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**CENTER FOR
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How-To Brief: HOW TO DETERMINE VALUE CAPTURE REVENUE POTENTIAL AND BOUNDARIES FOR TRANSPORTATION INFRASTRUCTURE

Most infrastructure projects are completed with funds from a combination of sources, and revenue from value capture alone is often not sufficient to complete a project. Unlike funds from federal or state programs and local government budget allocations, funds from value capture are not established ahead of time, but instead are based on the value generated by the infrastructure itself. As a result, one of the first things an agency pursuing value capture needs to know is how much money can be generated. The question, though logical, puts the cart before the horse. The real first question is, “How much value does this infrastructure create, and for whom?” This how-to brief outlines how an agency can determine the value of a proposed infrastructure project and how to make revenue projections based on that value.

Key Takeaways

- > **The revenue potential of a value capture technique is driven by the economic value of the infrastructure improvement.** This value is a result of the way the infrastructure interacts with regional socioeconomic factors, major activity centers, land use patterns, the local real estate market and characteristics of affected properties or parcels.
- > **This value can be quantified by conducting a market study (also called market feasibility analysis).** Some agencies have the capacity to do these studies—or parts of these studies—in-house, while most agencies will need to hire consultants with specialized expertise in land use economics and knowledge of the local real estate market to complete them.
- > **The market study provides critical information** about the project’s economic value, the groups and individuals that benefit, and how benefits are conferred (e.g., increase in property values, increase in sales tax revenues). This allows the agency to select a suitable value capture tool, establish appropriate boundaries, and make revenue projections.

Assessing the Value of a Proposed Project

Transportation infrastructure generates economic activity by making new connections and/or by reducing transportation time and cost. These savings and new connections have value for households and businesses that use the new infrastructure, which is expressed through increased trips to destinations it serves. Depending on whether the facility serves passengers or

freight, these trips result in new expenditures at retail stores and restaurants, better workforce access for employers, and more efficient access to inputs and wholesale or consumer markets for manufacturing, warehousing, and distribution businesses. This activity and the value it creates can be quantified using a transportation study of the proposed infrastructure in conjunction with a market study to determine how that new facility will interact with regional socioeconomic factors and industry composition, land use patterns, local real estate market trends, and specific characteristics of affected properties and businesses.

Economic Benefits of Transportation Infrastructure

Most new transportation infrastructure projects create value through user benefits such as changes to VMT/VHT and crash reduction.

Larger projects may also generate wider economic benefits through changes in reliability, accessibility, and intermodal connectivity.

Transportation Study

The first step is conducting a transportation study that estimates trip generation and cost savings, identifies user groups these cost savings accrue to,¹ and identifies locations relative to the infrastructure where this increased activity will take place. Activity may occur along a corridor or at the ends, at interchanges, at freight or passenger intermodal terminals, or at local or regional activity centers such as shopping centers, office parks, and industrial parks.

Market Analysis

The next step is a market analysis to determine how businesses and real estate developers will respond to the new trips and cost savings. A separate How-To Brief provides a step-by-step guide to performing a market analysis and to determining which tasks an agency can do in house and what elements to consider contracting out. The following summary of market analysis explains its role in determining the revenue potential of a proposed value capture implementation. A market analysis incorporates the following information:²

- Demographic patterns such as population growth trends and projections and population characteristics such as age distribution and household size.
- Socioeconomic factors such as income, wealth, employment status, the unemployment rate, and workforce education and skill levels and occupations.
- Industry patterns such as key industries, major employers, and industry growth or decline.
- Location of major local and regional activity centers with improved access.
- Existing and future land use patterns.

¹ User groups may include commuters (who benefit from access to jobs and housing), employers (who enjoy better labor market access), businesses reliant on shipping/receiving intermediate components and final products, and businesses reliant on traveling to client sites and/or hosting visiting clients.

² A more complete list of key data used for real estate market analysis can be found in the EDC-5 Value Capture Implementation Manual Table 13 (page 124).

- Real estate market trends, including retail, office, or industrial space, occupancy rates and rents, absorption rates (how quickly the market leases or buys new space), land prices, and availability of new and redevelopment sites.

An analyst with experience in real estate market analysis can use this information to determine the likely market response in terms of:

- New housing units and the impact on housing rents and sale prices.
- New retail, office, industrial space and impact on rents and sales prices.
- Acres developed or redeveloped to meet this demand for new housing and commercial space and the impact on land prices.

The analyst can then use the market response information and existing and future land use patterns and location of major local and regional activity centers to identify specific locations where property owners' (and sometimes businesses') benefits are likely to be concentrated. It is this concentration of private benefits conferred by a public investment to a select group of individuals that should be captured.

Determining the Amount of Value to be Captured

The market study described informs the agency about the economic value of the proposed infrastructure and identifies the groups and individuals that benefit. The next step is to determine the appropriate technique or combination of techniques for capturing that value.

