



How To Brief No. 4: **HOW TO USE MARKET ANALYSIS FOR VALUE CAPTURE**

Market analysis is fundamental for successful value capture. It allows a transportation agency to anticipate how the private sector will respond to a new infrastructure investment—how properties are developed, where businesses choose to locate, and where people choose to live. This brief introduces the key elements of market analysis and describes how to identify opportunities for value capture, build stakeholder support, and fund and finance transportation infrastructure using value capture techniques. This brief will also help agencies decide whether they have the capacity to perform market analysis in house and which analyses they may consider hiring consultants to perform. It also provides a framework that agencies can use to evaluate market analyses performed by consultants they hire or those submitted by developers in support of infrastructure development proposals.

KEY TAKEAWAYS

- > Market analysis is critical for value capture. It helps transportation agencies anticipate how the private sector will respond to a new infrastructure investment—and the application of the value capture technique—in terms of how properties are sold, assembled, and developed; where businesses choose to locate and expand; and where people choose to live.
- > Property values are driven by factors largely beyond an owner's control—by economic, demographic, and real estate market factors, as well as the policy environment and infrastructure investments. A market study evaluates these factors to quantify changes in demand for different land uses resulting from a transportation infrastructure investment.
- > Taxes on land have a different impact on private sector decisions than taxes on goods and services. To anticipate the market response to a value capture technique, it is important to understand the extent to which the value capture technique acts on land value or on the value of what is built, or both.

Role of Market Analysis in Value Capture

As discussed in How-To Brief No. 2: How to Determine Revenue Potential and Boundaries for Value Capture, market analysis is fundamental for successful value capture. It allows a transportation agency to anticipate how the private sector will respond to a new infrastructure investment—and the value capture technique(s) used to fund it—in terms of how properties are sold, assembled, and developed; where businesses choose to locate and expand; and where people choose to live. A market analysis is the basis for identifying areas and specific parcels

that are likely to experience a windfall private gain from the public infrastructure investment, and it provides the basis for quantifying the magnitude of that gain. It is also critical for identifying appropriate value capture techniques and ensuring that the implementation of a technique realizes its revenue potential and avoids unintended impacts on land values and development patterns.

Market analysis is not only an analytical tool, but also a public relations tool that can help build critical stakeholder support. Successful value capture implementation is the result of collaboration between the public and private sectors; therefore, it must be perceived as fair by both public and private sector stakeholders. An independent, objective market analysis quantifies and communicates to stakeholders the benefits, opportunities, risks, and alternatives of the infrastructure investment and the way it is funded.

The purpose of this brief is to introduce the key elements that should be incorporated into a market analysis as value capture techniques are being considered for implementation to fund or finance transportation infrastructure. This brief will also help agencies decide to what extent they have--or desire to have--the capacity to perform market analysis in house, and what elements they may consider hiring consultants to perform. It also provides a framework that agencies can use to evaluate market analyses performed by consultants they hire, or those submitted by developers in support of development proposals.

Geographical Levels of Market Analysis

A market analysis evaluates current indicators and trends, historical patterns, future plans and projections, and site-specific characteristics to anticipate the market response to a proposed infrastructure investment. Demand for housing, retail and shopping, office space, and industrial space is driven by regional factors and conditions, while supply is determined by local factors and policies and the characteristics of the sites available for development. The private sector response to a new infrastructure investment is thus the result of **regional factors**, **local factors**, and **site-specific factors**. Regional-level analysis evaluates the amount of regional demand for housing and employment space (and other land uses) relative to available development space; the local analysis estimates local demand for housing and employment space given its competitive position in the region; and site-level analysis tells what may be possible on a specific site or sites made more competitive by the proposed infrastructure. These geographical levels of analysis are discussed below.

Regional Factors

Regionwide factors such as population growth and demographics; job growth and the regional economic base, labor market characteristics; infrastructure availability, cost, and quality; and the policy environment (land use, environmental protections, transparency of governance, and others) determine demand for real estate developments and business activities. Regional-level data commonly collected and analyzed in a market analysis are described below.

