



The Value Capture Approach To Stimulating Transit Oriented Development And Financing Transit Station Area Improvements

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Abstract

This paper examines the proposition that a land value tax (LVT) is an effective method to promote transit oriented development (TOD) and raise revenue to finance public improvements within urban rail transit station areas. A case study of a proposed TOD special assessment district in Seattle demonstrates how changing the general property tax to a LVT would provide incentives to utilize sites more intensively. The paper discusses various value capture mechanisms, and offers two possible land value capture methods to support public bond financing.

This paper is an update of a published article: "Applying Value Capture in the Seattle Region," *Journal of Planning Practice & Research*, Vol. 16, No. 3/4, 2001, pp. 307-320.

Introduction

The four-county central Puget Sound region enters the 21st century with a profusion of ambitious development plans. VISION 2040, mandated by Washington state's Growth Management Act, calls for most new growth to be contained within existing urban areas—in compact communities and vibrant mixed-use centers. The Metropolitan Transportation Plan calls for a wide range of programs and joint development projects designed to integrate land use and transportation, with an emphasis on high capacity transit. Construction is nearing completion on the first 16-mile Central Link light rail line; land acquisition and design are underway for the 3.15 mile extension to University District. City and regional planners are firmly committed to the currently popular concept of TOD, that is, the creation of transit oriented development, or compact, mixed use activity areas centered on transit stations that by design encourage residents, workers and shoppers to walk and to ride transit.

Regional agency managers occupied with the complexities of plan implementation are coming around to the view that in addition to capital funding, regulatory and financial incentives will be needed to achieve these ambitious plans.

Transit Oriented Development

Planning for compact land uses around new high volume transit stations is a useful way to counter the effects of urban sprawl. A mix of multifamily residences with nearby shopping and neighborhood services and convenient transit access is beneficial because it makes more efficient use of existing urban infrastructure, is convenient to residents, consumes less land, and ultimately preserves open space, farms and forests at the urban fringes. Reduced automobile dependency leads to lower household costs, and a quieter, less congested neighborhood environment. The transit-land use relationship is symbiotic, in that TOD is likely to increase transit ridership and increase pedestrian trips - which in turn support the nodal type of commercial development (a cluster of contiguous storefronts with zero setback and minimal surface parking).

It is one thing to designate TOD communities, but quite another to implement them. The re-zoning of station areas for higher density development is the most expedient regulatory mechanism available. But experience has shown that desired development will not occur simply on the basis of its classification as an allowable use. Financial inducements are needed to prompt timely development.

At the same time, public planners and stakeholders need to acknowledge the fact that the announcement of station designation, the installation of station improvements, and commensurate up-zoning bring added site value to affected properties. Riley's research on London's Jubilee Line Extension revealed that a Southwark station area site was purchased in 1980 for £100,000; a year after the line's opening the site was sold for £2.6 million.¹ "The gain was money in the bank for the owners but nothing was contributed to the welfare of the residents." Meantime, Sound Transit planners found that the original cost estimates of building the LINK system were increasing beyond expectations. Unanticipated inflationary trends in the real estate market, especially rising land prices along the designated rail corridor, drove acquisition costs beyond the project's total capital budget. Officials are now inquiring as to whether there are legal but painless ways of tapping into these escalating land values to find supplemental capital funding for the \$1.9 billion extension.

The Case for Capturing Land Value Gains

Implementing the region's transportation plans will require substantial public investments in new infrastructure, and sizable increases in program funding to meet TOD objectives. These public sector commitments, in the form of approved detailed plans, land use regulations, and capital funding, will stimulate private sector investments in business activity and housing. This economic activity will result in the growth of "land rents", or rising land values in designated locations. Such site value increases are experienced generally, that is, independent of capital investments in building improvements that individual owners may undertake. Land rent is surplus value, and is the product of location advantages, natural amenities, government actions, and collective private capital investments in the nearby vicinity. In the course of real estate transactions, owners and

¹ Don Riley, *Taken for a Ride*, Centre for Land Policy Studies, UK.

purchasers make investment decisions based upon their expectations of local government performance. Thus, government actions coincidentally “give” property added value.

