



Value Capture for Transportation Finance:

Report to the Minnesota Legislature

Final Report

CTS 09-185

June 2009

Published by
Center for Transportation Studies
University of Minnesota
200 Transportation and Safety Building
511 Washington Ave. SE
Minneapolis, MN 55455

Technical Report Documentation Page

1. Report No. CTS 09-18S	2.	3. Recipients Accession No.	
4. Title and Subtitle Value Capture for Transportation Finance: Report to the Minnesota Legislature		5. Report Date June 2009	
		6.	
7. Author(s) Michael Iacono, David Levinson, Zhirong (Jerry) Zhao, and Adeel Lari		8. Performing Organization Report No.	
9. Performing Organization Name and Address Center for Transportation Studies University of Minnesota 200 Transportation & Safety Building 511 Washington Avenue Minneapolis, Minnesota 55455		10. Project/Task/Work Unit No. CTS Project # 2009016, 2009017, 2009018	
		11. Contract (C) or Grant (G) No.	
12. Sponsoring Organization Name and Address Minnesota Legislature State Capitol 75 Rev. Dr. ML King Jr. Blvd. St. Paul, MN 55155		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes http://www.cts.umn.edu/Research/Featured/ValueCapture/ http://www.cts.umn.edu/Publications/ResearchReports/			
16. Abstract (Limit: 250 words) As vehicles become more fuel-efficient and overall levels of travel stagnate in response to increases in fuel prices, conventional sources of revenue for transportation finance such as taxes on motor fuels have been put under increasing pressure. One potential alternative as a source of revenue is a set of policies collectively referred to as <i>value capture</i> policies. In contrast to fuel taxes and other instruments that impose charges on users of transportation networks, value capture policies seek to generate revenue by extracting a portion of the gains in the value of land that result from improvements to transportation networks. In this report we identify a set of eight policies that contain elements of the value capture approach. These policies include land value taxes, tax increment financing, special assessments, transportation utility fees, development impact fees, negotiated exactions, joint development, and air rights. We evaluate each of the policies according to four criteria: 1) <i>efficiency</i> , which relates to how well the policies allocate scarce resources, 2) <i>equity</i> , which describes the fairness of resource allocation among different strata of society, 3) <i>sustainability</i> , which refers to the ability of the policy to serve as an adequate, reliable source of transportation revenue, and 4) <i>feasibility</i> , which refers to the degree of political and administrative difficulty associated with each policy. Since these policies are targeted toward use at the state and local level in Minnesota, we conclude by examining some legal and administrative issues related to the implementation of each policy with special reference to Minnesota.			
17. Document Analysis/Descriptors Transportation finance, land value, taxation, Minnesota		18. Availability Statement No restrictions. Document available from: National Technical Information Services, Springfield, Virginia 22161	
19. Security Class (this report) Unclassified	20. Security Class (this page) Unclassified	21. No. of Pages 56	22. Price

Acknowledgments

This document summarizes findings from the Value Capture for Transportation Finance study conducted for the Minnesota Legislature. The study Web site (www.cts.umn.edu/Research/ValueCapture) contains a policy summary of the research (CTS 09-18PS) as well as the technical research report (CTS 09-18).

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This report represents the results of research conducted by the authors and does not necessarily represent the views or policies of the University of Minnesota or the Center for Transportation Studies.

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Executive Summary

Transportation systems play a pivotal role in enhancing the productivity and quality of life in the United States. Funding for streets, highways, and transit is provided by the joint efforts of federal, state, and local governments; taxation and user fees are the primary revenue sources, along with supplemental methods including loans, bonds, public-private partnerships, and concessions (Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, 2006). The Report of the National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*, suggests that the country needs to invest at least \$225 billion annually from all sources for the next 50 years to upgrade the existing system to a state of good repair and create a more advanced surface transportation system. The report also notes that present spending is only about 40 percent of this amount (National Surface Transportation Policy and Revenue Study Commission, 2007). To ensure adequate and sustainable transportation investment for current and future needs, policymakers need to reassess the current mechanisms of transportation finance in the United States and explore alternative revenue sources.

One possible alternative is known as “value capture.” Large public investments in transportation infrastructure can substantially increase the value of adjacent land. Capturing the value of this benefit through various tools is gaining interest as a finance mechanism for infrastructure investments. But many questions remain: Does value capture promote or hinder economic development? How high should the tax rate be? How stable is the revenue? This study reviews the relationship between transportation and land values, including the measurement of benefits from a transportation improvement, as well as the legal and economic frameworks for capturing the value gains. It explores the major financing techniques associated with value capture—such as joint development of infrastructure and adjacent private parcels, rezoning and reselling, development impact fees, special assessments, and tax increment financing—and some examples of their implementation. It also evaluates several of the proposed policies and their suitability for implementation locally, based on the criteria of economic efficiency, social equity, adequacy as a revenue source, and political and administrative feasibility.

Transportation and Value Creation

Accessibility to desired destinations by customers and employees tends to play a major role in location decisions and, therefore, drives up the value of land in highly accessible locations. Convenient transportation facilities, depending on use, can come in the form of highway interchanges, public transportation lines or stations, and freight rail facilities.

Increases in the capacity of each transportation mode in response to rising demand lead to increases in land value, whereas allowing congestion to worsen leads to declining values.

From Value Creation to Value Capture

A general principle, sometimes referred to as the “benefit principle,” holds that systems are more efficient if their costs and benefits are better related to each other. Given this principle, the long-used gas tax would seem like a reasonable funding source, given the assumption that transportation benefits are proportional to vehicle operations. However, in addition to creating benefits for travelers, transportation improvements also create value for owners and developers of nearby property in the form of higher land values and/or property prices, or enhanced development opportunities. In order to better conform to the benefit principle, a portion of these gains could be recovered to help fund transportation improvements. This is “value capture.” No previous research has systematically compiled and analyzed the full gamut of policy tools that may be used for value capture.

Value Capture in a General Framework of Transportation Finance

Transportation improvements create benefits for three groups of beneficiaries:

- The general public, which benefits from broad economic and social returns. Such benefits create a rationale for use of general fund financing. Because the growth of the general tax base occurs through the life cycle of a transportation facility, the corresponding general fund revenues are suitable for both initial capital costs and ongoing operations and maintenance (O&M) costs.
- Transportation users, who benefit from reduced travel times and enhanced safety. Such benefits create a rationale for the use of gas taxes, mileage charges, vehicle sales and property taxes, wheelage charges, tolls, and transit fares. Typically, users receive the bulk of the benefits through the use of facilities, indicating that these types of charges may be assigned to users to cover most (O&M) costs.
- Property owners and developers, who benefit from increased property values generated by transportation improvements. Such benefits create a rationale for the use of value capture policies such as land value taxes (LVT), tax increment financing (TIF), special assessments (SA), transportation utility fees (TUF), development impact fees (DIF), negotiated exactions, joint development (JD), and air rights. For these beneficiaries, value gains are mostly realized upon the completion of transportation projects; therefore, these strategies may be used more often for capital costs.

While multiple value capture policies can be applied simultaneously, the total level of value capture cannot exceed the total benefits derived from a transportation improvement. Otherwise, the financial instruments would negate the economic rationale for development.

Value Capture Policy Evaluation and Implementation Considerations

The report discusses the aforementioned value capture techniques, examining each in relation to economic efficiency, equity, sustainability, feasibility, and, where required, implementation considerations.

Land Value Tax (LVT) Rather than being assigned to a specific project, land value taxes more generally capture the value created by the provision of public goods, including the accessibility afforded by transportation networks. A tax on land would be preferred to a tax on buildings, as the former would result in less economic distortion due to the fixed supply of land. A pure tax on land is possible, though rarely used. While land value taxes are desirable from the standpoint of economic efficiency and sustainability, they would most likely be slightly regressive in terms of ability-to-pay. Further, land value taxes may prove politically challenging due to high visibility and potential unpopularity.

Tax Increment Financing (TIF) Tax increment financing uses taxes levied on the increment in property value within a development to finance development-related costs. Tax increment financing is most commonly used by local governments to promote housing, economic development, and redevelopment in established neighborhoods. Tax increment financing has been used, however, in some instances to finance transportation projects. The paucity of evidence on the effectiveness of TIF districts for transportation purposes makes it difficult to evaluate the efficiency of this tool. Evidence from Chicago suggests that, in certain cases, the increment in property value that can be captured from a transportation improvement may be large, though this case involved some unique circumstances (e.g., a heavy rail system in a very dense, central city area). While TIF districts may promote benefit equity, they may raise some unique issues related to geographic equity, as some overlapping jurisdictions (e.g., school districts) often do not share in the benefit from a TIF district. TIF districts may be limited to specific projects and one-time capital costs. TIF districts may be politically feasible, as they are perceived to promote projects that “pay their own way.” To adopt tax increment financing for transportation purposes in Minnesota, the authorizing statute (469.175) would need to be amended to add the Minnesota Department of Transportation (Mn/DOT) and Metro Transit (or its parent agency, the Metropolitan Council) to the list of authorized users.

Special Assessments (SA) Special assessments impose charges on property owners near a new or improved transportation facility based on geographic proximity or some other measure of special benefit. Various methods have been used to determine which properties receive special benefit and how to allocate charges among these beneficiaries. Some of these methods include measurement of distance from an improved facility, property frontage adjacent to an improved facility, and property acreage. Special assessments generally promote economic efficiency and equity along several dimensions. However, given the location-specific nature of the mechanism, the amount of revenue generated in each instance is relatively small and limited in use to initial capital costs. Political feasibility may

be an issue with special assessments, as they are highly visible to affected property owners. In Minnesota, special assessment districts are currently limited to local units of government and are not authorized for application to interstate highways. Allowing the establishment of special assessment districts for transportation purposes would require amendment of state statutes to allow state and regional agencies as authorized users, and to allow special assessments to be applied to interstate highways and public transportation facilities.

Transportation Utility Fees (TUF) Transportation utility fees derive from the notion that transportation networks can be treated like a utility, similar to other local services such as water and wastewater treatment, which are financed primarily from user charges. Transportation utility fees are assessed on characteristics thought to be more closely related to transportation demand than property taxes, which currently account for a large share of local transportation revenues. Utility fees have the potential to improve efficiency by shifting the cost burden from residential to commercial and industrial properties, which tend to consume more transportation services than their relative tax contributions would imply. In principle, transportation utility fees could help promote equity, but only if a link can be established between the various characteristics that form the basis of utility fees and the value of the benefits received from consumption of transportation services, a link that in the past has not been strongly established. The revenue from transportation utility fees would be relatively stable, as the demand for travel is not terribly sensitive to cyclical economic trends. Transportation utility fees are politically feasible, as shifting the cost burden to non-residential properties would most likely be popular among existing residents of a jurisdiction. Enforcement of utility fees may prove difficult, as it would be hard to deny transportation services to a delinquent property owner.

Development Impact Fees (DIF) Development impact fees are one-time charges collected by local governments from developers for the purpose of financing new infrastructure and services associated with new development. They are similar to negotiated exactions in that they are charged primarily to new development to help recover growth-related, public-service costs, but differ in that impact fees can be levied for off-site services, such as local roads, schools, or parks. The efficiency of impact fees can be established to the extent that they pass along the marginal costs of land development, including the provision of transportation infrastructure, to the primary beneficiaries. Impact fees promote benefit equity, but may have other undesirable equity effects if developers cannot recover the costs associated with impact fees and are forced to abandon low- and moderate-income segments of the housing market. Impact fees are not a primary source of revenue for transportation in most jurisdictions, but can help finance the share of transportation budgets attributable to new development. They are also aided by the fact that they are politically and administratively feasible. For development impact fees to be adopted more widely in Minnesota, specific, state-level legislation would need to be passed authorizing their use. The fees authorized by this legislation would need to ensure a nexus between the charges and legitimate state interest, and also ensure a degree of connection between the charges imposed on a specific development and the impact of that development.

Negotiated Exactions Negotiated exactions are functionally similar to development impact fees, with the exceptions that they are not determined through a formal, formulaic process and are typically not applied to off-site infrastructure provision. Exactions can take the form of in-kind contributions to local road networks, parks, or other public goods as a condition of development approval, or can be requested in the form of in-lieu fees. Exactions generally promote economic efficiency and social equity. In most cases, negotiated exactions should be seen as a supplemental source of revenue, rather than a large-scale replacement for more traditional sources of revenue. Negotiated exactions are generally politically feasible, as they are seen as a way to make new residents “pay their own way.”