POPULATION AND SOCIOECONOMIC FACTORS

- Current population, historical growth, population forecast
 - Median income, income distribution, poverty
 - Median age and age distribution
 - Average household size
 - Housing tenure (owner/renter)
- Economic base
 - Industry patterns and trends (job concentration and growth relative to national patterns)
 - Key industries and key traded industries
 - Major employers
- Labor market characteristics
 - Population age 25+
 - Labor market participation and unemployment
 - Jobs by occupation
 - Educational attainment and workforce skill level
- Policy and infrastructure
 - Regional economic development strategies, land use plans, comprehensive plans, transportation plans
 - Transportation infrastructure, including the road network, the transit system, airports, rail and intermodal facilities, marine ports
 - Other infrastructure, including energy, water, sewer, and broadband.

Not every one of these elements will be relevant to every market analysis. For small infrastructure investments with local transportation impacts, it may be sufficient to simply determine the general direction and pace of regional economic growth and the general strength of demand for different types of real estate development and focus on local sources of supply and demand, rather than documenting all regional sources of supply and demand.

UNIQUE CHARACTERISTICS

Some regions have unique characteristics that must also be incorporated into the analysis. Examples include:

- Communities on the U.S. borders with Mexico and Canada may need to factor in border crossings and binational labor and consumer markets.
- Communities with a large U.S. military presence may need to collect data on the characteristics and needs of the base, uniformed and civilian employees, and military families. Needs can be different depending on the military base and can change with national defense needs and priorities, which are largely unpredictable.
- Communities with a large tourist destination such as theme park or port with cruise ship dockings may need to collect data on those unique visitation patterns.

Some agencies have access to regional socioeconomic data and projections needed for the regional analysis. Metropolitan planning organizations, regional planning agencies, councils of governments, and economic development agencies often collect and analyze data, produce

forecasts and projections, and publish regional economic analyses based on the data and projections. Sometimes universities or community colleges host research centers that perform this function. Business location and expansion decisions are based not only on the cost, quality, and access factors of a given location, but on the competitiveness of those factors relative to other possible locations. Ideally, some regional agency or organization monitors and reports on regional competitiveness.

Local Factors

The factors that determine regional sources and levels of demand are also relevant in evaluating local demand potential. Much of the data collected at the regional level can also be collected for the local level and analyzed using the region as a point of comparison. It may also be important to consider the competitiveness of other communities in the region and similar communities in other regions. This analysis allows demand for housing, and retail, office, industrial, and other land uses to be quantified in terms of single and multifamily housing units, square feet of building space, and acres of land.

When the amount of potential demand has been quantified, it should be compared to the supply of vacant space and developable land. As noted above, the supply of land available to meet demand for new development is influenced by local zoning regulations, land use plans, environmental protections, and local infrastructure decisions.

If the value capture technique applies throughout the jurisdiction, total demand for development of different types can be compared to an inventory of building sites available to meet that demand (greenfield or redevelopment). If demand exceeds supply of developable land under current zoning or future land use plans, this may indicate the opportunity for up-zoning (allowing an increase in density or intensity of use) in areas situated to benefit from the transportation investment, to ensure that the full value of the transportation investment can be realized. Zoning decisions and transportation investments have a reciprocal relationship. Zoning for increased density, for example, creates value as well as demand for additional transportation infrastructure. Transportation infrastructure creates value as well as demand for additional development (which is governed by what zoning allows).