This surplus value, reflected in *land value* assessments, can either be retained by individual owners as a capitalized asset, or captured by the public sector to be redistributed as public benefits. Land owners typically desire to retain their property appreciation because it represents the value conferred through ownership. However, a basic principle in liberal economic theory holds that legitimately created value belongs to the creator of that value. Hence, government in its role as steward of publicly created value is justified in collecting what the community has given. A “benefits received” view of just taxation means that in practical terms a part of this surplus value needs to revert back into public infrastructure; the remainder might be retained by owners as unearned increment.² In practical terms, public jurisdictions have the legitimate right to recapture incremental land value increases, either through property taxation, or “set-asides” requiring developers to make direct contributions to a prescribed public purpose such as the provision of below market rate dwellings.

Improvement value, on the other hand, is the remaining component of property assessments and is attributable to private capital investment in individual parcels. Owners have the intrinsic right to retain most of the building value which they themselves have created.

Land Value Taxation

A tax on land values produces economic and social consequences very different from a tax on improvements.³ Any tax tends to diminish the base upon which it is levied. Hence, what in the public’s interest is desirable should be taxed less—commerce, job growth and investment. What is undesirable should be taxed more—pollution, traffic congestion, land consumption (urban sprawl), and energy resource depletion. Yet, as the nation’s tax codes demonstrate, the reverse is often the case. “Our tax system is brilliant in its perversity,” claims green tax advocate Alan Durning, of Northwest Environmental Watch.⁴

Because buildings comprise most of the aggregate value in real estate, the prevailing equal tax rate on land and improvements places a relatively high burden on improvement values—the capital investment of owners. In this way the current tax system discourages private investments in areas where property values are rising. In fact, the system amounts to an inducement to monopolize and speculate on land, that is, to hold onto property without improving or selling it, thus reaping windfall gains as land prices rise. How can these tax incentives be reversed so as to encourage new private investment in mixed-use centers and transit-oriented communities?

² Fred Harrison (2006), *Wheels of Fortune: Self-funding Infrastructure and the Free Market Case for a Land Tax*, Institute of Economic Affairs, London.

³ Francis K. Peddle (1994), *Cities and Greed*, Canadian Research Committee on Taxation (Ottawa) p.34.

⁴ Alan Durning (1998), *Tax Shift*, Northwest Environmental Watch (www.sightline.org), p.28; at www.sightline.org/publications/books/tax-shift/tax.

The land value tax (LVT) as a reform measure has several advantages. As a result of placing a higher tax rate on land values, it would become more costly to hold onto vacant or underutilized sites. Lowering the tax rate on improvement values would engender private capital investment in building improvements. Coincidental with the reformed tax system would be a gradual trend towards infill development, as owners realize the tax benefits of making substantial capital investments. The marginal tax shift onto sites having a high ratio of land-to-building value would effectively be capitalized into lower resale prices. Because a land value tax is applied uniformly to all properties within a local jurisdiction (city or county), the general effect would be a restraint on rising land prices and housing prices. Finally, the LVT, being revenue-neutral, would not result in any revenue losses.

Stimulating Transit Oriented Development Through Tax Incentives

Faced with the realization that land speculation is likely to occur in designated station areas, regional planners are now giving thought to new incentives to encourage TOD, including the land value tax. If a local option land value tax system were to be authorized by the state legislature, what would be the economic incentives that could actually be expected? Would the incentives in the form of tax shifts operate in positive ways, and would the tax burdens be fair?

A Simulation Model of LVT

The tax shift effects accompanying a conversion to a differential or 2-rate property tax can be simulated by finding the split rate that produces the same jurisdiction-wide revenue derived under the present tax regime. The split rate adopted for this model is a 95% LVT, that is, 95% of the total tax rate is applied to the land assessment and 5% to the improvement assessment. The aggregate city-wide ratio of land-to-total value (0.42) determines the point at which tax shift occurs in the change to a differential rate system.

The Broadway/John Street LRT station, located in Seattle's Capitol Hill business district is the first stop on the northbound University LINK Extension. This station area, currently in the property acquisition stage, affords a static analysis of the incentive/disincentive effects of land value taxation. The 458 parcels found within a half-mile radius of this intersection contain a higher building assessment ratio than the city as a whole. Therefore, assuming that a revenue-neutral 2-rate tax rate applies to the city as a whole, the land-based tax would result in a slight downward shift in tax liability within the station area. But when these parcels are divided into fully utilized and underutilized sites (based on assessment ratios and floor area ratios), differences emerge. See Table 1 for model assumptions and outcomes.