Joint Development (JD) Joint development, as typically applied in discussions of value capture, refers to the spatially coincidental development of a transportation facility (e.g., a public transit station) and adjacent private real estate development, where a private sector partner either provides the facility or makes a financial contribution to offset its costs. The term “joint development” could also be used to refer to jointness in timing of development or ownership of transportation infrastructure, though for the purposes of this report, the above definition is used to refer to various forms of cost-sharing or revenue-sharing arrangements. JD arrangements generally promote efficiency, as the voluntary nature of the transaction ensures that the expected benefits of the private sector partner exceed the cost (or share of costs) of the transportation improvement that he or she anticipates. This characteristic also promotes benefit equity among participants. Since the nature of JD arrangements is often location-specific, the tax base is rather narrow and the amount of revenue generated is relatively small. Joint developments are often politically feasible, due to their narrow impact, but entail a higher degree of administrative complexity.

Air Rights Air rights are a form of value capture that involves the establishment of development rights above (or in some cases below) a transportation facility that generates an increment in land value. Air rights agreements promote efficiency to the extent that the increment in land value generated by the facility exceeds the cost of its development. The sale of air rights may also promote benefit equity, since the costs of a transportation improvement can be allocated more proportionally among non-user beneficiaries. Similar to joint development, air rights agreements tend to provide a narrow tax base and a relatively small amount of revenue, though they can provide some or all of the initial capital costs of a specific project. The narrow scope of impact of air rights projects indicates that they should be politically feasible, though they share some of the administrative complexities associated with joint development arrangements.

Chapter 1

The Need for Alternative Transportation Revenue Sources

1.1 Motivation

Transportation systems play a pivotal role in enhancing the productivity and quality of life in the United States. In the United States, funding for streets, highways, and transit is provided by the joint efforts of federal, state, and local governments, with taxation and user fees as primary revenue sources, along with supplemental methods including loans, bonds, public-private partnerships, and concessions (Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, 2006). Over the years, there has been growing concern about the adequacy and effectiveness of the present system of transportation finance. However, the resources to construct, operate, and maintain these systems have not grown proportionally to need, which has caused the gap between costs and available funds to grow alarmingly. The Report of the National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*, suggests that we need to spend at least \$225 billion annually from all sources for the next 50 years to upgrade our existing system to a state of good repair and create a more advanced surface transportation system, and that the present spending is only about 40 percent of this amount. It also argues that the costs of inaction to improve the funding system will include deterioration of the nation's transportation system assets, increased automobile casualties, congestion, further underinvestment, and damage to the country's economy (National Surface Transportation Policy and Revenue Study Commission, 2007). To ensure adequate and sustainable transportation investment for current and future needs, policymakers need to reassess the current mechanism of transportation finance in the United States and explore alternative transportation revenue sources.

1.2 Organization of the Report

The following chapters of this report present the topic of value capture in three parts. Chapter 2 provides a broad introduction to the concept of value capture as a source of revenue for transportation. It begins with a brief discussion of the relationship between transporta-

tion and land or property value, then transitions to a discussion of how the concepts of value creation and value capture might be meaningfully linked in the context of policy and transportation finance. We then introduce value capture within a broader framework of transportation finance that integrates the concepts of benefit incidence, benefit measurement, and cost to describe different funding mechanisms. At the end of Chapter 2, we introduce the set of eight policies that we characterize as value capture policies and classify them along several dimensions. Chapter 3 provides an overview and evaluation of each of the eight policies. Each policy is evaluated in terms of the criteria of economic efficiency, social equity, sustainability (in terms of the ability to provide adequate, stable, predictable and growing revenues), and political and administrative feasibility. Chapter 4 concludes by identifying potential legal or administrative barriers that must be overcome to adopt and implement each of the eight value capture policies.

Chapter 2

Value Capture in Context

2.1 Transportation and Value Creation

Before turning to a discussion of value capture policies, it is important to first gain an intuitive understanding of the relationships between transportation networks and patterns of land value and use. Observed patterns of land use in cities largely reflect the interaction of transportation networks and land markets ¹. The mediating factor that represents this interaction is the concept of *accessibility*. Accessibility can be loosely defined as the ease of reaching desired destinations. What exactly is meant by “desired destinations” can vary, but it generally encompasses a set of activities that households engage in on a fairly frequent basis. The most important of these activities is employment, which has been consistently identified as one of the most important (and hence, most studied) influences on the location decisions of households. Other types of activities that households might value access to include shopping destinations, entertainment venues, or educational institutions (especially higher education institutions, which are more limited in supply). Locations with higher accessibility tend to command higher prices for land, while locations with less accessibility tend to be cheaper. In cases where land is very expensive, developers substitute additional capital for scarce land, resulting in higher development densities.

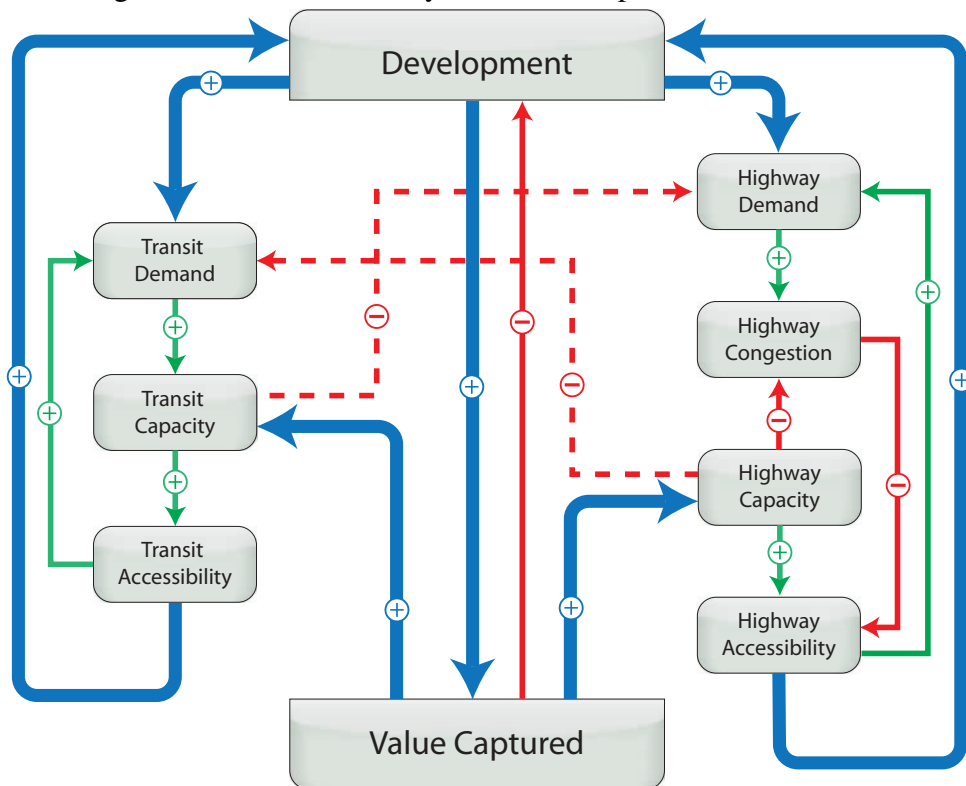
The notion of accessibility also extends to the location decisions of firms. Firms, depending upon the type of industry, may value access to other types of things that lead them to cluster in certain locations. Retailers may wish to locate near their customers and near other retailers or suppliers. This leads retailers to cluster together in certain locations, like shopping malls, which are often located in high-accessibility locations (e.g., near access points of major highways). Many office and professional services activities require access to workers, which leads firms specializing in these activities to choose more central locations with higher accessibility to their respective labor markets. The premiums these firms pay for high-accessibility locations reflect the increased productivity that those locations facilitate. Even more footloose industries, like light manufacturing and warehousing, respond to the locational incentives provided by existing transportation networks and locate

¹It should also be mentioned that this relationship is mediated to some extent by local regulations that place restrictions on the amount and character of development; however, a full discussion of these regulations is beyond the scope of this report.

in places with good highway and, where required, freight rail access.

Accessibility is fundamentally a dynamic concept in that transportation networks are being continually modified over time and firms and households respond to these changes to transportation networks, and the accessibility they provide, by eventually changing their location. These location decisions and the patterns of accessibility they represent eventually become capitalized into land markets, giving rise again to a different set of location incentives. Thus, we can say that land use and transportation systems and their associated patterns of accessibility are characterized by *feedback loops*, which affect all of the different actors in these systems. A stylized representation of these feedback loops, based on the work of Levinson (1997) is presented in Figure 2.1. Note that in Figure 2.1, the direction of the feedback loops between different elements of the transportation and land use system are represented by the arrows connecting them and that the (+/-) signs indicate whether the feedback effects are positive or negative.

Figure 2.1: Feedbacks in systems of transportation and land use



Source: Levinson (1997)

The important points to note in Figure 2.1 are that increases in the capacity of each mode in response to rising demand lead to increases in land value, whereas allowing congestion to worsen leads to the opposite effect. The reason for this is that travel time acts as a disincentive to consumers to choose destinations that are farther away, since consumers must expend resources to access those destinations. Increases in travel time or other travel costs reduce the number of destinations that can be feasibly accessed, given the budgets households are restricted to in terms of money or time. The feedback effects continue

when the increases in land value caused by increases in accessibility in a given location lead to a larger amount of development, which again begets higher land values. The latter sections of this report will elaborate on how this process can be harnessed by policymakers to capture the accessibility-related value that drives this system through various types of value capture policies. Before doing so, however, we first outline a framework for thinking about transportation finance more generally and describe an overarching principle, the benefit principle, that provides a formal justification for linking value creation and value capture through the policies that we explore later in the report.

2.2 From Value Creation to Value Capture

A general principle, sometimes referred to as the “benefit principle” holds that systems are more efficient if one can better relate their costs to their benefits. This “user-pays” principle would ensure that the costs of transportation investments are borne by beneficiaries. For decades, a primary source of transportation finance in the United States has been dedicated gas tax revenues, which sounds reasonable assuming that transportation benefits are proportional to vehicle operations and hence the level of gasoline consumption, and that gasoline consumption varies little between users. However, transportation improvements not only bring benefits for motorists, but also in the current environment² create value for property owners or developers in the form of higher land values and/or property prices or enhanced development opportunities surrounding transportation facilities. Thus, to better conform to the benefit principle, one could recover a portion of the value gains to fund transportation improvements. This is the idea of “value capture” to be studied in this report.

Value capture has been increasingly discussed by policymakers and planners as an alternative approach of transportation finance. However, there is still much confusion about the mechanism and how it may be applied. Most related literature has focused on empirical evidence of “value creation” rather than practical strategies of “value capture.” In terms of “value creation,” although there has been abundant evidence that access creates value, the mechanisms underlying these economies of agglomeration are an area of continuing research and debate. For “value capture” no previous research has systematically compiled and analyzed the full gamut of policies that may be used to capture the property value gains, despite the fact that many options have been explored across the globe. In this project, we attempt to bridge the gap between “value creation” to “value capture” by:

- Summarizing the findings of previous studies that measure the impact of transportation improvements on nearby properties;
- Discussing practical models to measure potential value gains from certain transportation improvements;
- Offering a range of policies to capture the value gains from transportation improvements; and

²The current environment includes a number of underlying assumptions; a major one is the absence of profit-maximizing tolls or fares.

- Providing a framework to analyze the efficacy of each value capture policy.

2.3 Value Capture in a General Framework of Transportation Finance

To better understand value capture, we propose a general framework of transportation finance. Following the benefit principle that the cost of transportation for a contributor should be proportional to the benefits received, different instruments of transportation finance may be designed to match different categories of transportation benefits and the different ways in which these benefits are measured. As Table 2.1 shows, the beneficiaries can fall under three broad categories: the unrestricted general public, restricted non-user beneficiaries, and direct users of transportation facilities.

In the broadest sense, transportation improvements create benefits for the general public within the whole jurisdiction, because the enhanced infrastructure may lead to economic or social returns signified by the growth of the general tax base. Accordingly, transportation finance may be allocated from a government general fund that comes from all revenue sources. This is the case for many local governments in the United States and many other countries. Identifying this general benefit is, however, the most difficult, as it is hard to disentangle the general public benefit from the benefits received by individual members of the public.