Site Factors

If a value capture technique applies to a specific site (single parcel or group of adjacent parcels) or if the proposed transportation infrastructure serves certain locations to a greater extent than others, the market analysis can be used to identify specific parcels and estimate the impact on property values. The following factors can make a difference in how a site benefits from a transportation infrastructure investment:

- Contiguous size and shape or ease of parcel assembly
- A terrain that is level and cleared or one that requires extensive grading
- Environmental conditions such as wetlands, wildlife corridor, unstable coastline or floodplain
- Site fully served by or easily connected to water, sewer, the power grid, broadband internet
- View if obstructed, urban landscape, park, nature, or body of water

- Surrounding built environment:
- Proximity to complementary uses (new multifamily housing near an existing employment center, new office space near existing retail)
- Proximity to nuisances such as noise, pollution, or crime
- Proximity to other transportation, including transit, airport, intermodal rail terminal, and marine cargo facility
- Position relative to the transportation improvement and the extent to which improvements in accessibility, mobility, and connectivity are directed to certain parcels by:
 - Proximity to a new on/off ramp
 - Proximity to a new intersection or interchange that increases population and employers to whom the site is accessible
 - Increased vehicle traffic and/or highway visibility.

Applying a Market Study to Value Capture Implementation

The discussion above focuses on how agencies can use a market analysis to understand how the market might respond to the value created by the proposed transportation investment. As discussed in How To Brief No. 1, How to Adopt the Business Case Mindset for Value Capture, value capture presents the opportunity to fund infrastructure in a more equitable way, and to align infrastructure provision with a wide range of public policy needs such as smart growth, affordable housing, and environmental protection. This occurs in part because value capture is really composed of three elements: value creation, value capture, and value expenditure.



A public infrastructure investment creates value, a portion of that value representing windfall private gains to individuals is captured, and that captured value is then expended. But successful value capture implementation considers the potential market response to all three components:

- **Value creation:** How much value does the transportation infrastructure create and for whom?
- **Value capture:** How can that value be captured in a way that maximizes equity and minimizes unintended market responses (negative externalities and market distortions)?
- **Value expenditure:** How can value created by public investment allocated to support public benefits?

Negative externalities are the cost to a third party of a transaction or consumption; for example, households near a power-generation facility can be affected by changes in air quality, and neighborhoods near airports can be affected by the noise of jet takeoff.

Market distortion can occur when the price of a good is lower than its true cost (for example, due to externalities), which causes more of the good to be produced and consumed; or the price of the good is made higher than its true cost (for example, due to a tax), which causes producers to make less and consumers to buy less than they desire.

Economic Principles in Market Analysis

This following provides a high-level explanation of the economic principles that act on the real estate market. The following principles can guide the market analysis for value capture in infrastructure spending:

- Taxes on land have a different effect than taxes on goods and services.
- A tax on goods increases the cost of production of the goods, which decreases the amount of the good produced and increases the price to consumers, which decreases the amount the consumer can buy.
- Land is not produced, so a tax on land has no impact on the supply of land, instead taxes on land value are capitalized into the value of the land, reducing the expected future value and therefore the price.
- The value of land is the capitalized value of its expected use—in other words, the value of the revenue stream it generates or the price it can be sold for. This value is created largely by factors outside the owner’s control: primarily, the regional and local economic factors and site characteristics evaluated by a market study.
- Transportation infrastructure may increase the expected future value of the land, but unevenly across different property owners, users, and other taxpayers.¹

There are important legal and regulatory distinctions between taxes and fees, but those distinctions are not related to how a value capture technique may affect private sector behavior. Instead, the important factors are: 1) Does the value capture technique change the amount of development that will occur (and is this the desired result?), and 2) Who bears the cost of the value capture, land owners and developers? Or consumers, in the form of increased property rents and sale prices?

An experienced analyst can use the information from a market analysis to anticipate the market response to a given value capture technique and can help policymakers determine whether the market response is consistent with public policy goals, whether the market response undermines the revenue potential of the value capture technique, or whether the benefits of the value capture method (and the infrastructure investment it supports) outweigh potential negative impacts.

¹ See Appendix E of The Guidebook to Funding Transportation Through Land Value Return and Recycling (NCHRP Research Report 873) for a more complete explanation of the economic principles involved in value capture.

Technique-Specific Considerations for Evaluating Potential Market Effects

The following discusses the potential market effects of common value capture techniques.