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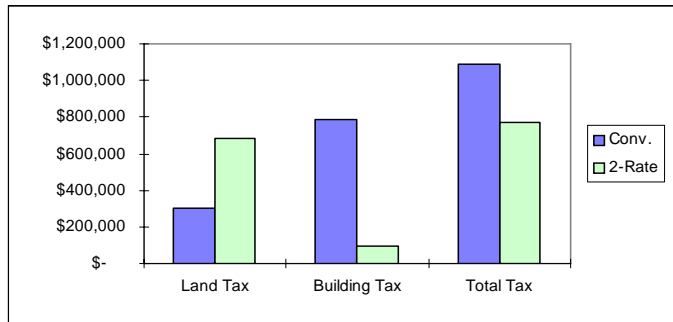
Table 1

**A SIMULATION MODEL OF 2-RATE INCENTIVE PROPERTY TAXATION:
E BROADWAY & JOHN STATION AREA - TRANSIT ORIENTED DEVELOPMENT**

MODEL ASSUMPTIONS:	Value	Notes:
Property Characteristics		
Station Area	1/2 sq. mi.	radius from station
No. taxable parcels	458	
Sum land value	\$ 78,012,300	1996 Assessment
Sum improvement value	\$ 118,795,357	1996 Assessment
Land-to-total value ratio	0.40	aggregate LTV ratio
Floor Area Ratio	1.21	aggregate FAR (building floor area / lot area)
Redevelopment Potential		
Underutilized parcels	157	LTV ratio > .66, and FAR < overall land use class mean
Mean FAR	0.39	
Fully developed parcels	301	balance of properties
Mean FAR	1.59	
Taxation Methods		
Conventional tax rate	\$12.50	mill rate (___\$ per \$1000 assessed value)
2-rate land value tax (LVT)	95%	of total tax rate applied to land value; revenue neutral at Seattle city level
Redevelopment Scenario		
Conversion to multifamily use		underutilized properties converted to multifamily and mixed use residential
Standard FAR	2.04	mean FAR in multifamily class, fully developed properties
Building floor area		multiply lot square footage by standard FAR
Unit floor area	842	mean square feet per dwelling unit in existing multifamily buildings
Additional dwelling units		additional building floor area / unit floor area
Building value factor	\$ 38.00	building value per internal square foot (based on mean MF = \$29 and mean MU = \$43)

OUTCOMES:	Value
All Parcels	
Revenue from conventional tax	\$ 2,460,096
Revenue from 2-rate LVT	\$ 2,359,311
Tax shift	-4.1%
Fully Developed Parcels	
Revenue from conventional tax	\$ 2,104,466
Revenue from 2-rate LVT	\$ 1,673,142
Tax shift	-20.5%
Underdeveloped Parcels	
Revenue from conventional tax	\$ 355,630
Revenue from 2-rate LVT	\$ 686,169
Tax shift	92.9%
Redevelopment Scenario	
Sum land value	\$ 24,278,600
Sum improvement value	\$ 63,049,203
Land-to-total value ratio	0.28
Revenue from conventional tax	\$ 1,091,598
Revenue from 2-rate LVT	\$ 772,683
Tax shift	-29.2%
Additional dwelling units	1,590

COMPARATIVE TAX BURDEN EFFECTS: All Parcels



More intensively utilized sites including retail stores and apartment buildings (301 parcels) would experience a negative 21% tax shift under the 2-rate system, about \$431 thousand less than the annual conventional tax yield. On the other hand, the underutilized subset that includes surface parking lots and vacant lots (157 parcels) would see a tax increase of about 93%. Thus, owners of intensively used parcels (consistent with TOD objectives) would be rewarded with lower taxes. Unlike the conventional tax effects, the LVT would not expropriate owners' capital investments. Conversely, land owners whose interim economic activity is the accumulation of potential windfalls from rising site values would be required to give back a higher portion of their annual gain. The 2-rate tax incentives are simultaneously negative and positive.

Suppose that owners of underutilized sites responded to the positive incentive of lower taxes on fully developed properties. If these sites were all redeveloped into multifamily and mixed-use buildings at the same intensity as existing fully developed properties (an FAR of 2.05), the aggregate building value would increase 14 times. This would tip the land-to-total-value ratio to the other side of the scale, where building values comprise over 70 percent of the assessment. Now, the same properties redeveloped would experience a reduction in taxes of nearly 30 percent compared to what the conventional tax would take annually. Again, owners are rewarded for investing their own capital or releasing land for new development consistent with TOD objectives. An added public benefit is the nearly 1,600 new dwelling units that could be built on these parcels at the development intensity normal for this area.