Most directly, transportation benefits are enjoyed by users of transportation facilities, such as vehicle operators or transit passengers. This provides the rationale of dedicated special revenues for transportation. For vehicle operators, the corresponding financial instruments would be gas taxes, distance-based (mileage) charges, vehicle sales taxes or vehicle property taxes, wheelage charges, or tolls, depending on how driving benefits are measured. Some options above, such as gas taxes or vehicle sales taxes, have been widely used by the U.S. federal government and the states. Other options, such as mileage-based charges or wheelage based charges, are also increasingly considered. For transit passengers, the corresponding financial instruments would be fares or permits.

Between the general public and direct users, we can also define a restricted group of beneficiaries who are not direct users of transportation facilities but who enjoy benefits because of their enhanced location advantages. As these property owners or developers benefit from transportation value creation, they are the targeted contributors of value capture. Different ways to measure the value gains give rise to a range of different value capture policies.

Some value capture policies would impact property owners:

- Land-Value Taxes (LVT) (or split-rate property taxes) may be levied to capture the general increase in the price of land due to enhanced accessibility;
- Tax Increment Financing (TIF) may be used because improved transportation facilities will contribute to the growth of property tax within a TIF district;
- Special Assessments (SA) may be levied if the direct special benefits for some properties due to transportation improvements exceed those that accrue to the general

Table 2.1: Value capture in the general framework of transportation finance

Funding Mechanism	Beneficiaries		Measurement of Benefit	Finance Instrument	Cost Type	
					Upfront	Ongoing
General Revenue	General public		General tax base growth	General fund allocation; property tax; transportation sales tax	●	●
Value Capture	Restricted non-user beneficiaries	Landowners	Land value growth	Land Value Taxes	●	●
			Property tax growth	Tax Increment Financing	●	
			Assessed special benefits	Special Assessment	●	
			Transportation utility	Transportation Utility Fees		●
	Developers	Off-site development opportunities	Development Impact Fees	●		
		Off-site access benefits	Negotiated Exactions	●	●	
		Development privileges	Joint Development	●	●	
		On-site development opportunities	Air Rights	●	●	
User Fees	Users of transportation facilities	Vehicle operators	Gas consumption	Gas taxes	●	●
			Mileage	Mileage-based charges	●	●
			Vehicle units/types	Vehicle sales tax; license tab fee; wheelage charges	●	●
		General access rights	Tolling		●	
		Demand-controlled access rights	Congestion pricing		●	
		Rights to incur environmental impacts	Transportation environmental taxes/fees		●	
	Passengers	Ridership	Fare or permits		●	

public, and can be clearly identified and measured within a special assessment district; and

- Transportation Utility Fees (TUF) may be collected if the utility of transportation improvements is measured with the proxy of property types or sizes.

Others would impact developers:

- Development Impact Fees (DIF) or impact taxes pay for enhanced off-site infrastructure;

- Negotiated Exactions require developers to forfeit part of their land in exchange for off-site transportation benefits;
- Joint Development (JD) involves collaboration with the public sector to simultaneously improve transportation while developing land; or
- Air Rights allow development on top of existing or new transportation facilities in exchange for a financial contribution or future additional property and income taxes.

Note that transportation improvements may create value in many different ways simultaneously, and so multiple value capture policies can be combined. However, the total level of value capture cannot exceed the total benefits created by transportation, otherwise the financial instruments would negate the economic rationale of development.

The last column of Table 2.1 shows the suitable cost types that can be financed by each transportation finance instrument. Ideally, cost types should be matched with the timing of transportation benefits. Typically, direct users of transportation facilities receive the bulk of their benefits through the use of facilities, and thus the corresponding special revenues are most suitable for ongoing operation and management (O&M) costs. The growth of the general tax base occurs through the life cycle of a transportation facility, and thus the corresponding general fund revenues are suitable for both upfront capital cost and O&M cost. For value capture beneficiaries (property owners and developers), their value gains due to enhanced locational advantages are mostly realized upon the completion of transportation facilities, and as such the corresponding value capture policies may be used more often for capital cost. For example, negotiated exactions are typically used for the capital cost only as a way to reduce the fixed cost for the right-of-way. Transportation utility fees, however, are more closely related to the daily usage of facilities and thus TUF may be more suitable for O&M cost.

It should be noted that any financial instrument can be used for any cost occurring at any time with appropriate planning and use of debt and annuity instruments. An agency could use ongoing revenue to pay back debt acquired to pay for capital costs, or could charge a one-time fee to fund an annuity to pay for ongoing costs. This is somewhat more complicated than the pay-as-you-go mechanism many jurisdictions prefer to reduce transaction and interest costs, and also disassociates benefits from costs.

2.4 Value Capture Policies and Their Features

With the concept of value capture firmly situated within a broader framework of transportation finance, we may turn our attention to the individual value capture policies themselves. We have identified eight different policies that can at least loosely be classified as value capture policies. Table 2.2 identifies these policies and presents the features of each policy in eight dimensions. The policies listed in Table 2.2 are land value taxes (LVT), tax increment financing (TIF), special assessments (SA), transportation utility fees (TUF), development impact fees (DIF), negotiated exactions (NE), joint development (JD), and air rights. The dimensions along which these policies may be classified are discussed below.

Table 2.2: Features of value capture policies

Value Capture Strategies	Contributor		Coordination			Timing		Space			Basis		Cost		Transport Ownership		Level of Govt.	
	Landowners	Developers	Taxing Authority	Negotiation	Partnership	Before Transp. Improvement	After Transp. Improvement	On-site	Restricted Off-site Areas	Entire Jurisdiction	New Development	Old Development	Upfront (Capital)	Ongoing (O&M)	Public	Private	State	Local
Land Value Tax	●		●			●	●			●	●	●	●	●				●
Tax Increment Financing	●		●			●			●		●	●	●		●			●
Special Assessments	●		●			●			●			●	●		●		●	●
Transp. Utility Fees	●		●			●	●		●	●	●	●	●	●	●			●
Development Impact Fees		●	●				●		●		●	●	●		●			●
Negotiated Exactions		●		●		●		●		●	●	●			●	●	●	●
Joint Development		●			●	●	●	●	●		●	●	●	●	●	●	●	●
Air Rights		●		●			●	●		●		●			●	●	●	●

Contributor

The first dimension identifies which party is being asked to contribute resources toward transportation improvements, and is split between property owners and developers. Joint development, air rights, and development impact fees and negotiated exactions tend to shift the required contributions toward developers, as they apply mainly to new development.³ Land value taxes, transportation utility fees, and special assessments can be applied to both new development and existing property owners.

Coordination

The second dimension along which value capture policies can be characterized is the type of coordination required to administer the policy. As Table 2.2 indicates, many of the policies listed require oversight from a specific taxing authority. In many cases, this could be

³This characterization could also be extended to tax increment financing schemes, which are often applied to redevelopment projects.

accomplished through an existing city or county assessor's office. Negotiated exactions and air rights generally involve the level of charges or in-kind provision of infrastructure being determined through a less formal negotiation process. Joint development policies, by their nature, involve the formation of a partnership between the public and private parties involved, through which the costs of infrastructure development and ownership arrangements can be determined.

Timing

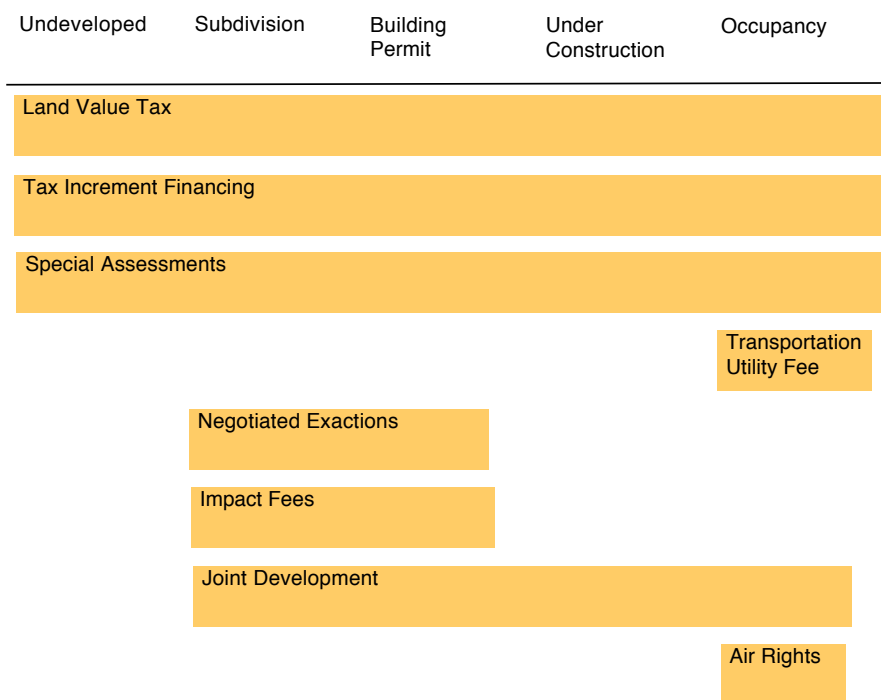
A third way to classify the different policies is to group them according to whether the policy is implemented before or after the associated transportation improvement takes place. Some policies are implemented prior to the transportation improvement. Tax increment finance and special assessment policies typically require delineating a special district on or near the site of the transportation improvement, a characteristic that leads them to be established in advance of the improvement. Likewise, exactions are typically negotiated during the planning process for a new development, and so precede the transportation improvement that confers additional value on that development. Air rights arrangements are typically implemented following a transportation improvement, since it is the additional access provided by the improvement that generates additional land value and attracts development. Several types of policies are implemented prior to a transportation improvement and continue for long periods of time following the improvement. Some arrangements, like land value taxes, transportation utility fees, air rights, or joint development, may continue in perpetuity as a source of ongoing financing for operations and maintenance.

A similar way to view the different policies in terms of timing is to classify them according to the stage in the development process at which the tax or fee occurs. Figure 2.2 displays this classification by dividing the development cycle into five stages: undeveloped, land subdivision, building permitting, under construction, and occupancy. As the figure indicates, three of the policies (land value tax, special assessment, and tax increment financing) can be applied at any stage during the development cycle. Development impact fees and negotiated exactions are typically assessed during the subdivision and permitting stages of development. Joint development revenues can be collected at any stage between land development and occupancy. Transportation utility fees and air rights, since they require development to be complete before charges can be levied, take place only at the occupancy stage.

Space

A fourth type of classification relates to the spatial reach of the affected area in which the value capture policy is implemented. Some are typically restricted to limited areas on the site of the transportation improvement, such as air rights and negotiated exactions. Land value taxes and transportation utility fees can be scaled up to the level of an entire jurisdiction, such as a city or county, to capture more generally the value of access provided by transportation networks. Tax increment finance and special assessment districts tend to be restricted to specific, restricted off-site areas near a transportation improvement, where value creation is believed to occur. Development impact fees are not always restricted to