IMPACT FEES

Impact fees are designed to recover the cost of infrastructure needed to accommodate new development and applied based on intensity of land use rather than on the value of the land itself. The fee structures are based on how the new development changes demand for infrastructure, typically in terms of trip generation per square foot of building space or per housing unit. The fees add to the cost of development, and developers are able to change the amount of fees paid by building a larger or smaller building or more or fewer housing units. In a strong real estate market, a developer can easily pass the cost of impact fees on to consumers in the form of higher rents or sale prices. However, if the fees add more to the cost of development than what the market can bear in rents or sale prices, developers respond by developing less building space and fewer housing units. As a result, impact fees can be useful in rapidly growing areas where demand is strong enough to bear the cost, particularly for development in outlying greenfield areas where land costs are low because they do not incorporate the full cost of necessary infrastructure and public services or environmental costs. When applied to urban infill redevelopment areas, where land values are often already high because of proximity to employment and population centers, or because site prep such as demolition and remediation increase construction costs, the added cost of an impact fee can discourage development. Research on impact fees suggests that they are largely passed on to consumers through rents and sale prices and tend not to capture windfall benefits accruing to developers.² This is an important consideration when evaluating the equity benefits or impacts of a proposed value capture implementation.

NEGOTIATED EXACTIONS

If the value of an exaction is based on the value of what is developed (rather than the increase in land value), the exaction increases the cost of development, and as with impact fees, the cost is passed on to consumers rather than captured from the landowners and developers who benefit from the new infrastructure. Market impacts can be minimized by tying the exaction closely to the infrastructure need generated by the new development (rather than general, jurisdiction-wide infrastructure needs), and relating the value of the exaction to the infrastructure's impact on property value (rather than the cost of the infrastructure).

TRANSPORTATION UTILITY FEES

Transportation utility fees use assumed trip generation (e.g., by building type and size or number of parking spaces) as a proxy for transportation system use to approximate a user fee. Because a transportation utility fee is based on what is built on the land rather than the value of the land itself, it can increase the cost of building and reduce the amount of what is built. If the fees are linked closely to actual transportation system usage rather than general rules of thumb, they function more like a user fee than a tax or impact fee and create less distortion than a general tax that applies to all taxpayers (such as a property tax).

² The Guidebook to Funding Transportation Through Land Value Return and Recycling (NCHRP Research Report 873) page 105.

SPECIAL ASSESSMENT DISTRICTS

Ideally, a special assessment district would apply a levy only to land value rather than to total property value (which includes the value of what is built on the land). To the extent that the assessment applies to built value, it can raise the cost of building and reduce the amount of what is built. But the more closely special assessment district boundaries reflect the benefit areas created by the infrastructure investment, the better the assessment approximates a user fee rather than a general tax.

BUSINESS IMPROVEMENT DISTRICTS

Business improvement districts (BID) function similarly to special assessment districts, but in a BID, the members themselves set the boundaries, determine the amount of the levy, and make expenditure decisions. Thus, BID boundaries more closely represent the true benefit area, and the levy will represent the value of the infrastructure to property owners and businesses in the BID more accurately.

LAND VALUE TAXES OR SPLIT-RATE TAXES

A tax on land, rather than what is built on it, is considered ideal from an economic standpoint because the amount of land is fixed. Imposing a tax on land does not reduce the amount produced, but instead motivates the owner to develop it for productive use (to cover the tax) or sell to someone who will. This principle is useful in real estate markets where, in anticipation of greater future values, property owners choose to hold undeveloped or underdeveloped parcels rather than develop them to their current highest and best use.

In practice, determining the separate value of the land from the total property value is difficult. Simply subtracting the cost of improvements can yield wildly different values (“residual land value”) for adjacent properties with comparable characteristics. The Lincoln Institute of Land Policy is developing a methodology to disaggregate land value from building value more accurately.