The land value tax system is in practice *incentive taxation*; that is, by shifting tax burden onto land-intensive sites, it increases the potential for infill development, greater capital investment, higher commercial rents, and the rapid absorption of building space. For example, Harrisburg, PA shifted its tax system to LVT in 1996 and as since seen substantial increase in new development as owners of parking lots on prime downtown sites are no longer paying low taxes.⁵ The land value tax system is not a funding mechanism – a method of raising revenues within an assessment district to fund capital improvements for transportation infrastructure. However, the same land-based approach can be used for this purpose, and falls within the category of “value capture”.

Value Capture

Value capture is a mechanism by which all or a portion of the financial benefits received through property value increases, generated by geographically targeted public capital investments, are appropriated by a local public authority. The concept of *value capture* appeared many decades ago in the form of special assessments. The City of New York drew up a proposal for financing its 1930s subway extension through property assessments, demonstrating that increased land values along existing lines amounted to more than four times the cost of constructing them.⁶ Lately, a keen interest in transportation - land use linkages and transit oriented development has refocused attention on this potential funding device. A 1987 Washington state statute authorized the formation of local “transportation benefit districts”, although no TBD has ever been formed.⁷

Over the past years, several methods of capturing value added have come into practice; normally they involve delineating a local benefit area to form a special assessment district. These methods vary – from compulsory capture through taxes or levies, to

⁵ Stephan Nieweler, *Transit-Oriented Development for the Greater Toronto Area: An International Policy Perspective*, M.Sc.Pl. Thesis, 20 April 2004.

⁶ Donald Hagman, and Dean Misczynski (Eds.), *Windfalls for Wipeouts: Land Value Capture and Compensation*, APA Planners Press (www.planning.org), Chapter 12.

⁷ PSRC (1999), *Creating Transit Station Communities in the Central Puget Sound Region*, Puget Sound Regional Council (www.psrc.org).

voluntary capture through partnership agreements between property owners and a local authority.⁸ Four strategies are widely practiced in North American localities:

1. Special Assessment – a tax assessed on parcels identified as receiving a direct and unique benefit as a result of a public project. The most common among these is a Local Improvement District (LID), used to finance capital improvements in transportation infrastructure. The 1.3-mile South Lake Union Streetcar project in Seattle involved an LID that raised \$25 million, half of the total capital costs of the streetcar line. In this case, the amount paid by each parcel was determined by agreement between the 750 property owners and the city, and approved by a margin exceeding the 60% rate required by law.⁹
2. Tax Increment Financing – a special provision in state law that allows the diversion of the property tax increment derived from the increase in property values over a base year to a fund used to pay off capital bonds for public improvements within a TIF district. This method evolved primarily as an offset to decreased federal grant funding for urban renewal, and usually involves community revitalization projects wider in scope than transit improvements. The Washington state legislature approved a limited form of TIF, but constitutional prohibitions against the lending of state credit and use of the state's portion of property tax revenue for diversion to TIF districts has greatly weakened the strength of this financing tool. It is authorized in 47 states, and is widely used in Oregon.
3. Joint Development – a cooperative agreement between a public agency and private developer/owners to build usually large-scale mixed-use development projects on land that has been purchased by a transit agency. Washington, D.C. and California have made extensive use of such partnerships to build transit communities in rail station areas.
4. Developer Impact Fees – a fee assessed on new development within a jurisdiction, used to defray the cost of extending public services to the development sites. This reflects a policy shift whereby local governments increasingly look to developers to bear part of the costs of development – both direct and indirect. However, benefits received are not always easily determined.

The rise in property values associated with public transportation developments is certainly a derived benefit to land owners, but what is the precise measure of benefits received, and what portion is reasonable to capture in the form of taxes or fees? A large number of empirical studies have confirmed the positive impact of transit station improvements on nearby property values.¹⁰ Urban rail transit will significantly raise site values in station areas, especially if the regional economy is growing, and complimentary

⁸ Marcus Enoch, Stephen Potter and Sephen Ison (2005), "A Strategic Approach to Financing Public Transport Through Property Values", *Public Money & Management*, June, p. 147.

⁹ University of Washington Urban Form Lab (2007), *Financing Options for an Expanded Seattle Streetcar System and Network*, Washington State Transportation Center, report to the Urban League and Seattle Streetcar Alliance.