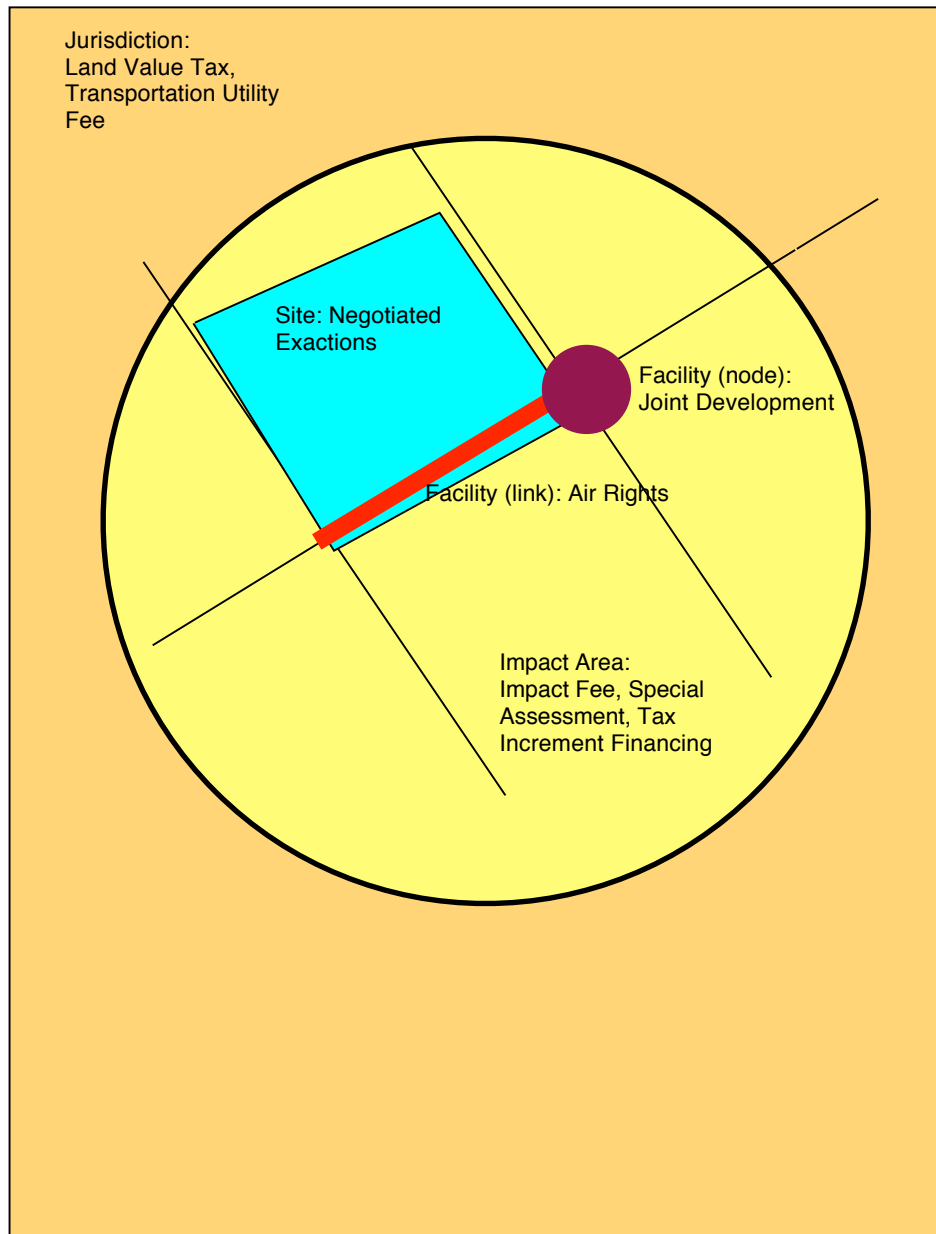
Figure 2.2: Value capture policies classified by timing of tax imposition relative to stage in development cycle



locations near a specific improvement, but can be limited in their spatial scope to the boundaries of political jurisdictions for administrative purposes. Joint development arrangements may be limited to the site of an improvement, as in the case of development on top of a public transit station, or extended to a restricted off-site area, as with the designation of special assessment districts.

A useful way to visualize the spatial relationship between the type of transportation improvement that takes place and the type of policy that might be adopted to capture its value is provided in Figure 2.3. Figure 2.3 distinguishes between link and nodal types of transportation improvements. As the figure indicates, air rights might be used in cases where development takes place directly on top a link (e.g., decking a freeway link). Air rights might also be used for development that takes place directly on top of a nodal facility (such as a transit station), or in joint development arrangements. Development that takes place on a site adjacent to an improved link or node might be ideal for the application of negotiated exactions to recover the cost of the improvement. In cases where the influence of the facility on property values extends beyond the site of the improvement to nearby properties, an impact area (denoted in Figure 2.3 as the area shaded yellow) may be defined and used to collect revenues from property owners in the form of development impact fees, special assessments, or tax increment finance. Finally, some types of value capture policies apply at the scale of an entire jurisdiction. These include land value taxes and transportation utility fees.

Figure 2.3: Value capture policies classified by spatial effects



Basis (New or Old Development)

Value capture policies may also be distinguished in terms of whether they are applied strictly to new development or are extended to old development as well. Some policies, such as development impact fees, are designed to apply primarily to new development. Many of the policies listed can be designed so as to apply to both new and older development. Special assessment districts are exceptional in that they are applied mostly to older development.

Cost

Another useful distinction for classifying value capture policies is to suggest whether the charges are used primarily to finance the initial capital cost of a transportation improvement, its recurring operational and maintenance costs, or both. Table 2.2 suggests that several of the policies considered here are designed to recover the initial capital costs of a transportation improvement. At least three of the policies (land value taxes, transportation utility fees, and joint development) have been or could potentially be applied both to capital costs and to ongoing operations and maintenance.

Ownership

A seventh dimension along which value capture policies can be distinguished relates to whether the road or other transportation facility that generates the gain in property value is owned publicly or privately. All eight of the value capture policies presented here can be applied in the case of public ownership, while a subset of them, including air rights, negotiated exactions, and joint development, lend themselves to situations where the improved transportation facility is privately owned.

Risk

An issue closely related to the ownership of transportation infrastructure and to issues of who is responsible for contributing to the provision of infrastructure is the issue of risk. Nearly all of the value capture policies just described involve the capture of value created by a transportation improvement through charges on affected landowners. However, all of these mechanisms involve some degree of financial risk in the sense that they rely on a large enough increment in property value being created to provide adequate revenue. It is worthwhile to consider who bears the bulk of the risk under each type of policy.

Policies that rely on up-front payments from developers for the provision of new infrastructure generally tend to transfer risk to developers. This might include policies related to development impact fees, negotiated exactions, and certain types of special assessment districts. The charges are borne as costs by developers, who must then rely on sufficient demand for new development to recover the associated costs. If population growth, economic growth, or other factors that affect the demand for housing or commercial development fall short of expectations, the developer will be unable to recover the costs of infrastructure provision and will likely incur a financial loss.

In contrast, policies that rely on future appreciation in property values to finance the costs of a transportation improvement tend to transfer risk to the public sector. Policies such as tax increment finance, land value taxes, and the creation of special assessment districts to finance specific transportation projects (e.g., streetcars, subway lines, etc.) are characterized by exposure to this type of risk. If the value created by a transportation improvement falls short of expectations, revenues from these types of mechanisms may be insufficient and require tax increases from other sources (e.g., general property taxes) to cover the shortfall. To the extent that they are used to finance capital costs of transportation improvements, air rights and joint development arrangements may also expose the public

sector to these types of risks. If a government entity is unable to lease space or find reliable tenants in an air rights development or joint development, the resulting shortfall would have to be made up through other types of tax increases or user charges. This type of risk exposure needs to be accounted for during the planning stages for implementation of a value capture policy.

Level of Government

An eighth, and related, dimension identifies which level of government (state or local) would most likely be responsible for implementing the policy. The term “local”, as used here, may encompass both county and municipal levels of government. All of the policies listed here may be implemented at the local level, while a smaller subset of them may also be implemented by state-level organizations.

Chapter 3

Evaluation

Classification of the value capture policies along the lines of the dimensions suggested in Table 2.2 gives a useful overview of their similarities and differences, in addition to hinting at where, when, and how they might be applied. Now we will take a look at each of the eight policies in greater depth. A brief overview and description of each of the policies will be provided, including some information on where each of the policies has been applied, both in the United States and abroad, when applicable. Each of the policies will then be evaluated according to a set of criteria that describes its desirability as a transportation revenue source.

Table 3.1 presents a framework to be used to assess each value capture policy. The four broad criteria that will be used to assess the policies are listed, along with any relevant sub-categorization of these criteria. In addition, the table lists some sample questions that might be asked to evaluate the proposed policies against these criteria. The criteria are:

- *Economic efficiency*, which relates to the ability of the policy to ensure an efficient allocation of society's resources. This definition is not necessarily limited to their efficiency as user charges, but may also refer to their ability to equate marginal benefits and costs of development.
- *Equity*, which describes the fairness of resource allocation according to different stratifications of society. Here we evaluate equity along two dimensions: benefit equity, which describes the distribution of benefits across different social strata; and ability-to-pay, which relates to how the burden of finance is distributed across various income groups under the different policies.
- *Sustainability*, which in this context will refer to the ability of the policy to serve as a reliable source of transportation revenue. It will be further divided according to the criteria of adequacy, growth potential, stability and, predictability.
- *Feasibility*, which will evaluate the policies according to their political and administrative feasibility.

Table 3.1: Criteria for evaluating value capture strategies

Criterion		Sample Questions
Efficiency		Is the cost to contributors related to the benefit they receive? Will it provide price signals/incentives for travelers' behavior, priority of investment, or governmental decisions? To what extent may it hinder economic development?
Equity	Benefit equity	Is it fair to the contributors in terms of benefits they receive? Are there issues of equity by geographic areas? Are there concerns of intergenerational equity?
	Capacity-to-pay equity	How closely does it relate to personal capacity-to-pay? Is it regressive or progressive for different income groups?
	Adequacy	Is the revenue base broad or narrow? Is the (implicit) tax rate high or low? How much revenue can it raise? Would it be enough to replace traditional source of revenue?
	Potential of growth	To what extent can the revenue catch up with income growth? To what extent can the revenue catch up with inflation? To what extent can the revenue catch up with need increases?
	Stability	How volatile is the revenue? Is it cyclical or counter-cyclical?
	Predictability	Is the revenue easily predictable?
Feasibility	Political feasibility	Is the tax or fee visible to taxpayers or the public? Would it incur any tax exportation? What is the common perception by developers and the public? Are there specific obstacles in the current rules/regulations?
	Administration feasibility	Administrative cost: How hard is it to manage the process? Compliance cost: Is it hard for the public to comply with the policy?

3.1 Land Value Tax

Land value taxes (LVTs) are the most general type of value capture policy we will describe. Rather than being designed to apply to a specific project, land value taxes are designed to capture the value that is created by the provision of public goods more generally, including the accessibility that transportation networks provide. This may be a desirable characteristic from a value capture perspective, since some types of transportation improvements may increase property values near the improved link or node, but this increase may be at least partially offset by declines elsewhere (Adams and VanDrasek, 2007). Conventional methods of local public finance rely heavily on the property tax, which serves as a tax on both land and any improvements, including buildings, that are made to the property. In principle, a tax on land rather than buildings would be desirable, as it would be less distortionary. Where part of the tax burden falls on buildings rather than land, the higher price for buildings discourages additional investment in the supply of buildings. On the other

hand, the supply of land is fixed, implying that while an additional tax might raise the price of the taxed good (land), it will not affect its supply.

In principle, a pure tax on land is possible, though there are few documented examples of its application. Variations on the LVT principle have been experimented with, however. The most common is a form of split-rate property tax, in which the land and improvements that constitute a property are valued separately and taxed at different rates, most often with a heavier emphasis on land. While variations on the land tax mechanism have been adopted abroad in countries like Canada, Australia, and New Zealand, their application in the United States has been limited to a handful of experiments with split-rate property taxes. Along with isolated instances in the towns of Fairhope, Alabama, and Arden, Delaware, both of which were initially established as development corporations, most of the applications of split-rate property taxes in this country have been in various cities in Pennsylvania.

Efficiency

A strong case can be made for a land value tax on efficiency grounds. At a basic level, contributions toward the financing of transportation (and potentially other local public services) would be much better aligned with the benefits derived by property owners in the form of higher property values. While price signals to users of the transportation system would still be rather weak, signals to developers and to government entities about where to invest would be much stronger. As a provider of transportation services, government entities would be better able to prioritize investments under the criterion that those investments would create benefits greatly in excess of their costs, and that some or all of the benefit could be captured to finance the transportation investment. Developers confronted with a land tax or split-rate property tax would have an incentive to use land more intensively and to develop vacant parcels more quickly, rather than holding them indefinitely in speculation of land market changes. In locations where the demand for land is fairly strong, a land value tax would discourage low-intensity uses of land such as surface parking. Land taxes are unlikely to create a hindrance to economic development, except perhaps in cases where the tax is set at arbitrarily high rates. Several studies that have reviewed the experience with split-rate taxes in the Pittsburgh region have found mixed results as to whether it has stimulated additional development, but have found no evidence that the imposition of the tax structure has dampened economic development.

