



# Harnessing Value for Transportation Investment

A Summary of the Study: Value  
Capture for Transportation Finance

Research identifies eight  
potential strategies  
for Minnesota

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# Harnessing Value for Transportation Investment

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](http://www.cts.umn.edu/Research/ValueCapture)—contains the report to the legislature (CTS 09-185) as well as the technical research report (CTS 09-18).

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# Executive Summary

Large public investments in transportation infrastructure—such as a new freeway interchange or transit station—can increase the value of adjacent private land, sometimes substantially. 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 does it affect different segments of society? Is the revenue substantial, stable, or predictable? How feasible is adoption and implementation?

To answer these and other questions, the Minnesota Legislature appropriated funding to the University of Minnesota’s Center for Transportation Studies in 2008 to study the public policy implications of value capture. No previous research has systematically compiled and analyzed the full gamut of policy tools that may be used for value capture. This document summarizes the findings from that study.

## Key Findings

Eight value capture strategies could potentially be applied by jurisdictions in Minnesota:

- Land value tax
- Tax increment financing
- Special assessments
- Transportation utility fees
- Development impact fees
- Negotiated exactions
- Joint development
- Air rights

Some value capture strategies target property owners, while others target developers. The strategies differ in how, when, and where they may be applied. They also yield different outcomes, which can be assessed relative to four criteria: economic efficiency, equity, sustainability, and feasibility.

The strategies can be applied individually or combined to meet specific situations and goals. The total amount collected cannot exceed the total benefits created by transportation, however, or the financial tools would negate the economic incentive for development.

There are also important legal considerations for units of government wishing to apply some or all of these strategies. Statutory adjustments in Minnesota law would be needed to allow for implementation of several of the strategies.

# Background

## Need for Alternative Revenue Sources

There is growing concern about the adequacy, equity, and effectiveness of the U.S. system of transportation funding and finance. The gas tax, in particular, faces serious challenges: less revenue is being collected from more fuel-efficient vehicles, per capita travel is declining, and inflation is eroding the value of what is collected.

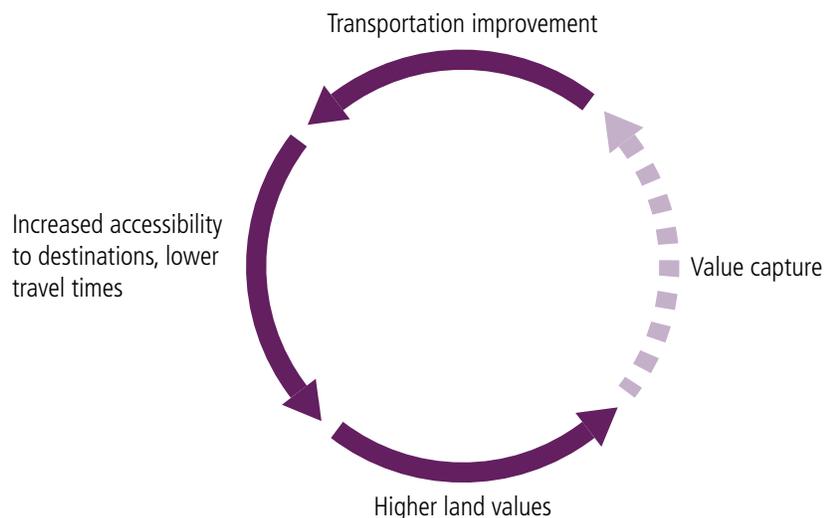
To ensure sufficient transportation investment, alternative revenue sources are needed. One possibility is value capture.

## What Is Value Capture?

### Transportation, Accessibility, and Value Creation

Transportation networks and urban land value are closely linked. A transportation improvement increases accessibility to desirable destinations, such as jobs or schools. Locations with higher accessibility tend to command higher prices for land. Landowners and developers benefit from this increased value.

Using value capture mechanisms, a part of this created value can be captured. The revenue can help finance the transportation improvement, or it can go toward further transportation investment, spurring a new round of increased accessibility and land value. Figure 1 illustrates how value capture can provide the missing link in this feedback loop.