¹⁰ Jeffrey Smith and Tom Gihring (2006), "Financing Transit Systems Through Value Capture: An Annotated Bibliography," *The American Journal of Economics and Sociology*, Vol. 65, No. 3, July; pp. 751-786; at www.vtpi.org/smith.pdf.

regulatory and joint development programs are in place.¹¹ Joint development programs supportive of TOD include permissive zoning, street improvements, and design features such as pedestrian plazas. Most of the land use and value impacts occur within a quarter to half mile of stations, where office rents tend to increase and housing prices are higher. To place this in its widest perspective, the presence of transit generally enhances urban real estate values. For example, Metalitz estimates that the 300 full-service rail transit stations operated by Chicago's CTA and Metra currently generate land value increments of \$1.6 billion annually.¹²

The Center for TOD in Berkeley, California identified several ways that station location, transit accessibility, and associated amenities can benefit land owners:¹³

- Transit can improve the marketability of new residential units, office and retail space, resulting in higher profits.
- Transit stops can open up valuable new sites for development.
- Proximity to transit stops is likely to prompt up-zoning and higher-density development.
- TOD can command higher sales prices and rents, making higher-density construction more financially feasible. (For example, properties within 2 blocks of the Portland Streetcar line realized 75 to 90 percent of the allowable FAR under the zoning code, compared with development at 43% of the FAR potential for properties located more than 3 blocks away.)
- TOD can encourage cities to support new infrastructure and public facilities, and possibly provide development subsidies.

If all of these advantages do in fact accrue to station area land owners, what method is appropriate to assess their value? Often, transportation improvements take on a linear configuration, associated with a public right-of-way. When forming LIDs, it has become a practice to assess adjacent property owners on a \$ per foot of lot frontage basis to fund ROW improvements. In the case of transit improvements which take on a nodal configuration, it may be appropriate to assess on the basis of \$ per square foot of lot area. The City of Seattle rejected both options for the SLU Streetcar project in favor of a special benefits method of assessment.¹⁴ Total direct benefits were calculated at \$69,358,310, consisting of the measurable increase in the market value of property attributable to the transit project (the difference in value *with* [after] the improvement and *without* [before] the improvement). Through negotiation, private owners agreed to be assessed 38% of the total direct benefit, yielding \$25.7 million, or 52% of the total project cost.

¹¹ Robert Cervero (1994), "Rail Transit and Joint Development," *Journal of the American Planning Association*, Winter, p.83-93.

¹² Chuck Metalitz (2007), *Retrieving Transit's Benefits*, Henry George School Research Note 5a.

¹³ Center for Transit-Oriented Development (2008), *Capturing the Value of Transit*, Reconnecting America for the U.S. Department of Transportation, Federal Transit Administration; at www.reconnectingamerica.org/public/download/ctodvaluecapture110508.

¹⁴ Allen Brackett Shedd, Associates (2006), *Final Special Benefits Study for the South Lake Union Streetcar Project*, City of Seattle LID No. 6750, March 29, 2006.

Thus, if a property owner or developer anticipates that improved public transit service will enhance the value of a new mixed-use building as well as the rents that can be charged to tenants, it makes business sense to enter into a voluntary agreement with the implementing local public agency to pay at least part of the capital costs involved. The question is, what proportion of gain in land value resulting from public action is fair? The answer is not readily discernable, but there are circumstances that make that decision more or less difficult.

If the prevailing notion in the real estate market is that property appreciation is an integral part of an owner's bundle of rights, and anticipated gains are simply an element of wise investment, local government may experience resistance to the exaction of land rents. Moreover, if government agencies have already established the practice of crafting and offering "incentive" programs to leverage public benefits, then the prospect of recapturing the lion's share of community-generated value is not high. In which case, one might ask what is the *return on cost* that developers usually expect from a project. If a developer pencils in on a pro forma a ROC of 15% to 20%, would it be reasonable to retain an equivalent proportion of land value gain as a return on investment? This is indeed a smaller share than the 62% that South Lake Union property owners retained.

Land owners adjacent to the proposed New York & Florida Avenues Metrorail station in D.C. claimed that without an offset provision, the payment of higher property taxes to help finance the station would compel them to pay twice. But in fact, the additional 2.05% assessment rate on the elevated land values captured less than a third of the land rent on those sites circumscribed by the Metro Benefit Assessment district.¹⁵ One measure of tax equity is ability-to-pay. Another measure is payment *in proportion to benefits received*. Those benefiting from government actions can be expected to return a fair proportion of community-generated gain.

Implementing Value Capture

By setting up a special assessment district to encourage transit oriented development, a local jurisdiction declares its intent to stimulate new building-intensive development by making sizable investments in transit infrastructure and facilities. Special assessment districts circumscribing transit station areas are an application of the "benefit principle." That is, some portion of the benefits of a public transit project derived by property owners should be recaptured. Because the project causes nearby properties to increase in land value, the aim is to appropriate this publicly created value.