Equity

The structure of land value taxes and split-rate property taxes implies that they will change the distribution of the tax burden within the taxing jurisdiction. Evidence from Pittsburgh (Weir and Peters, 1986) suggests that the primary beneficiaries of the imposition of such a tax would be owners of office properties in high land value locations, such as the central business district where building-to-land-value ratios are high, and owners of single-family homes in middle- and upper-class neighborhoods. Taxes on properties in poor neighborhoods would rise somewhat, though the increase would be limited due to the lower total value of the property. Geographically, land-based taxes would seem to favor central areas of cities, where development intensities are higher. In terms of property type, the tax burden

would appear to be shifted away from residential properties and more toward commercial property, especially industrial property. In summary then, land value taxes would produce favorable results in terms of benefit equity, but would most likely be slightly regressive in terms of ability-to-pay, depending upon the final incidence of taxes levied on commercial property owners.

Sustainability

Land value taxes could provide a sustainable source of revenue for transportation improvements or other types of public services. Their similarity to property taxes in terms of having a broad base implies that a fairly low tax rate would be adequate. When applied at local levels (e.g., municipal or county levels), a land value tax or split-rate tax could likely replace the existing property tax and perhaps some other local revenue sources, depending upon the tax rate. The growth potential of a tax on land value would be modest, as historical returns to real estate have roughly tracked the general rate of inflation in the long term. As a property-based revenue source, land taxes could be fairly stable and resistant to economic cycles, though the recent experience with an asset bubble in housing suggests that major corrections in housing prices, though rare, might limit the ability of a land tax to act as a counter-cyclical revenue instrument. Their predictability would be subject to the ability of local governments to forecast (or acquire forecasts of) trends in residential and commercial real estate markets.

Feasibility

From an administrative perspective, land value taxes would be fairly easy to implement, as the knowledge and administrative capacity already exist in most local governments to assess real property. However, accurately determining the value of land and buildings separately may be a challenging task, as they are typically bundled together at the point of sale. Compliance, moreover, would require the ability to maintain an independent and neutral source of property assessment. The experience in many cities that adopted a split-rate tax, including Pittsburgh, has indicated that this may prove to be a difficult task. Pressures from landowners to reassess the value of a property downward, similar to the experience in California that led to the adoption of Proposition 13, may lead to a rejection of split-rate taxes, as they did in Pittsburgh where the split-rate property tax was recently discontinued.

Thus, a major hurdle to the adoption of a land value tax or split-rate property tax is political feasibility. The broad base and high visibility of existing property taxes makes them a focal point for conflict over public finance and budgetary practices at the local level. They are also difficult to export, except in the case of businesses whose customers and employees live mostly outside of the affected jurisdiction. The generally negative perception of the property tax from developers and the public implies that any shift to a land-based tax would need to be carefully explained to all affected parties, especially in terms of why such a tax would be preferable and that the tax would be a replacement, rather than a supplement for existing revenue sources. Any shift toward a land-based tax would also need to be phased in gradually to avoid large and abrupt increases in tax liability for certain types of property owners.

One other variation of a land value tax is a capital gains tax on property sales, or “windfall” tax. There is very little evidence on the adoption of such a tax, and so it is difficult to evaluate. One of the primary obstacles to the feasibility of a windfall tax is the administrative difficulty it would present. As previously proposed, the tax would essentially be administered by adopting some arbitrary threshold for property value appreciation (say, a doubling of value) after purchase, beyond which the tax would be imposed. The tax then would be collected upon the sale of the property. The arbitrariness of setting such a threshold in the first place would make a windfall tax politically difficult to adopt, since any properties falling under the threshold in incremental value would be able to evade the tax. Second, similar to land value or split-rate property taxes, a windfall tax would invite pressure on property assessors to lower the assessed value of certain properties, especially those that are near the value threshold that would trigger the tax. Third, because the nature of the tax would be a one-time charge on properties assessed at the point of sale, it would be difficult to identify when the gains in value occurred, and assess properties accordingly. Fourth, because the tax would be imposed at the point of sale and affect only those properties that have experienced a given threshold level of appreciation in value, it would likely have the effect of discouraging property transactions, particularly in high-demand locations. Fifth, it would be difficult to establish a tax that was targeted specifically at increments in property value associated with transportation improvements, since this effect would need to be disentangled from other potential influences on property value. This consideration suggests that a windfall tax would need to function similarly to a land value tax, in that it would represent a tax on the value of land attributable to the provision of a range of public goods, including transportation services.

3.2 Tax Increment Financing

Tax increment financing (TIF) is a public finance technique that uses taxes levied on the incremental increase in property value within a development (or redevelopment) project to finance development-related costs, including infrastructure improvements. As applied to transportation projects, TIF districts can be expanded beyond the site of a transportation improvement to encompass a small district within which an increment in property value is thought to occur, similar to the creation of special assessment districts, which will subsequently be discussed. Tax increment financing is more frequently used by local units of government to promote housing, economic development, and redevelopment projects in established neighborhoods, though some states make more intensive use of them for transportation purposes.

While tax increment financing has seen widespread adoption in many states for the promotion of local development projects, experience in the United States with tax increment financing for transportation purposes has been largely limited to public transit projects. In Chicago, TIF districts have been established to support the construction of subway/elevated stations near the central business district. One large example of the application of a TIF district in Chicago was the construction of the Randolph/Washington station, which derived \$13.5 million in TIF funds from nearby development. Portland, Oregon has also promoted the use of TIF districts to support streetcar and light rail development. A TIF district cre-

ated to support the development of the Central City Streetcar in Portland generated around \$7.5 million in TIF funds. On Portland's north side, the Interstate Avenue light rail project was supported by the issuance of \$30 million in general fund notes, which are assumed to eventually be paid back from funds generated by a TIF district established near the line.

Efficiency

The ability of tax increment financing as a value capture policy to promote economic efficiency is largely dependent on its ability to support projects that deliver large, local benefits in the form of property value appreciation. The paucity of evidence on the effectiveness of TIF districts for transportation purposes makes this difficult to evaluate. The evidence from Chicago's use of TIF districts to support the development of rapid transit stations suggests that in certain cases the increment in land value within a TIF district may be large. It may be difficult, though, to compare these types of projects to the more recent applications to streetcar and light rail projects in Seattle and Portland. Since subway/elevated systems tend to operate at higher average speeds and serve more densely populated locations than light rail or streetcar networks, they may be expected to provide higher levels of accessibility, and hence create larger increments in land value. Also, from the perspective of general economic development, the ability of TIF districts to promote economic development may be limited if they steer investment toward less productive urban locations. This is the interpretation of some recent research findings that suggest that while property values may grow within a TIF district, this localized effect may come at the expense of growth in the larger jurisdiction within which the district is located (Dye and Merriman, 2000).

Equity

The application of TIF districts to transportation finance raises a host of equity issues. The strongest case for equity in TIF financing for transportation improvements can be made in terms of benefit equity. Requiring those who receive disproportionate benefit from a transportation improvement to make greater contributions toward the financing of the improvement not only promotes economic efficiency, it also promotes fairness in the distribution of the burden of transportation finance. However, the abuse of TIF in some jurisdictions has led it to be skeptically viewed by some as a "corporate hand-out" or a way to channel subsidy funds to politically favored firms (Dye and Merriman, 2000) or members of the development community. Some firms may strategically locate in established TIF districts to take advantage of lower development costs, even though in many cases this "development" would have occurred even in the absence of the TIF incentives. In terms of geographic equity, problems may arise where the boundaries of a TIF district overlap with those of other taxing jurisdictions. Where property taxes are used as the basis for TIF financing, the taxes generated within the district are not available to overlapping jurisdictions during the lifespan of the TIF district. Hence, when property values increase, the growth in revenue is not shared among all government units. School districts and other types of special-purpose taxing districts are typically unable to take advantage of TIF revenues. Along these lines, it has been suggested that policymakers should evaluate the effects of TIF projects, in terms of benefits and costs, on existing residents (Stinson, 1992; Lawrence and Stephenson, 1995).

TIF legislation can be structured in ways that allow for the benefits from TIF districts to be shared more broadly, such as allowing local jurisdictions to capture increasing shares of tax revenues from districts over time, and using a portion of these revenues to finance local public goods such as police or fire protection for existing residents.

Tax increment financing mechanisms typically do not operate on the basis of ability-to-pay, and so may create some outcomes that may be viewed as negative from the perspective of the distribution of the tax burden among income groups. This illustrates the tension between policies promoting benefit equity and equity on the basis of ability-to-pay. For example, to the extent that a transportation improvement creates appreciation in local residential property values, TIF districts that are based on a property tax or special assessment mechanism may place an increased burden on lower-income households or households with fixed incomes, either directly through property tax increases or indirectly through rent increases. In principle, these problems could be ameliorated by designing the TIF district to allow for discounts or exemptions to residents meeting certain eligibility requirements based on income or some other socioeconomic status.

Sustainability

The revenue base for tax increment financing is limited, as it is typically applied to specific locations near a transportation improvement. The implicit tax rate is thus likely higher than for more conventional forms of public finance, though this should be weighed against the consideration that those subject to the charge are also receiving special benefit. TIF districts have a limited amount of revenue-raising capacity and so are probably not good candidates for completely replacing existing transportation revenue sources. As a project-specific financing technique, though, they should be able to replace a significant share of general revenue sources for specific projects. To the extent that properties within a TIF district rise at above-average rates for different types of real estate, they should be able to keep pace with increases in incomes and general rates of inflation. One restriction on the sustainability of TIF revenues is that in some states, including Minnesota, laws prohibit the use of tax increment financing for general government purposes, which may include operations and maintenance costs. Thus, TIF districts may be limited in application to specific projects and to one-time capital costs.

Feasibility

In terms of political feasibility, TIF districts have the advantage of shielding general taxpayers within a jurisdiction from broad-based tax increases and thus benefit from low political visibility. This perception that tax increment financed projects “pay their own way” may mute local opposition and increase public acceptance. TIF districts also enjoy a fairly good perception among developers, as they may allow development projects to move forward that otherwise might be stalled due to the inability to provide needed infrastructure or other components of development. The ability of local jurisdictions to use TIF districts to export a share of the tax burden is probably limited, as much of the burden will ultimately be borne by local landowners and residents within the district.

The administrative feasibility of TIF districts is less easily established. The establishment of TIF districts requires much effort from administrative staff in adopting jurisdictions, especially in ensuring that legal requirements such as needs assessments are met. Implementation requires several steps, including needs assessment, formulation of a (re)development plan, plan adoption, and project monitoring, each of which can be time-consuming. TIF financing arrangements, especially where bond financing or intra-fund loans are involved, require constant monitoring by local finance departments. However, once districts are established and in place for an extended period of time, enforcement and compliance costs typically come down to the lower levels associated with property tax collection.

3.3 Special Assessments

Special assessments are a type of value capture mechanism that impose special charges on property owners based on geographic proximity to a new facility, usually for the provision of transportation or other types of infrastructure. Special assessments are often administered through the designation of formal districts and can be developed for a variety of purposes related to infrastructure provision, including sewer and water districts, road construction and improvement districts, and public transit benefit districts, which are often designated near new rail transit services. The rationale underlying special assessment districts is that owners of property near a major transportation improvement receive a disproportionate benefit in the form of property value appreciation and should accordingly be charged for this benefit.

The implementation of special assessment districts necessarily involves the somewhat arbitrary determination of which properties receive a disproportionate benefit from a transportation improvement and how the size of this benefit varies by location. In practice, several different methods have been used to establish a basis for the assessment of properties within an assessment district. These include:

- *Benefits assessed or increased value*, a method which allocates the costs of an improvement according to the value of benefits received, as determined by estimated increases in property value.
- *Zones*, a method which allocates assessments based on location within a zone of a given distance from an improved transportation facility.
- *Frontage*, a method which allocates costs according to the amount of frontage occupied by a parcel adjacent to an improved transportation facility.
- *Acreage*, a method of allocating costs according to the acreage of a parcel within the boundaries of a special assessment district.
- *Distance Factor*, a method which uses a scaling factor to relate the distance from the improved facility and the amount of the charge.

Special assessment districts for road improvements are found in parts of some rural states, where fiscal capacity is more limited. Under the formation of “rural improvement districts,” local property owners can petition their counties to initiate infrastructure improvements with the assent of a simple majority of property owners along the proposed route. Property owners are then assessed for the cost of the improvements. In urban areas, special assessments are used not only for some types of road maintenance and improvement, but also for improvements to public transit networks. Recent streetcar and light rail transit projects in cities like Seattle and Portland have involved the authorization and formation of “local improvements districts,” within which special assessments are levied to finance a portion of the capital costs of these projects. Other U.S. cities that are exploring assessment districts for similar types of projects include Atlanta, Tampa, and Columbus, Ohio.