**Figure 1:** Positive feedback loop. (The feedback may have positive or negative consequences. Allowing congestion to worsen, for example, decreases urban accessibility and land value.)

## Value Capture in a Framework of Transportation Finance

Transportation funding mechanisms can be divided into three broad categories (Table 1).

On the one hand are user fees—such as transit fares or the gas tax—paid by direct users of transportation facilities. With user fees, the relationship between who pays and who benefits is quite clear.

On the other hand are general revenues paid by the general public, such as sales or income taxes. This approach assumes that citizens benefit indirectly through the broad economic and social returns from transportation investment, so a general government fund is tapped for transportation revenue. The relationship between who pays and who benefits is less clear.

Value capture mechanisms lie in between these two categories. They target a restricted set of indirect beneficiaries: landowners and developers who benefit from the increased land value that follows a transportation improvement. Different ways to measure the value gains give rise to a range of different strategies of value capture.

**Table 1:** Value capture in a framework of transportation finance

Funding Mechanism	Beneficiaries	Measurement of Benefit	Finance Instrument
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 assessments
			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



# Value Capture Strategies

The study identified eight value capture strategies: land value tax, tax increment financing, special assessments, transportation utility fees, development impact fees, negotiated exactions, joint development, and air rights.

Table 2 characterizes the strategies according to eight features:

1. Contributor: landowners or developers
2. Coordination: taxing authority, negotiation, or partnership
3. Timing: before or after the associated transportation improvement
4. Space: the spatial reach of the value capture strategy
5. Basis: whether it applies to new development only or is extended to old development as well
6. Cost: used for initial capital cost of a transportation improvement, its recurring operational and maintenance (O&M) costs, or both
7. Road ownership: whether the road or other transportation facility that generates the gain in property value is owned publicly or privately
8. Level of government: which level (state or local) would most likely be responsible for implementing the strategy. (Local level may encompass counties and cities.)

**Table 2:** Features of value capture strategies

Value Capture Strategies	Contributor		Coordination			Timing		Space			Basis		Cost		Transport Ownership		Level of Government	
	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																		
Transportation Utility Fees																		
Development Impact Fees																		
Negotiated Exactions																		
Joint Development																		
Air Rights																		

Because these strategies mainly capture value after a transportation project is completed, they are used more commonly for capital cost than for operations and maintenance. However, all of the strategies could be used for any cost occurring at any time with appropriate planning and use of debt and annuity instruments.

The following pages briefly describe the strategies and evaluate them using four broad criteria:

**Economic efficiency:** Is the cost to contributors related to the benefits they receive?

Will the strategy provide incentives for travelers, investors, or government units? Will it hinder economic development?

**Equity:** Is the strategy fair? Are there equity issues in terms of geography? How does it affect different income groups?

**Sustainability:** Is the revenue base broad or narrow? Is the tax rate high or low? How much revenue can it raise? Would it be enough to replace traditional sources of revenue? To what extent could the revenue catch up with income growth, inflation, and need? Is it stable or cyclical? Is it predictable?

**Feasibility (political and administrative):** Is it visible to taxpayers? How is it perceived by developers and the public? How difficult is it to launch politically? How hard is it to manage the process, and are additional skills needed?

In addition, next steps for implementation—including statutory changes that would be needed in Minnesota—are noted for each strategy.

## Land Value Tax (LVT)

The land value tax (a type of property tax) is the broadest tax in the study. It captures the general increase in the price of land due to improved accessibility from transportation networks (not just from a specific project). A pure land tax is rare; the most common form, the split-rate property tax, taxes land at a different—higher—rate than buildings. (The conventional property tax applies the same rate to land and buildings.) Taxing buildings creates disincentives for development, but because the supply of land is fixed, taxing it at a higher rate results in little economic distortion. The land value tax has had limited use in the United States.

**Economic efficiency:** Provides strong signals about where to invest. Gives developers an incentive to use land more intensively and develop vacant parcels more quickly.