SALES TAX DISTRICT

In a sales tax district, voters approve a small additional tax on retail sales, typically for a limited duration, to pay for specific infrastructure. Because it is a tax, in theory it is passed on to consumers, which reduces the amount purchased, which in turn reduces the amount landlords can collect in rent. But in practice the additional sales tax is usually very small. In a vibrant area with a strong retail market, the tax may not affect consumer behavior much, if at all. It may have more of an impact on distressed areas, particularly at the borders of the district where consumers may choose to shop at stores in a jurisdiction just outside the special assessment district. Furthermore, the additional tax is often temporary, which minimizes the impact it may have on property values. Market analysis can be used to quantify the potential impact of a sales tax district on retail sales and evaluate whether this change will have an impact on retail rents and, ultimately, property values.

TAX INCREMENT FINANCING (INCLUDING TRANSPORTATION REINVESTMENT ZONES)

A TIF does not change the amount collected from property owners, so it does not increase development costs or create costs that are passed on in the form of higher rents and sale prices. Empirical studies of TIF use across the country, however, present a mixed picture of its impact on property values within the TIF district, beyond the TIF district in communities using

TIF, and in neighboring communities.³ This research suggests that in some cases, rather than catalyze new development, TIF simply shifts growth from one location to another. This may be desirable if the shift favors disadvantaged areas.

AT-GRADE JOINT DEVELOPMENT AND UTILITY JOINT DEVELOPMENT

These techniques allow private development on public right-of-way or public property, usually public right-of-way or property that has been made more attractive for development by a public infrastructure investment. Joint development creates new developable land (by allowing private development where it was previously not permitted), then captures the value of the new land through lease or sale. This cost is borne by the developer, and because it is based on the value of the land, it avoids market distortions.

ABOVE-GRADE JOINT DEVELOPMENT

Above-grade joint development (“air rights”) creates value by increasing the amount of developable space in severely land-constrained real estate markets with strong demand, where rents (which are capitalized into land values and sale prices) are high enough to absorb the high construction costs associated with this type of development. As with at-grade joint development, the cost of this newly developable space is borne by the developer, and because it is based on the value of the land, it avoids market distortions.

Although air rights may be inexpensive, they do not provide collateral in the traditional sense—that can be borrowed against—which can make securing financing for the project difficult.

ASSET RECYCLING

The value of infrastructure improvements planned before a land sale can be capitalized into the land values developers paid, and captured under the sale agreement, but the value of later infrastructure investments cannot. In contrast, lease agreements allow for an ongoing revenue stream that can capture increases in property value from subsequent improvements.

NAMING RIGHTS

The value of naming rights is affected by transportation system user volume but is not captured as a tax or user fee and therefore does not create market distortions.

Staff Capacity and Expertise

Data collection for a full market study is time consuming, particularly for agencies that do not have access to regional data and analysis provided by a metropolitan planning organization, regional planning agency, council of governments, or university research department. Analyzing the data requires experience in planning and land use, market analysis, and specialized knowledge of the real estate market.

Large agencies, such as transportation departments of major cities or metropolitan planning organizations for large metropolitan areas, may have the resources to maintain a dedicated staff

³ Tax Increment Financing: A Tool for Local Economic Development (January 2006) and Why Tax Increment Financing Often Fails and How Communities Can Do Better (September 2018)

with the necessary skills and experience to perform complex market analysis. Smaller agencies may have the staff capacity and experience to perform market analysis for smaller infrastructure projects and may opt to hire consultants for more complex projects. Agencies of all sizes and capacities sometimes opt to hire consultants with expertise in real estate analysis, financial analysis, legal and regulatory analysis, or environmental economics when a market analysis incorporates those more specialized aspects. Some agencies may choose to accept market analyses provided by the developer. Preferably, such studies will be performed by an independent consultant hired by the developer, or at the very least, will be reviewed by an independent consultant hired by the agency. Independent analysis is not only the basis for good decision-making, but it is also the basis for creating stakeholder buy-in.