Efficiency

The efficiency rationale for the use of special assessments is fairly strong. Depending on the type of mechanism that is used to set the charge (acreage, frontage, distance, etc.), the use of special assessments to apportion cost of a transportation improvement among its more direct beneficiaries can enhance economic efficiency. While special assessments provide few price signals to users of transportation networks directly, they do provide signals to landowners regarding the costs of a transportation improvement and ensure that not all of the additional value created by the improvement is absorbed as windfalls by local landowners. Special assessments may promote economic development to the extent that they help finance needed improvements that provide net benefits to local landowners.

Equity

Special assessments also improve benefit equity to the extent that they assign costs for a transportation improvement to local property owners in proportion to benefits received. In doing so, they help to rectify geographic inequities that exist under general revenue forms of financing. However, the equity implications of special assessments are highly dependent upon how they are structured. In some cases, entire classes of properties (such as residential) are exempted from charges under special assessment districts, as was the case with an assessment district identified for Los Angeles’ Red Line subway (Stopher, 1993). While this might be an expedient way of mitigating potential opposition, it does allow some potential beneficiaries to free-ride on the contributions of other non-exempt property owners.

Modifications to the provisions of special assessments may be required to tailor the charges to fit ability-to-pay criteria if this is desired. To the extent that they are tied to some level of benefit received, special assessment charges may be slightly regressive, in terms of placing a greater effective tax burden on lower-income households. However, as we will see with the design of transportation utility fees, modifications can be made to the provisions of special assessment legislation to allow for discounts, tax credits, exemptions, or other forms of relief to be provided to the elderly, low-income, or other vulnerable groups.

Sustainability

As with other types of project or location-specific value capture policies, special assessments typically have a narrow base and raise only a limited amount of revenue. Hence, they are not likely to be a large-scale replacement for more conventional transportation revenue sources. However, for specific projects they may provide a small, yet important, source of revenue. The amount of revenue raised depends largely on the project. In the case of rural improvement districts, adjoining property owners typically pay for the entire cost of the improvement. Experience with several types of rail transit projects from streetcars to subways suggests that, depending on the level of local support for the project and hence the willingness of local property owners to tax themselves, special assessments could recover anywhere between 9 percent and nearly one-half of the capital cost of the project. The amount contributed also surely depends on the type of project, considering that capital costs for new subway lines are several times higher than those for streetcar lines.

Revenue from special assessments is more often used for capital costs of projects, rather than for operation and maintenance, and so do not require as much attention to predicability. The setting of charges for a special assessment district can take into account the level of assessment needed to recover an expected share of project costs from each affected property. Following this approach would reduce the volatility of special assessments as a revenue source and limit its vulnerability to cyclical trends in the economy.

Feasibility

Despite having a much narrower base than the property tax, special assessments are nonetheless highly visible to affected property owners and may be viewed as skeptically as the property tax. Decisions regarding who ought to be subject to special assessments are likely to skew toward a preference for charging owners of commercial and industrial property, as this may be viewed by local residents as an opportunity to export the costs of the tax. Local landowners, business leaders, and public officials may need to be convinced of the value or necessity of adopting special assessments as an instrument of transportation finance before the charges become politically feasible.

Administratively, special assessment districts are somewhat difficult to establish, as they must identify legally defensible methods of calculating assessments. However, once in place, they are relatively easy to administer and can be implemented along with current property tax assessment and collection processes. Compliance rates should be high, similar to property taxes, ensuring that most of the revenue collected through special assessments will not need to be spent enforcing payment.

3.4 Transportation Utility Fees

Transportation utility fees derive from the notion that transportation networks can be treated like a utility, similar to other local services such as water and wastewater treatment, which are financed primarily from user charges. Most local jurisdictions continue to rely heavily on property taxes or other sources of general revenue to finance local transportation

services. Since property taxes are based on the value of a property and are only loosely related to the costs a particular property imposes on the transportation network (in terms of congestion, pavement damage, etc.), transportation utility fees, which are assessed on characteristics of the property thought to be more closely related to its transportation demands, have the potential to spread the costs of financing local roads or other transportation services more appropriately among users.

The adoption of transportation utility fees is sometimes merely a matter of political expediency since, as a fee rather than a tax, it can be established without the requirement of a public referendum. The first known application of a utility fee was a fee adopted in Fort Collins, Colorado, in 1984, which tied the level of the fee to the amount of street frontage on each parcel. This fee system was abandoned in 1987 following a legal challenge by local residents, but the experience sparked interest among other cities, primarily in Oregon, where transportation utility fees have seen their most widespread use. Subsequent transportation utility fees have used a number of different bases for setting fee rates, including flat fees, fees that apply per unit of housing or per parking space, fees based on square footage or gross floor area, fees that vary with the trip generation rate for a given property type, and fees that are set at the discretion of local city councils. It remains unclear how well these different indicators correlate with transportation demand, with the exception of trip generation rates for different property types, which are published for planning purposes by the Institute of Transportation Engineers' *Trip Generation Handbook*.

Efficiency

Transportation utility fees hold some potential for improving the efficiency of local transportation finance by shifting some of the cost burden from residential properties to commercial and industrial properties, which typically consume more transportation services than their relative property tax contributions would imply. Utility fees would also allow local jurisdictions to collect revenue for transportation from some users who previously did not pay, due to exemptions from local property taxes (e.g., churches, stadiums, public buildings). While they might provide some desirable shifting in the burden of taxation, utility fees would do little to send strong price signals to consumers of transportation services, because as fixed charges, once paid, they would provide little incentive to conserve transportation resources.

Equity

Transportation utility fees would, in principle, adhere more closely to the benefit principle than a system based on property tax payments. However, the effectiveness of the utility fee in enforcing this principle is related to the ability to establish a link between the various characteristics that form the basis of different fees and the value of transportation benefits that they receive (or the value of services they consume). To date, this link has been only weakly established through the publishing of trip generation rates. Equity in ability-to-pay is more difficult to establish with utility fees, since many of the fees are generally flat and do not distinguish between income groups of users. In that respect, they are similar to several of the other value capture policies discussed here. However, the regressivity of a

utility fee structure can be mitigated by offering discounts to certain groups of users. For example, utility fee programs in Colorado, Oregon, and Texas offer discounts to elderly and low-income groups. Such a policy could be easily justified on the grounds that these groups make fewer trips on average.

Sustainability

Transportation utility fees would represent a relatively stable source of funding for transportation, as levels of local travel are less sensitive to cyclical economic trends. The adequacy of utility fees as a revenue source could be established by setting rates in relation to estimated costs of providing transportation services over a given budget cycle. Fees would be best suited for financing operational and maintenance-related costs of road networks, rather than major capital projects. Revenue from a transportation utility fee would be fairly stable and predictable, since the property characteristics that are used to determine fee levels change little from year to year. The level of stability and predictability of transportation utility fees would be similar to that of the property tax, since the fees could be adjusted annually to reflect changes in needs.

Feasibility

Politically, transportation utility fees should be deemed feasible. To some degree, the cost of a transportation utility fee could be exported if commercial property owners passed the increased costs of the fee along to customers or employees who do not live within the local jurisdiction. Also, shifting more of the responsibility for financing transportation services to commercial properties should be popular with residents in a given jurisdiction, since property owners who do not live in the jurisdiction cannot vote. However, owners of commercial property and other types of property that would see increased charges under a utility fee system may challenge the legal basis for the fee, if it does not clearly link benefit incidence to the amount of the fee. This has occurred in a number of localities that have adopted transportation utility fees. It would be more difficult to ensure compliance with a transportation utility fee than with other forms of utility charges since, unlike other utility services, it would be difficult to deny transportation services to a delinquent property owner.

3.5 Development Impact Fees

Development impact fees are one-time charges collected by local governments from developers for the purpose of financing new infrastructure and services associated with new development. They are similar to negotiated exactions in that they are charged primarily to new development to help recover growth-related public service costs, but differ in that impact fees can be levied for off-site services, such as local roads, schools, or parks. Impact fees also differ in that they are typically determined through formal calculations of the public service costs of new development, rather than through less formal negotiation processes, as are typically used with exactions.

There are two common types of methods for calculating the level of impact fees to be assigned to a specific development. Each can and has been applied to the problem of estimating transportation-related impact fees for new developments. One method, known as a *demand-driven* system of fee calculation, takes the product of the number of new trips generated, the average trip length, and the cost per trip based on the cost to improve a mile of roadway. The estimated impact fees are arrived at based on the estimated demands the new development will place on the transportation network. The second method is known as an *improvements-based* method of fee calculation, where the average cost of the trips generated by the development is determined by dividing the road improvements budget of a local jurisdiction by the trip generation rate for a proposed land use.

Development impact fees are used widely throughout the United States, especially in fast-growing parts of the country, such as California, Florida, and Texas. Their acceptance as a means of financing for transportation infrastructure and other growth-related public services is a fairly recent phenomenon, though. One study estimates that while fewer than 10 percent of local jurisdictions used development impact fees or negotiated exactions prior to 1960, the share of jurisdictions using impact fees along with in-kind levies grew to more than 60 percent by the mid-1980s (Altshuler and Gomez-Ibanez, 1993). Their use is more prevalent in developing areas, where growth pressures are strong and there is resistance to financing growth-related costs through general revenue sources. The legal foundation for impact fees, as well as negotiated exactions, rests on what has come to be known as the “rational nexus” test. Roughly speaking, the rational nexus test suggests that a link must exist between the services being provided with the impact fee revenue and the cost of the services allocated to a specific development.

Efficiency

Development impact fees have the potential to improve the efficiency of resource allocation by local governments for transportation purposes. They allocate most of the infrastructure costs of new development to those most likely to benefit from it, thus adhering to the benefit principle of public finance. This condition also means that infrastructure users are likely to receive price signals as to the cost of providing the infrastructure if not the cost of maintaining it. It also provides signals to local government officials to only expand infrastructure networks where the cost can feasibly be recovered from charges imposed on new development.

There is some question as to whether the imposition of impact fees leads to adverse consequences on local land or housing markets. Conventional wisdom among many home builders holds that any costs associated with impact fees will be shifted forward to the final consumer, whether a home buyer or owner or lessee of commercial property, and hence affect the demand for housing or floor space via a price effect. At best, this view is incomplete. Some analytical research has suggested that, under a variety of market conditions, at least a share of the cost of impact fees is shifted *backward* to the owners of undeveloped land (Yinger, 1998). This is a result one would expect to find in jurisdictions where a regime of impact fee financing for new infrastructure has been in place for some time. In short, the evidence on the price and quantity effects of impact fees in land and housing markets is mixed. Authors who have sought to investigate this issue empirically

have used a variety of variables and data sets, modeling methods, and study locations, many of which cannot be easily reconciled to produce findings which are qualitatively similar.

Equity

Issues of equity are, for the most part, dealt with fairly under development impact fee systems. To the extent that impact fees conform to the guidelines of rational nexus provisions, those who contribute to the financing of new infrastructure through impact fees should receive roughly proportional benefits. Issues of geographic equity should be minor, with the only potential issue being the ability of established residents within a jurisdiction to free-ride on the use of new infrastructure paid for largely out of impact fees levied on new residents. If the dimension of equity we are concerned with is ability-to-pay, rather than the benefit principle, the effect of impact fees is less clear. Impact fees are generally not set with regard to ability-to-pay, though to the extent that consumers of new housing have average or above-average incomes, impact fees should not create a regressive distribution of costs for financing infrastructure. An unintended effect of impact fees, however, may be that builders in desirable markets could ignore lower-income households and turn their attention to more high-income segments of the market when they cannot recover costs associated with high, fixed levels of impact fees (Huffman *et al.*, 1988).

Sustainability

The revenue base of development impact fees is necessarily narrow, since impact fees are often targeted toward new development. This implies a higher marginal tax rate on newer development. Impact fees are not often used as a primary source of revenue for infrastructure improvements, though in fast-growing communities they may contribute a larger share. In communities where property taxes are used as the main source of financing for infrastructure, impact fees may replace a portion of these revenues, but are unlikely to be seen as a wholesale substitute for general revenue sources. Impact fees also have good potential for growth. Since they can be readjusted on fairly short notice, they can be set to account for changes in income or inflation rates. Also, since they are set as part of the process of planning for new development, they can be adjusted as needed to meet rising demands for infrastructure services.