Encourages higher density development. Does not affect the supply of the taxed good.

**Equity:** Shifts tax burden away from residential properties and more toward industrial property and vacant parcels (i.e., those with a low building-to-land ratio). Primary beneficiaries would be owners of office properties in high land value locations and owners of single-family homes in middle- and upper-income neighborhoods. Taxes on properties in low-income neighborhoods could rise somewhat.

Features	
<b>Contributor:</b>	landowners
<b>Coordination:</b>	taxing authority
<b>Timing:</b>	before and after
<b>Space:</b>	whole jurisdiction
<b>Basis:</b>	old and new development
<b>Costs:</b>	capital and O&M
<b>Road ownership:</b>	public
<b>Level of government:</b>	local

**Sustainability:** Could provide a stable base with a fairly low tax rate. Modest growth potential. Broad enough to replace the property tax.

**Feasibility:** Fairly easy to implement, but may prove politically challenging due to high visibility and potential unpopularity. Getting accurate assessments could be difficult.

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**Implementation:** The land value tax is not explicitly authorized under current law. The most important 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.

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## Tax Increment Financing (TIF)

Features	
<b>Contributor:</b>	landowners
<b>Coordination:</b>	taxing authority
<b>Timing:</b>	before
<b>Space:</b>	restricted off-site areas
<b>Basis:</b>	old and new development
<b>Costs:</b>	capital
<b>Road ownership:</b>	public
<b>Level of government:</b>	local

Tax increment financing levies taxes on the future increment in property value within a development (or redevelopment) project to finance development-related costs, including infrastructure improvements. TIF districts can be expanded beyond the site of an improvement to encompass a small district. The strategy is commonly used by local governments to promote housing, economic development, and redevelopment in established neighborhoods. TIF has rarely been used for transportation, however, except for small-scale applications to urban rail transit networks.

**Economic efficiency:** May promote economic development, but revenues largely depend on how much the property value appreciates.

**Equity:** Relates costs to benefits, but problems may arise where the boundaries of a TIF district overlap with those of other taxing jurisdictions, such as school districts. May place an increased burden on existing businesses, lower-income households, or households with fixed incomes.

**Sustainability:** Limited revenue base, as it is typically applied to specific locations near a transportation improvement. Higher tax rate than conventional taxes. Fairly stable and predictable in healthy markets/economy; keeps pace with inflation and incomes.

**Feasibility:** Politically feasible due to low visibility for general taxpayers, but more costly to administer and ensure compliance.

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**Implementation:** TIF is currently limited to local units of government in Minnesota. The authorizing statute (469.175) would need to be amended to add the Minnesota Department of Transportation (Mn/DOT) and/or Metro Transit (or its parent agency, the Metropolitan Council) to the list of authorized users.

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## Special Assessments (SA)

Special assessments impose special charges on property close to a new facility. The assessment is levied only against those parcels that receive a special benefit from the public improvement; the benefits must be clearly identified and measured. The strategy is widely used across the United States, typically for local infrastructure improvement projects.

**Economic efficiency:** Spurs economic development. Benefits are allocated in proportion to use.

**Equity:** Links the costs of infrastructure projects to those who benefit, but the link depends on the assessment structure and any exemptions. Often determined by home value, so lower-income or fixed-income residents may pay a higher effective rate.

**Sustainability:** Typically has a narrow base and raises only a limited amount of revenue; tax rate varies. For specific projects, may provide a small yet important source of revenue.

**Feasibility:** Highly visible to affected property owners, leading to localized opposition. Business owners tend to support them; homeowners often oppose them. Administratively, one of the most technically difficult, with a complicated legal establishment process.

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**Implementation:** Minnesota statutes would need to be amended to allow state and regional agencies as authorized users, and to allow special assessments to be applied to interstate highways and public transportation facilities.