The principle is straightforward to put into practice due to the fact that benefits are closely tied to ad valorem assessments. The governing agency need only estimate the revenue needed to support the planned project improvements in each station area, define

¹⁵ Rick Rybeck (2004), "Using Value Capture to Finance Infrastructure and Encourage Compact Development," *Public Works Management & Policy*, Vol. 8, No. 4, pp. 249-260; <http://pwm.sagepub.com/cgi/content/abstract/8/4/249> and www.njrati.org/files/technology%20transfer/conferences/portland/updatedPDFs/Portland_Rybeck.pdf.

an assessment district, and set up a mechanism to capture land value increments. The method proposed here does not base assessments on total annual land value (as does the general property tax), but rather on the change in land value, from year to year. This coincides with land rent, or annual unearned economic gain.

Here is where the major distinction is drawn between value capture and tax increment financing. TIF is a manipulation of the general property tax, whereas value capture is a separate tax, not unlike a mandatory LID (local improvement district). Because general property tax revenues are not affected, the constitutional prohibition against non-uniform taxation does not arise. Moreover, regular taxing districts (such as school districts) are not deprived of the increases in property tax revenues they need to meet increased demand for services created by new households and businesses added to the benefit districts.

Tax allocation bonds are issued after the construction of public improvements begins. The term “geo-bond” might be used to distinguish the capture of land rent as a bond financing mechanism from other taxing mechanisms that include the building component of assessed value. How much of the total land rent is captured from properties within a benefit district is a matter of political judgment. The more radical approach would be to set a land value gains tax rate high enough to capture the anticipated total annual gain in land values. An alternative approach is to set the tax rate sufficient to capture only the incremental increase in land values beyond the growth levels that had been generally occurring without the public improvements.

The capture of incremental land values, whether through general taxation (LVT) or special assessment districts, produces two socially desirable effects: (i) reducing the temptation for land owners to speculate on sites by keeping them out of productive use, and (ii) raising the holding costs to a level at which owners will seek a better return on their property investment by reinvesting in building improvements.¹⁶

Simulating Value Capture

The previous Capitol Hill case study illustrating the hypothetical tax burden shifts under a LVT regime is a *static* model; that is, it measures effects at one point in time. Value capture, on the other hand, is a special assessment designed to provide revenue for the debt financing of new capital improvements. Hence it is necessary to project land value increments over a specified project time period. This would be akin to a feasibility study that would accompany a proposed TIF project, whereby it is determined whether the expected rise in property values over the project period will cover total capital costs. In the case of value capture, the researcher wants to know what amount of land rent could be captured over a period of years from all parcels within a benefit district. This requires a *dynamic* model containing assumptions about zoned development capacity within the

¹⁶ William Batt (1997), *Value Capture as a Tool in Transportation: An Exploration in Public Finance*, The Central Research Group (Albany); at http://findarticles.com/p/articles/mi_m0254/is_1_60/ai_74643767.

district, the redevelopment potential of each parcel, and the projected growth of land and building values.

The first step in simulating value capture effects is to project land value growth within a TOD benefit district over a period of time during which much of the anticipated rebuilding activity will be completed. Experience provides a guide in this respect. An independent study of London's Jubilee Line extension estimated an increase in nearby land values of £13 billion, worth about £1.3 billion in annual land rent. A recapture rate of 25% would have financed the entire cost of the project over a 20-year period.¹⁷ Perhaps this example is not the best comparable for a Seattle application. Few case studies on record contain the longitudinal data useful for projecting land value growth rates. One such project that does provide this kind of data is found in Vancouver, B.C. In the ten year period following the completion of the Expo Line in 1986, vacant land prices within 500 meters of the stations increased 251 percent.¹⁸ This works out to an average annual increase of 13.4%, a rate that might be reasonably replicated in Seattle's LINK rail system.

For the Capitol Hill station area simulation, a rapid growth scenario (modeling land value growth following the designation of the station location) assumes a 13.4% annual growth rate. This compares with a historic 10.4% average annual growth rate found on representative properties in the Broadway-John business district since the 1996 assessments. In this case, the two growth scenarios built into the simulation model (rapid rate and trend rate) are projected forward from the 1996 base year. The model is designed to simulate a 15-year growth period over which land values are expected to increase, and during which a portion of the annual land rent is captured and allocated to a debt retirement fund for bond financing.

