid some of the concerns raised by the Citizen Advisory Committee in Portland about "Geographic Equity".

Step 3: Develop local transit trip generation rates per dwelling units or per square foot for different land use categories in Chapel Hill

This is something that none of the municipalities did, instead relying on ITE trip generation rates, and modal splits out of the output. Direct observation of transit ridership in Chapel Hill will provide more accurate data to use in calculating transit payments

Step 4: Incorporate the cost/trip and trip generation rates into an ordinance, bearing in mind the approved cost will likely be lower for political reasons

Given concerns over barriers to development, and the overall high cost of providing transit service, it is likely that during a requisite process of public input and participation the final agreed upon rates will end up lower. This was the case in both Portland and San Francisco.

Step 5: For a proposed new development, multiply the number of new trips to be generated, by the cost/trip in that corridor.

This step will be embedded into the existing Traffic Impact Assessment procedure, similar to Rockville. In doing so, the developer who elects to pay in to the transit system will be substituting all or part of what would have been paid in road construction. The exact ratio of amount of transit mitigation money spent in exchange for less automobile mitigation will need to be worked out in consultation with policymakers, lawyers, and the public. This payments-in-lieu system would be quite similar to Rockville, where the number trips that must be mitigated with roadway improvements can be reduced by implementing transit improvement measures instead.

Legal Considerations

It is also important to consult a legal expert intimately familiar with North Carolina laws and the Chapel Hill Town Charter. There may be the need to more directly prove the link between the impact of the development on the transit system by projecting the proportion of the new system that can be attributed to growth as is done in Portland. However, as the legislation stands, as the payment of the fee is an option the developer can elect, the need to prove direct proportionality may not be an issue the way other impact fees are.

PART 4: GENERAL PLANNING LESSONS AND CONCLUSION

This concluding section of the paper provides a general set of lessons learned, that can be useful to other municipalities considering implementation of a transit impact fee.

Transit Impact Fee Methodology Guidance

In determining which methodological approach is most fitting for a municipality, there are several characteristics of the municipality that should be considered.

State Legal System

Whether the legal system is home rule or Dillon's rule will have direct implications for how a transit impact fee can be implemented. In Dillon's rule states, specific state legislation authorizing the use of these fees must be enacted before a municipality can implement the fee. Additionally, a state law may place limits on when the fee is charged or what the money can be spent on.

Sophistication of the Transit System

The sophistication of the transit system is also an important consideration in devising a methodology to calculate the fee. In a place like San Francisco that already had a well developed transit system when the ordinance was adopted, the average cost/trip was an appropriate way of determining the cost new demand will place on the system. However, in rapidly growing municipalities with underdeveloped transit systems, the existing cost/trip is not appropriate to capture the costs of upgrading a system to the level required to meet city growth. In this case, calculating the costs of a set number of improvements which are determined necessary to accommodate growth is the better approach to use.

Trip Generation

Although significant criticisms have been raised with the ITE method of calculating trip generation, this is still standard practice. Whether this method is used will be largely based on the resources a municipality has available. Chapel Hill is charting new territory by developing local transit trip generation rates, and the outcome of this experiment should be analyzed at a later date. If a municipality has the resources to undergo a transit trip generation study, this may be the best option. The next best option is to use locally observed trip generation rates as Rockville does (for all trips not just transit), and

the next best is to get future mode split out of a regional model by plugging in ITE trip generation rate as Portland and San Francisco do.

Capital vs. Operating Expense

Another consideration is whether the money can be used for capital expenses, operating, or both. Generally, a municipality would want to be allowed to use it for both, and would only limit it based on state laws.

Transit Only or Multi-Modal Improvements

A transportation impact fee can be used for just transit improvements, or more generally for improvements of all modes. It is not clear whether one approach is better, and municipality policymakers should consider their local context and needs in determining the best approach.

Impact Fee or Payment in Lieu

There is a tradeoff between an impact fee system and a payment in lieu system. In an impact fee system, a certain amount of money is always going to transit, whereas in a payment in lieu system, the developer can elect to pay in instead of funding road improvements. In the impact fee case, there may be a separate requirement to fund or build additional road improvements which could induce additional demand. The payment in lieu system more directly makes the connection between the relationship between roads and transit and could prevent unnecessary road capacity increases; yet, it also does not guarantee that the developer will elect to pay for transit over roads.

Other Considerations

In addition to the proposed system described above, there are several more general lessons Chapel Hill and other municipalities considering transit impact fees should bear in mind.

- Transit impact fees are successful at generating money and improvements, but there are limits. In both Portland and San Francisco, policymakers were unwilling to adopt the level of fee necessary to cover the entire cost of the new development on the transit system.

- Because of these limitations, transit impact fees should be complemented with other tools such as assessment districts, property taxes, tax increment financing, etc.

- Public participation is an important part of the process. In particular, Portland has a very extensive public participation process which strengthened the program and the outcomes.

- Transit impact fees will work best if they are paired with transit-friendly land uses that are at relatively high densities with mixed uses and pedestrian and bike friendly design elements.

APPENDIX

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