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Features	
<b>Contributor:</b>	landowners
<b>Coordination:</b>	taxing authority
<b>Timing:</b>	before
<b>Space:</b>	restricted off-site areas
<b>Basis:</b>	old development
<b>Costs:</b>	capital
<b>Road ownership:</b>	public
<b>Level of government:</b>	state and local

## Transportation Utility Fees (TUF)

Transportation utility fees treat transportation networks like a utility, similar to other local services such as water and wastewater treatment that are financed primarily from user charges. TUF fee rates can be set using a number of different bases that are more closely related to transportation demand than the property tax, including fees that apply per unit of housing or per parking space, fees based on square footage or gross floor area, and fees that vary with the trip generation rate for a given property type. This strategy has faced legal challenges in the United States, most often on the grounds that it represents a tax, thus triggering referendum requirements in some local jurisdictions.

**Economic efficiency:** Shifts some of the cost burden from residential properties to commercial and industrial properties, which typically use the transportation network the most. Allows collections from users exempt from local property taxes (e.g.,

Features	
<b>Contributor:</b>	landowners
<b>Coordination:</b>	taxing authority
<b>Timing:</b>	before and after
<b>Space:</b>	restricted off-site areas, whole jurisdiction
<b>Basis:</b>	old and new development
<b>Costs:</b>	capital and O&M
<b>Road ownership:</b>	public
<b>Level of government:</b>	local

churches, stadiums, public buildings).

**Equity:** Better connects costs and benefits than the property tax; property could be billed based on how much transportation it uses. Residential costs would decrease, but retail costs would increase substantially.

**Sustainability:** Relatively stable. Tax rate can be set on various bases.

**Feasibility:** Politically feasible, because shifting the burden to non-residential properties would be popular with residents. Administrative workload would increase. Creates potential for legal challenge (must not resemble an unauthorized tax).

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**Implementation:** TUFs are not authorized under current state law, so a state-level authorizing statute would be required. TUFs have been challenged in the past on the grounds that there was only a weak nexus between the level of the charge and the benefit received by the property owner. Thus, jurisdictions wishing to establish a utility fee for transportation purposes may choose to commission formal planning or engineering analyses that better establish the link. In addition, jurisdictions should carefully consider the use of discounts or exemptions for certain groups of residents.

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## Development Impact Fees (DIF)

Features	
Contributor:	developers
Coordination:	taxing authority
Timing:	after
Space:	restricted off-site areas
Basis:	new development
Costs:	capital
Road ownership:	public
Level of government:	local

Development impact fees are one-time charges levied on 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. Development impact fees also differ in that they are typically determined through formal calculations of the public service costs of new development, rather than through the less-formal negotiation processes typically used with negotiated exactions. DIF is widely used throughout the

United States, but prior attempts to levy them in Minnesota were challenged in the courts.

**Economic efficiency:** Allocates most of the costs to those most likely to benefit from the infrastructure.

**Equity:** Contributors receive roughly proportional benefits. Not regressive (i.e., it doesn't impose a relatively greater burden on the poor than on the wealthy) unless it causes developers to abandon low- and moderate-income housing markets.

**Sustainability:** Narrow, since impact fees are often targeted toward new development. Adjustable, so good potential for growth. Strongly tied to the demand for new housing and/or commercial space, so it is subject to cyclical movements in real estate markets and the economy more generally.

**Feasibility:** Not highly visible, so politically feasible. Fairly low administrative costs.

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**Implementation:** Specific, state-level legislation would be needed to authorize their use. There must be a clear connection (nexus) between the charges imposed on a development and the impact of the development.

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## Negotiated Exactions (NE)

Negotiated exactions are functionally similar to development impact fees, except that they are not determined through a formal, formulaic process and are not typically applied to off-site infrastructure provision. 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. They are used in many Minnesota communities.

**Economic efficiency:** Allocates the costs of development (through a one-time fixed charge) to those who generate them.

**Equity:** Provides benefits to contributors. The distribution of the burden of costs across income groups is likely to depend on the incomes of the new residents of developments.

**Sustainability:** Narrow base and high rate; cyclical because it is targeted toward new development and dependent on real estate market conditions.

**Feasibility:** Generally politically feasible, as it is seen as a way to make new residents “pay their own way.” Administratively, relatively simple as part of the development permitting process.