Again, as in the previous LVT model, the 458 station area properties are classified into redevelopable and non-redevelopable subsets, corresponding to their current (1996) utilization status (underutilized and fully-utilized). The criteria used to indicate underutilized status is a high ratio of land value to total value (L-T-V) and a lower than average floor area ratio (FAR). An L-T-V ratio of .66, where over half of the total value of a site is in the land, is used as a tipping point to indicate that a parcel is likely to be redeveloped. This measure is commensurate with a general rule observed in Portland, OR, that when housing and retail rents support land values in the range of \$15 to \$40 per square foot or more, developers have a financial motivation to build at transit supportive densities. For the sake of simplicity, this model assumes that only the 157 redevelopable parcels will be rebuilt within the project period of 15 years.

As a way of simulating the possible effects of the TOD bill (HB1490) introduced in the 2009 state legislative session, the overall average net density within the assessment district at the build-out year is assumed to reach 50 dwelling units per net acre. The construction type is mixed-use residential / ground floor retail. The overall FAR of the

¹⁷ Samuel Brittan (2001), "How land taxes could pay for urban renewal", *Financial Times*, 30 Aug. 2001.

¹⁸ *The Landcor Report* - Special Edition, August 19, 2008, (www.landcor.com).

301-parcel non-redevelopable subset is 1.6, meaning that new rebuilds on 157 redevelopable sites will have to average about 3.4 to reach the target density. The total amount of new building space on these redeveloped sites yields over 456,000 sq. ft. of rentable retail space and over 1,800 dwelling units.

The building value of typical new construction sites in the base year is \$109 per sq. ft. of floor area; the inflation rate (CPI Index) since 1996 has averaged 3.65% annually. If private construction activity follows as anticipated, the value of new buildings is projected to grow at an average rate of 37.9% per year, accounting for inflation. The combined rate for all 458 parcels is 12.7% per year. Building values in are useful for modeling land value capture only insofar as they apply to a general property tax (on land and building assessments). This simulation model incorporates a property tax deduction; that is, the annual property tax is subtracted from an established portion of the annual land rent, leaving a capturable residual. The sum total residual from all parcels is used for bond financing.

GAINS TAX EFFECTS: In practice, one could conceive of two alternative methods of capturing annual land value gains (land rent). An *incremental gains tax* could be designed to capture a given portion of the annual land value gain minus the general property tax amount. An alternative method would capture only the increment of value attributable to transit improvements. Commonly known as a *betterment levy*, this method applied to a dynamic model captures the difference in land rent between the 10.4% district trend rate and the 13.4% rapid growth rate. The following procedures apply to each method (see Table 2):

1. The incremental gains tax captures the residual land value, that is, the difference between the capturable annual increase in land rent and the tax derived from the general property tax. When calculating total land value assessments for the general property tax, the full annual gain would not be used. This is because the additional tax from the value capture mechanism would have the effect of diminishing land values. Economists studying the effects of land-based taxation agree that the marginal tax liability (the amount of an additional land tax over and above the regular property tax amount) is capitalized into lower sales prices. Hence, the annual *capitalized* land assessment is used to calculate the property tax amount for each year during the build-out period.

Annual land rent accruing to all property owners in the district accumulated over a 15-year period amounts to a total of \$436.5 million. As a fairness principle, a portion of gain is left untaxed. In this instance 20% of the full annual land rent is left as an allowable return on investment. After deducting regular property taxes (\$104.8 million), the capturable residual is \$244.4 million.

This amount of value captured would support a bond principal of \$222.2 million. Assuming a tax allocation bond were issued at 6% interest over a 15-year term, the annual debt payments of \$15.9 million plus bond financing fees would add up to the captured revenue amount of \$244.4 million.

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Table 2

**A SIMULATION MODEL OF VALUE CAPTURE AND BOND FINANCING:
E BROADWAY & JOHN STATION AREA - TRANIST ORIENTED DEVELOPMENT**