One weakness of using development impact fees as a source of revenue for transportation infrastructure is that it is more cyclical than other, more conventional sources of local public finance, such as property taxes. Since impact fees are levied on new development, they are strongly tied to the demand for new housing and/or commercial space, and as such are subject to cyclical movements in real estate markets and the economy more generally. The narrower base of impact fees means that large and costly infrastructure improvements that are to be financed through impact fees leave local jurisdictions exposed to significant financial risk if projected growth rates do not materialize. This also implies that the predictability of revenue streams from impact fees is tied closely to the ability of governments to predict local growth rates.

Feasibility

Development impact fees should present a politically feasible financing option for local governments. The fees are not highly visible either to the public or to the new home buyers, renters, or owners of commercial property who will pay at least a share of the fees, as these costs are typically bundled into prices for new development products, such as housing. Existing residents may favor impact fees, as they represent a way to shield existing residents from the costs associated with new development and may represent a potential windfall for existing property owners where impact fees raise the cost of new housing and existing housing represents a close substitute. An exception may be cases in which much of the land in a jurisdiction is vacant and developable, and landowners anticipate bearing a share of the cost of the fees in the form of lower land prices. Impact fees may be less welcome to developers, who may view them as an additional cost in the development process. However, opposition from developers may be muted if demand for new development within a jurisdiction is strong, making the ability to shift the cost of the fees forward greater, or if the alternative to impact fees is a less desirable outcome, such as a growth moratorium.

The administrative costs of impact fees are fairly low, since much of the information required to calculate appropriate fee levels can be collected from a local government's planning and/or public works department. The level of impact fees can be determined as part of a development project's planning and permitting process. Compliance costs should also be fairly low, as development impact fees apply in most instances to new development, and require no additional effort on the part of existing residents.

3.6 Negotiated Exactions

Negotiated exactions are functionally similar to development impact fees, with the exception of the distinctions mentioned previously. Levels of charges for new infrastructure to be collected through exactions are typically set through a less formal process of negotiation between developers and local jurisdictions, rather than through the preset, formulaic type of process that is applied to development impact fees. Negotiated exactions also typically apply only to on-site improvements in a new development, rather than being applied to infrastructure improvements that are not in the immediate vicinity, but are nonetheless attributed at least partly to new development. In addition, negotiated exactions can take the form of in-kind contributions to local roads, parks, or other public goods as a condition of development approval, or can be requested in the form of in-lieu fees.

The pattern of usage of negotiated exactions tends to be similar to that of development impact fees. Exactions are an attractive means of ensuring the provision of needed infrastructure in high-growth areas and where a jurisdiction's fiscal capacity is limited. The adoption of exactions as a method of infrastructure provision appears to be even more widespread than that of development impact fees, as the same study that estimated the share of jurisdictions adopting impact fees to be around 60 percent (Altshuler and Gomez-Ibanez, 1993) also estimated that around 90 percent of local governments were applying some form of exaction to new development by the mid-1980s. Also, similar to development impact fees, the legality of negotiated exactions is grounded in the establishment of a

rational nexus between the required exaction and the services provided.

Efficiency

Like development impact fees, negotiated exactions may promote efficiency to the extent that they allocate the costs of development, including transportation infrastructure, to those who occasion them. The fact that exactions are applied to on-site or to highly localized improvements, along with the establishment of a rational nexus between the contributions and the benefits received, make exactions an efficient instrument in the allocation of resources to infrastructure. On the other hand, since exactions tend to take the form of one-time, fixed charges, they are unable to send price signals to users regarding the variable costs of infrastructure. The same issue applies to development impact fees. The use of exactions is also not likely to create a hindrance to economic development, unless local governments violate the rational nexus principle by setting charges for negotiated exactions arbitrarily high, or by providing only a weak link between the required infrastructure contribution and the services financed through that contribution.

Equity

Negotiated exactions can promote equity in benefits to the extent that they provide benefits to those who are asked to contribute toward infrastructure provision. The financing of transportation infrastructure through one-time charges such as exactions or development impact fees may raise some issues of intergenerational equity if successive generations of residents are allowed to free-ride on the use infrastructure paid for initially by residents of new development. However, the degree of free-riding is likely to be small if exactions are used primarily to finance on-site transportation improvements or improvements in the immediate vicinity.

Negotiated exactions, like development impact fees, are set more to ensure benefit equity rather than to address concerns about ability-to-pay. The distribution of the burden of costs across income groups is likely to be dependent on the incomes of the new residents of developments where infrastructure services are financed through exactions. If the incomes of these residents are average or above, then the distribution of costs may be neutral to progressive with respect to different income groups.

Sustainability

In terms of adequacy, the revenue base for negotiated exactions, like development impact fees, is rather narrow considering it is targeted toward new development. In most cases, exactions should be seen as a supplemental form of financing for transportation infrastructure, rather than a large-scale replacement for more traditional sources of revenue.

In terms of growth potential, exactions share some of the desirable characteristics of development impact fees. Since they are negotiated during the development approval process, local jurisdictions have some freedom to adjust the level of charges to ensure that the resulting revenues are able to keep up with projected levels of inflation, income growth, and growth in the demand for infrastructure services, particularly for transportation. Exactions

also are subject to some of the weaknesses associated with development impact fees, such as revenue streams that tend to follow cyclical trends in real estate markets and hence are only as predictable as near-term trends in markets for different types of real estate.

Feasibility

Negotiated exactions may be politically feasible, as their narrow base means that most existing residents of a jurisdiction will not be subject to them. The notion of making new residents “pay their way” is also intuitively appealing to existing residents. The low visibility of exactions as a revenue source should also foster support, or at least little resistance. The perception of exactions among developers may be less negative than that of development impact fees, as the ability to negotiate the level of required exactions may allow more flexibility to meet the needs of both developers and local jurisdictions, while avoiding costly delays in the development process. Administratively, negotiated exactions are relatively simple, as they can be managed by most planning boards and local government staff in the usual process of development permitting. The compliance cost should also be low as exactions apply mostly to new development and entail few compliance requirements, except perhaps where their legality is challenged.

3.7 Joint Development

The term “joint development” (JD) as typically applied in discussions of value capture refers to the spatially coincidental development of a transportation facility (e.g., a public transit station) and adjacent private real estate development, where a private sector partner either provides the facility or makes a financial contribution to offset its costs. This is the most common definition and the one that will be discussed further here, but it is also worth mentioning that there are other ways to conceive of “jointness” that may also relate to the value capture policies discussed in this report.

The term joint development could also be used to refer to the jointness of the *timing* of real estate development and the development of supportive infrastructure. This is the rationale behind many growth management policies that rely on *concurrency* requirements or *adequate public facilities* ordinances. These types of measures typically require the provision of a prescribed level of infrastructure or other services as a condition of development approval. The use of impact fees and developer exactions often coincides with the adoption of these types of ordinances.

Another way of conceiving of jointness in the provision of transportation infrastructure is to consider jointness of ownership. In situations where growth moratoria exist and there is pressure to develop, developers may enter into contracts to jointly provide needed infrastructure to obtain the right to develop. These contracts are sometimes referred to as “road clubs” (Nelson and Duncan, 1995). The road clubs make in-kind contributions of new infrastructure that are similar to exactions.

Returning to the original definition, joint development is a way to encourage private contributions by interested developers toward the provision of a transportation improvement. We can divide JD policies into two types of ownership structures, depending on

whether the property and development rights are owned publicly or privately. This ownership structure classification can be further refined by suggesting whether the asset that is the subject of the JD agreement represents real estate or development rights. The resulting types of JD mechanisms for publicly owned property include sale, lease, land-banking arrangements. Those for privately owned property include land contribution agreements such as exactions, and usage adjustments that include policies such as density bonuses.

Another way of classifying JD policies is to specify whether the agreements entered into by the public and private sector participants involve revenue-sharing or cost-sharing arrangements. The former involve arrangements for the provider of the infrastructure, typically a public entity, to retain a share of the revenues from new development near the improved facility. This type of arrangement encompasses some of the other value capture policies discussed in this report, including air rights and benefit assessment districts. Cost-sharing arrangements, as their name implies, involve private sector participation in the provision or maintenance of the infrastructure itself.

The adoption of JD arrangements has been more common abroad, with several prominent examples in large, eastern Asian cities such as Hong Kong and Tokyo. These cities boast extensive railway systems, whose expansion is often tied to new real estate development through financial arrangements that involve the sale or lease of newly-developed properties near the rail stations. Examples from the United States are more limited, but still illustrate the application of value capture strategies. For example, Washington, D.C.'s public transit agency (WMATA) sells air rights at stations and land near stations to generate revenue that can be applied to the capital and operating costs of providing its rail services. In New York City, density bonuses are offered to developers who agree to improve subway entrances and incorporate these entrances into their development. Portland, Oregon provides an example of a rare case in which a private development team agreed to contribute a small share of the capital costs for construction of a light rail link between Portland's central business district and that city's airport, in exchange for the rights to develop a large, vacant property near the airport. The resulting development, called Cascade Station, is a 120-acre, mixed-use collection of retail, office space, and hotels.

Efficiency

As a market-based form of value capture, joint development projects ensure that the contributions of developers or tenants will coincide with the benefits they anticipate receiving from locating near a given transportation facility, as evidenced by their willingness to pay. In locations where development potential is great and high levels of accessibility imply large rent premiums, transportation providers will receive price signals to guide investment toward projects with large net benefits. This process will have little effect on the behavior of consumers of transportation, but will ensure greater adherence to the benefit principle as a criterion for transportation finance. Thus, JD arrangements generally support notions of economic efficiency.

Equity

Since the market mechanism by which JD arrangements operate involves voluntary transactions between the infrastructure provider and developer or tenant, JD methods of finance ensure benefit equity among participants. Furthermore, formal contracts that spell out the terms of these transactions can help local governments ensure that development costs are assigned fairly relative to benefits received. In terms of ability-to-pay, JD projects often attract higher-end office and commercial tenants, which to the extent that they do not shift the costs of their contribution to lower-income customers or employees implies that the progressivity of JD finance is probably neutral to somewhat positive. Traditionally, the profile of residential tenants in joint development housing tends toward the middle to the upper end of the income scale, meaning that these types of households are more likely to bear the costs of JD charges. This implies a distribution of costs that is neutral to progressive with respect to ability-to-pay.

Sustainability

The base of revenue from JD arrangements is fairly narrow, since it applies only to small sections of the real estate market, as opposed to broader measures such as property or land value taxes. Accordingly, the amounts of revenue that can be generated from such arrangements are generally small and are unlikely to completely replace more traditional sources of revenue. Revenues from joint development grow at rates roughly similar to the rate of growth in incomes or prices. Their volatility is closely related to levels of volatility in commercial and office real estate markets, implying that they may be fairly predictable if only in the short term. However, joint development agreements can be structured so as to provide payments that are stable relative to other sources of transportation revenues. If the public agency agrees to sell land as part of a joint development, it may receive a lump-sum payment, which can then be applied toward the capital cost of the improvement, or kept as an interest-bearing asset, which can help finance ongoing operational and maintenance costs. Conversely, the public agency may enter into a contract specifying lease terms for space in a joint development project. In this case, the terms of the contract would dictate a stable, reliable stream of revenues for several years hence. Payments could also be structured to rise with income or general price levels if these criteria were deemed desirable.

Feasibility

The narrow base and low visibility of JD revenues make them politically palatable to most residents. This is especially true if residents believe that this source of financing may allow the cost of providing transportation services to be exported to non-residents. However, if the public entity is regional in nature (as many public transit agencies are), the possibilities for tax exportation are limited, since most tenants or developers that participate in the JD arrangement are likely to be locally-based. If JD agreements are entered into willingly and enjoy the support of developers generally, then the political feasibility of joint development should be enhanced. However, it should be noted that joint development is only undertaken

when the private sector anticipates an incremental benefit, meaning that joint developments will not be feasible in every situation.

JD agreements are administratively more complex than more conventional sources of revenue and some of the other value capture policies described here. Thus, their transaction costs are likely to be higher. The need for more sophisticated legal, marketing, financial, and other types of specialized skills makes the implementation of joint development as a value capture policy more costly and managerially difficult. Also, the need to work closely with an external, private sector partner may raise workload levels and associated administrative costs for the participating public agency. This issue may be particularly salient for public organizations that have little or no experience with such development agreements.