**Implementation:** Authorized under current laws. Local governments should avoid any arbitrariness in their requirements for developer contributions and should use formal traffic impact studies to establish proportionality between the impact of a proposed development and the negotiated contributions.

Features	
<b>Contributor:</b>	developers
<b>Coordination:</b>	negotiation
<b>Timing:</b>	before
<b>Space:</b>	on-site
<b>Basis:</b>	old and new development
<b>Costs:</b>	capital
<b>Road ownership:</b>	public and private
<b>Level of government:</b>	state and local

## Joint Development (JD)

Joint development refers to the development of a transportation facility and adjacent private real estate development, in which a private sector partner either provides the facility or makes a financial contribution to offset its costs. There are two types of JD: revenue-sharing arrangements and cost-sharing arrangements. In the former, the infrastructure provider, typically a public entity, retains a share of the revenues from new development near the improved facility. In the latter, the private sector contributes directly to the provision or maintenance of the infrastructure itself. JD is more common abroad, especially in Asia.

**Economic efficiency:** Contributions of developers or tenants coincide with their expected benefits.

Features	
<b>Contributor:</b>	developers
<b>Coordination:</b>	partnership
<b>Timing:</b>	before and after
<b>Space:</b>	on-site and restricted off-site areas
<b>Basis:</b>	old and new development
<b>Costs:</b>	capital and O&M
<b>Road ownership:</b>	public and private
<b>Level of government:</b>	state and local

**Equity:** Since transactions are voluntary, ensures benefit equity. Neutral to progressive with respect to the property owners' ability to pay.

**Sustainability:** Fairly narrow, since it applies only to small sections of the real estate market; revenues are generally small. Revenues are closely related to levels of volatility in commercial and office real estate markets.

**Feasibility:** Narrow base and low visibility make it politically palatable to most residents. Entails a high degree of administrative complexity; requires sophisticated legal, marketing, financial skills.

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**Implementation:** Authorized under current statutes for public-private partnerships.

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## Air Rights (AR)

Features	
<b>Contributor:</b>	developers
<b>Coordination:</b>	negotiation
<b>Timing:</b>	before and after
<b>Space:</b>	on-site
<b>Basis:</b>	new development
<b>Costs:</b>	capital
<b>Road ownership:</b>	public and private
<b>Level of government:</b>	state and local

Air rights agreements establish development rights above (or below) a transportation facility in exchange for a financial contribution or future additional property and/or income taxes. Certain types of facilities (such as subways) can generate sharp increases in land value near access points that may induce developers to build at much higher densities. The public sector can sell or lease the air rights above these facilities. This strategy has a long history of use.

**Economic efficiency:** Promotes economic efficiency. Costs most likely will be at least proportional to the benefits received, since the contributors reveal their willingness to pay through a market transaction.

**Equity:** Contributors receive benefits in proportion to their contribution in the form of usable space in a high-access location. Neutral to progressive with respect to the ability to pay. Could replace other, more regressive forms of general taxation.

**Sustainability:** Narrow, since it only applies to specific developments and revenue is typically only generated on site. Could be a component of financing plans for specific transportation improvements. Modest growth potential. Predictability is related to the ability to forecast trends in commercial and office space markets, resulting in rather high volatility.

**Feasibility:** Politically feasible in most cases, often invisible to most taxpayers. More administratively complex than several of the other value capture strategies. Requires additional specialized skills related to real estate management and law.

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**Implementation:** 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 suitable locations. 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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# Conclusions

The study identified eight value capture strategies: land value tax, tax increment financing, special assessments, transportation utility fees, development impact fees, negotiated exactions, joint development, and air rights.

Some value capture strategies target property owners, while others target developers. The strategies differ in how, when, and where they may be applied. They also yield different outcomes, which can be assessed relative to four criteria: economic efficiency, equity, sustainability, and feasibility. Table 3 summarizes the strategies according to these criteria.