MODEL ASSUMPTIONS:	Value	Notes:
Property Characteristics		
Special Taxing District	1/2 sq. mi.	radius from station
No. taxable parcels	458	(157 redevelopable, 301 non-redevelopable)
Sum land value	\$78,228,300	1996 Assessment
Sum improvement value	\$118,796,357	1996 Assessment
Growth in Values		
Land value trend rate	10.3% annual	average 13 yr. trend in assessments for selected district sites: 1996-2009
Land value rapid rate	13.4% annual	replication of Vancouver, BC Expo Line experience
Inflation rate	3.65% annual	Seattle metro CPI: 15-year trend, since 1997
Simulation period	15 years	1996 to 2011
Rebuild Parameters		
Value of new construction	\$109 / sf	building value per internal square foot - new mixed use development in 1996
FAR of new construction	3.4	Floor Area Ratio needed to achieve district-wide average net density of 50 DU / acre
Dwelling unit floor area	950 sf	standard size for new construction
Value Capture Methods		
Incremental Gains Tax		
Annual land value gain	Land Rent	full annual LV gain (yr.2 - yr.1, yr.3 - yr2..) from rapid growth rate
Allowable return on land	20%	of full annual LV gain to be retained by owner
Property tax exemption		annual liability from general property tax on building & capitalized land value
Recapturable residual		full annual LV gain less allowable return and tax exemption
Betterment Levy:		
Differential land rent		difference in annual LV growth between trend and rapid growth rates
Recapturable gain		full land rent differential
Bond Financing		
Interest rate	6%	of principal amount
Bond financing fee	2.50%	of principal amount
Term	15 years	
OUTCOMES:		
	Value	all parcels, over a 15 year period
Incremental Gains Tax		
Cumulative land rent	\$ 436,456,332	
Allowable return on land	\$ 87,291,266	
Property tax revenue	\$ 104,787,029	
Recapturable residual	\$ 244,378,036	
Supportable bond principal	\$ 222,162,682	
Betterment Levy:		
Recapturable gain	\$ 153,624,950	
Supportable bond principal	\$ 139,659,045	

2. An alternative method, the *betterment levy*, would use the land rent differential as previously described to calculate the recapturable residual derived from all parcels. The difference in land rent between the trend growth rate (without the station) and the rapid growth rate (with the station) accumulated over a 15-year period amounts to a total of \$153.6 million. This capturable gain would support a bond principle of \$139.7 million.

Results from a simulation model of this kind of course depend upon the assumptions built into it. It can be safely assumed that parcels in the fully-developed class (in 1996) would also be redeveloped, because as land values increase over time, some would eventually reach the L-T-V threshold, that is, the tipping point where an excessively high land ratio makes it worthwhile to convert unproductive sites into higher density buildings. This model assumes a 13.4% annual increase in land values attributable to transit improvements. In practice the actual assessed values could be used to calculate annual

land rents on individual parcels. If the value capture parameters were changed by reason of TOD guidelines or negotiated agreements, the outputs could change substantially. For instance, the ratio of untaxed land rent left to property owners might be modified from the 20% level, or the ¼ mile radius of the benefit area might be adjusted. How the trend land value growth rate should be set is also a matter to be decided – whether it is based on historic values within the district or the current growth rate in the surrounding area.

For what purposes is value capture appropriate when using this mechanism for implementing TOD? The captured amount can be used to fund place-making activities within the district, or to supplement the overall capital budget for station construction. A general rule would be to follow the legal restrictions of an LID such as the nexus requirement; that is, there must be a direct and measurable benefit as a result of the transit station – reflected in increased land values. Also, there should be a prohibition on using value capture revenues to finance transit operating expenses. Because TOD involves community-building, some portion of the revenues could be allocated to the subsidy of affordable housing within the district. In any case, to be fair to property owners, the use of a value capture program should preclude the deployment of other trade-off strategies such as incentive zoning, as the betterment that is conferred on properties as a result of up-zoning would have already been captured.

Conclusion

A property tax reform adopting a differential rate (LVT) would tax mainly the value created by public actions, not the capital invested by individual owners. As a result of placing a higher tax rate on land assessments, it would become too costly to hold onto underutilized sites. Likewise, a proportionately lower tax rate on improvement assessments would encourage owners to upgrade or replace obsolete buildings. The widespread response to the fiscal inducement to reduce the land-to-building value ratio would lead to the development of infill sites and the upgrading of transit districts into compact, mixed use activity centers.

As for the highly articulated public commitment to transit oriented development in this region, planners can be encouraged by the inclusion of LVT as a proposed financial incentive in the Metropolitan Transportation Plan. The national examples of successful TOD show that public investment in transit improvements does not induce development as much as shape it. Only market forces provide the necessary catalyst to form transit station communities. Incentive taxation may indeed be the most effective tool for guiding and propelling these market forces. In addition, value capture applied to transit benefit districts might be seen from the point of view of *benefits received* as the most equitable resolution to financing capital improvements.