3.8 Air Rights

Air rights are a form of value capture that involves the establishment of development rights above (or perhaps below) a transportation facility that generates an increment in land value. Certain types of facilities that are physically depressed during construction, such as subway/metro stations or highways that are placed in a trench below ground level, can generate sharp increases in land value near access points that may serve as an incentive for developers to build at much higher densities than what prevailed prior to the transportation improvement. This accessibility effect gives value to the airspace above the facility, which may be an attractive location for new development. Since the public entity that owns and operates the transportation facility typically also owns the adjacent right-of-way, it also has access to potentially valuable airspace immediately above this land. Capturing some of the value created by the transportation improvement through the sale or lease of development rights in this airspace provides a means of financing some or all of the cost of the transportation improvement.

The use of air rights in the United States dates back to 1913, when New York's Grand Central Terminal and adjacent Park Avenue development were built over the Central Railroad. Subsequent applications of air rights to urban highways and subway systems have appeared in many large U.S. cities. Boston has had a history of working with the Massachusetts Turnpike Authority to facilitate the construction of major developments on top of major access points to the Massachusetts Turnpike in the more central parts of the city. This trend is likely to continue with major development projects anticipated to be completed on reclaimed space over Boston's Central Artery as part of the "Big Dig" project. Other locations where development has been pursued on top of depressed sections of urban freeway include Seattle, New York City, Columbus, Ohio and Duluth, Minnesota. Subway stations in many large U.S. cities have also proven to be ideal locations for air rights development. Stations along systems in Washington, D.C., Atlanta, Los Angeles, and Boston have invited dense development, from which lease agreements have provided a stream of operating revenue.

Efficiency

Air rights as a value capture policy should promote economic efficiency. The costs that are paid by private contributors in the form of rent or lease payments should be at least proportional to the benefits received, since the contributors reveal their willingness-to-pay through a market transaction. Decisions by public sector infrastructure providers about where and when to invest in infrastructure should be guided by the signals provided to them through the value of the rental or lease payments they are able to negotiate with tenants in developments where air rights are employed. Air rights arrangements should be expected to promote, rather than hinder, economic development to the extent that they provide genuine economic returns as measured by property value increments or some similar metric.

Equity

On grounds of benefit equity, air rights development promotes positive outcomes. Contributors receive benefits in proportion to their contribution in the form of usable space in a high-access location. Air rights development may even promote geographic equity under certain circumstances. For example, in many central cities, the construction of urban highways displaced many residents and disrupted some urban neighborhoods by physically separating them from nearby neighborhoods. In cases where air rights are offered for development by “decking” an urban freeway segment, they may promote new private development or allow for the provision of additional amenities, such as parks, which may confer positive spillover effects on adjacent neighborhoods.

With respect to equity measured by ability-to-pay, air rights development is probably neutral. Those who pay to rent or lease space in an air rights development are those who are able and willing to pay for the location amenity that the air rights development location provides. At the very least, it should not impose additional costs on lower-income households. Also, to the extent that an air rights development built around a transit station is able to generate revenue through lease payments for the transit agency that provides the infrastructure, this revenue may be used to replace other, more regressive forms of general taxation, such as sales taxes.

Sustainability

The revenue base for air rights development is narrow, since it only applies to specific developments and revenue is typically only generated on-site. The amount of revenue that is generated by air rights is likely to be small relative to the size of transportation budgets, but could be a component of financing plans for specific transportation improvements, such as the construction of a new transit station or highway interchange. The growth potential from air rights revenue sources is modest, but the revenue growth should at least be able to keep with inflation or income growth. The predictability of revenue from air rights development is related to the ability to forecast trends in commercial and office space markets. These markets are known to be rather susceptible to cycles of over-building, resulting in rather high volatility for income from air rights developments. One way to avoid the cyclicity of boom-and-bust cycles in commercial real estate markets in air rights arrangements would

be for the lessor (the public agency) to insist on a lump-sum payment up front, rather than a series of periodic lease payments.

Feasibility

Air rights development is politically feasible in most cases, though it is administratively more complex than several of the other value capture policies described here. Politically, air rights development charges have some advantages. They are assessed on a rather limited set of properties within a jurisdiction, meaning that they are often invisible to most taxpayers. They can also allow the exportation of some costs in cases where the responsible public entity is able to negotiate lease arrangements with lessees from outside their jurisdiction. Air rights developments may be viewed favorably by developers if they present the opportunity for development at higher densities in desired locations. However, since air rights developments are often costly and require higher densities to be marketable, they may encounter resistance from adjacent property owners, especially if the development is in a location where surrounding densities are low. Given the added transactions costs they present and the higher densities typically required to make air rights sales a feasible and attractive option, air rights developments may only be desirable in high-density locations where land is already in high demand.

Administratively, air rights development arrangements require additional skills that some public transit providers and transportation departments may not have in-house. Where the public entity owns and leases the space in an air rights development, it may require additional expertise for marketing and legal services, since the owner must establish air rights and then market the space to private tenants.

Chapter 4

Implementation Considerations

Each of the value capture policies described in this report could potentially be applied by jurisdictions in Minnesota. There are, however, important legal and administrative considerations for units of government wishing to apply some or all of these policies that should be discussed prior to implementation. Table 4.1 presents a list of the policy tools we have considered, along with an indication of whether they are authorized under current Minnesota legal statutes.

As a guide for implementation, we conclude by synthesizing the relevant administrative issues and necessary legal adjustments that would need to be adopted to allow for implementation of several of the policies discussed.

Table 4.1: Authorization status of value capture policies

Tool	Authorized		
	Yes*	No	Unclear
Land Value Tax		●	
Tax Increment Financing	●		
Special Assessments	●		
Joint Development	●		
Negotiated Exactions	●		
Development Impact Fees			●
Transportation Utility Fees		●	
Air Rights	●		

Note: An asterisk (*) indicates that a policy is authorized for use, though not necessarily for transportation infrastructure.

4.1 Land Value Tax

Perhaps the most important administrative issues in adopting a land value tax or any of its variants are ensuring a base of political support for the tax and maintaining consistent property value assessments from year to year. These issues are, of course, related. As was the case with Pittsburgh's split-rate property tax, property owners who experienced sharp increases in the value of their property brought pressure on the city and its assessor's office to lower the assessed value of their property. Apart from conferring windfall gains on the owners of these properties, a lack of timely and accurate assessments resulted in foregone revenues for the city, revenues that would need to be compensated for by raising other charges or proportionately reducing the level of services the city provides. Thus, maintaining an accurate assessment process is critical to ensuring the efficacy of the land value tax. Additionally, a land value tax would require a state-level authorizing statute since it is not authorized under current law.

4.2 Tax Increment Financing

Tax increment financing in Minnesota is legally limited to a set of authorized users. The authorizing statute in Minnesota, Statute 469.175, would need to add the Minnesota Department of Transportation (Mn/DOT) and Metro Transit or its parent agency, the Metropolitan Council, to the list of authorized users. Also, there should be a provision in this statute allowing for the creation of specific, transportation improvement-related TIF districts. An implication of this is that Statute 469.176 could be amended to include Mn/DOT or the Metropolitan Council as governmental units that can legally use TIF. Allowing these agencies as users would allow for TIF districts that span multiple jurisdictions, a necessity given the scale of some of the projects they implement.

4.3 Special Assessments

Chapter 429 of the Minnesota Statutes allows for the establishment of special assessment districts. Currently, their use is limited to local units of government (e.g., cities and counties). One of the statute's limitations is that it does not authorize special assessment districts for interstate highways (for example, in the case of new interchange construction) or locations served by public transit. The agencies that manage these types of transportation networks, such as Mn/DOT and the Metropolitan Council, are also not authorized to establish special assessment districts.

Provisions would need to be added to Chapter 429 to allow state and regional agencies as authorized users of special assessments and to allow assessment districts to be applied to interstate highways and public transit facilities. In addition, a provision could be added that addressed the issue of how revenues from special assessments would be shared in cases where multiple jurisdictions were involved. One possibility for this provision would be to allocate revenues from special assessments in proportion to the financial contribution of each agency toward the provision of the transportation improvement.

4.4 Transportation Utility Fees

There are three important considerations regarding transportation utility fees, two legal and one administrative. From a legal perspective, transportation utility fees are not authorized under current state law, and so would require a state-level authorizing statute. Also, transportation utility fees have in the past been challenged on the grounds that there was only a weak nexus between the level of the charge and the benefit received by the property owner. Jurisdictions wishing to establish a utility fee for transportation purposes may need to consider commissioning formal planning or engineering analyses that better establish the link between proposed fees and the unit of analysis that forms the base of the fee (e.g., square footage, property frontage). Administratively, jurisdictions adopting utility fees should carefully consider the inclusion of discounts or exemptions for certain groups of residents. Previous experience with transportation utility fees has shown a propensity among adopting jurisdictions for offering discounts as a way to improve the equity of the fee, both in terms of benefits received and ability-to-pay. Discounts or exemptions have been offered on the base of income, age (primarily for elderly residents), vehicle ownership, property vacancy, and other considerations. These adjustments allow the utility fee to be tailored to the needs and resources of local residents.

4.5 Development Impact Fees

Prior attempts to levy development impact fees, such as the road access charges implemented by Eagan, Minnesota, and later struck down, were found to be unconstitutional. The invalidation of this specific charge was carried out on the grounds that the city did not have the statutory authority to levy the charge, the charge was not proportional to the costs imposed by the development in question, and the charge was actually a tax and the city did not have specific taxation authority.

If development impact fees are to play a larger role in Minnesota as a value capture or cost recovery policy for newly developing areas, they must be placed on firmer legal footing. Specific, state-level legislation authorizing impact fees would need to be produced. The fees authorized by the legislation would need to be designed so as to be legally defensible. This would mean designing fees that ensure a nexus between the charges imposed and legitimate state interest, and that would ensure a degree of connection between the charges imposed on a development and the impact of the development, the so-called “rough proportionality” test.

4.6 Negotiated Exactions

Similar to development impact fees, exactions negotiated by local units of government for the provision of transportation infrastructure can be challenged legally if they do not promote a legitimate state interest and provide a rational nexus between the negotiated developer contribution and the benefits that flow from it. Thus, local governments should seek to avoid any arbitrariness in their requirements for developer contributions, and should

make use of formal traffic impact studies to establish a degree of proportionality between the impact of a proposed development and the negotiated contributions.

4.7 Joint Development

Joint development agreements face no serious legal barriers to use in Minnesota. In fact, to a limited extent, state and local governments have already become involved in joint developments. From an administrative perspective, organizations that have traditionally been tasked with the provision of transportation will need to become comfortable with the prospect of working more closely in partnership with private sector participants through joint development agreements. Also, organizations wishing to engage in joint development projects will need to develop or acquire additional expertise in areas such as real estate law, marketing, and finance.

One other type of infrastructure finance that has not been discussed at length in this report, but that deserves mention, is the use of public-private partnerships to build infrastructure, often through local franchise agreements. One can conceive of franchise agreements for toll roads and other types of public-private partnerships as a form of joint development, since ownership of the infrastructure often remains with the public sector, while responsibility for construction, maintenance, and/or finance is transferred to a private sector partner in return for the right to collect revenues in the form of tolls, advertising, or other sources of revenue. Currently, 23 states have legislation in place authorizing public-private partnerships. Recent experiments with the private provision of infrastructure, such as the Las Vegas Monorail and privately financed highways in California, Texas, and Virginia, which involve giving a private sector entity responsibility for building, financing, and operating a transportation facility, are often enabled through the passage of franchise legislation at the state or local level. Similar franchise legislation could be passed in Minnesota to allow for greater private sector participation in infrastructure development.

4.8 Air Rights

Air rights development is currently permitted in Minnesota and has seen some small-scale application. Further applications may be limited, in part due to the scarcity of locations that meet the conditions required to make air rights developments effective. Developments making use of air rights tend to be situated in locations that are already densely developed, and where the demand for land is high relative to existing supply, making land expensive. Thus, locations near established central business districts tend to be most feasible. Siting an air rights development near a neighborhood with lower overall densities may prove difficult due to localized opposition. Such developments may require costly modifications in order to receive approval and move forward. Jurisdictions seeking to promote air rights development must also consider the ownership structure that will accompany the development and what type of terms to offer the developer in the sale or lease agreement.

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