The strategies can be applied individually or combined to meet specific situations (see Figure 2). Strategies are used more commonly for capital cost rather than for operations and maintenance, but any financial instrument can be used for any cost occurring at any time with appropriate planning and use of debt and annuity instruments.

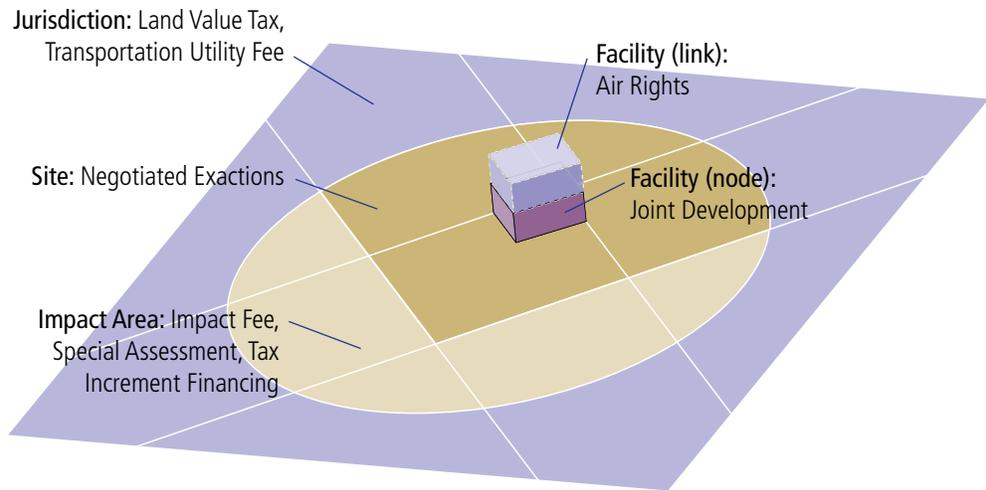
Each of the value capture strategies could potentially be applied by jurisdictions in Minnesota. Statutory adjustments in Minnesota law would be needed to use several of them for transportation purposes.

**Table 3:** Value capture strategies at a glance

	Autho- rized in Minn.	Efficiency	Equity		Sustainability	Feasibility	
		Price Signals, Economic Growth	Cost/Benefit to Payers	Ability to Pay*	(Adequacy, Growth Potential, Stability)	Political	Administra- tive
<b>LVT</b>	No	Good	Good	Slightly regressive	Broad base, modest growth, fairly stable	Low	Fairly simple
<b>TIF</b>	Yes**	Little evidence for transportation use	Good	Possibly regressive	Narrow, for limited proj- ects; keeps pace with inflation, incomes	High	Complex, costly
<b>SA</b>	Yes**	Good	Depends on struc- ture & exemptions	Slightly regressive	Narrow base, limited revenue, one-time	Low	Difficult to establish
<b>TUF</b>	No	Good potential	Good	Slightly regressive	Stable, adequate, predictable	High	Simple
<b>DIF</b>	Unclear	Good	Good	Probably neutral	Narrow; adjustable for growth; cyclical	High	Low costs
<b>NE</b>	Yes	Good	Good	Neutral to progres- sive	Narrow; some growth potential; cyclical	High	Simple
<b>JD</b>	Yes	Good	Good	Neutral or slightly progressive	Narrow base, limited revenue; cyclical	High	Complex
<b>AR</b>	Yes	Good	Good	Neutral to progres- sive	Narrow base, limited revenue; cyclical	High	Complex

\*For regressive strategies that may place a greater tax burden on vulnerable groups (e.g., low-income households, the elderly), provisions can be added to allow for discounts, tax credits, exemptions, or other forms of relief.

\*\*With modifications to existing statute(s) to allow use for Mn/DOT & Metro Transit



**Figure 2:** Value capture strategies can be applied individually or combined to suit specific situations.

## For more information:

Read the report to the legislature (CTS 09-18S) or technical research report (CTS 09-18) on the study's Web site: [www.cts.umn.edu/Research/ValueCapture](http://www.cts.umn.edu/Research/ValueCapture).

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