Selecting the appropriate value capture technique is a subject of its own, but two selection factors are relevant here:

- **Factors related to the value being created**—how much value is created, who is that value created for, and how does the value accrue to recipients (such as a one-time increase in property values, increased retail sales, or increased hotel room nights).
- **Factors related to project funding needs**—amount of funding needed, the timing of funding needs (immediate, delayed, ongoing), whether the project will be funded up-front or financed, and whether funds are needed for capital expenditures, operations & maintenance, or both.

When the appropriate technique has been identified, the amount of revenue to be captured can be determined:

- **Negotiated exactions, joint development, and naming rights.** The appropriate level of value capture can be based on the value determined by the market study and jointly agreed upon by the public and private partners.
- **Tax increment financing districts, special assessment districts, business improvement districts, and sales tax districts.** The market study can be used to determine the appropriate boundaries, duration, and in the case of a sales tax district, the appropriate sales tax (as a percentage or as cents on the dollar). A revenue model can be made using the market response (price) inputs from the market study. In all cases, but

particularly when the revenue stream will be used to meet debt service, accurate financial projections are critical. A robust sensitivity analysis that tests the revenue impacts of an economic downturn or unanticipated project delay can help agencies avoid relying on overly optimistic revenue expectations.

- **Fee-based techniques such as developer impact fees and transportation utility fees.** Fee levels are typically determined by an analysis of the cost of the infrastructure and expected number of users (based on development type—retail, office, industrial, residential, or institutional). The market study is critical to ensuring that fee levels and target geographical areas avoid creating distortions in the real estate market that drive desired activity to other jurisdictions. Such distortions will limit revenue potential while creating unintended consequences, including disinvestment in urban areas in favor of greenfield development (at a lower cost to developers but higher cost in terms of infrastructure needs and environmental impacts), and higher housing costs and greater challenge providing affordable housing.

Establishing Value Capture Boundaries

Value capture applies to infrastructure investments that confer significant benefits on distinct, identifiable property or business owners, over and above the benefits enjoyed by the general public. Capturing a fair share of these benefits requires identifying where they accrue geographically. Each jurisdiction's enabling legislation for a value capture technique will require that boundaries be established and identified; some regulations specifically restrict the extent of districts that can be created.

The market study provides information about the economic value of the proposed infrastructure and identifies the groups and individuals that benefit. This is usually achieved using one of the following analytical methods:

- **Compare to similar projects.** The analyst uses studies of similar infrastructure projects (wherever they may be located) to observe the geographic extent of benefits to determine a likely benefits catchment area for the subject infrastructure investment. This method is the easiest and may be sufficient for smaller, common projects. It may not be useful for unique projects or projects in unique contexts, or provide robust enough justification to satisfy stakeholders, investors, and lenders, or withstand legal challenge. EconWorks maintained by the American Association of State Highway and Transportation Officials (AASHTO), available at <https://planningtools.transportation.org/259/case-studies.html>, contains a database of more than 100 case studies of the economic benefits of transportation infrastructure investments, representing projects in all regions of the country, all modes of transportation, and a wide range of project types and scale.
- **Identify comparison areas.** The analyst identifies geographic areas with similar socioeconomic, land use, and real estate market factors, and observes the geographic extent of the market response in the areas that had similar infrastructure investments compared with those that did not. This approach is more robust than simply looking at the impacts of similar projects without comparison areas, though it is sometimes difficult to identify an appropriate comparison area and it is more time consuming to collect data for

multiple study areas and multiple similar projects. The EconWorks database may also be useful for identifying projects in suitable comparison areas.

- **Perform modeling or simulation.** Analysts can use integrated transportation-land use models or hedonic price modeling. This approach is the most robust but is by far the most time and data intensive. It is often warranted for major infrastructure investments such as those expected to have significant regional benefits.

Value capture techniques have unique aspects that should be considered when establishing boundaries. These considerations are summarized in the table.

Technique-Specific Considerations for Establishing Value Capture Boundaries

Value Capture Technique	Consideration
Special assessment districts	Special assessment districts are often used for infrastructure in localized “micro-service areas,” which can be challenging to determine for open-system infrastructure such as roadways (versus closed system infrastructure such as wastewater treatment or a transit station). As a result, most have boundaries based on distance from the facility (e.g., mile rings, drive times or distances, amount of frontage), but it can be difficult to identify the distance-based metric that accurately reflects the link between the project and beneficiaries. Area-wide special assessment districts are sometimes used to support a transportation infrastructure program (rather than specific facilities).
Business improvement districts	The boundaries of a business improvement district should encompass a group of businesses with similar goals and priorities such as area marketing and promotion, public safety, or beautification (such as litter clean-up or landscaping).
Sales tax districts	A sales tax district is a specialized type of special assessment district that captures value through sales tax rather than property value, and similar boundary considerations apply. One key difference is that sales tax districts tend to encompass a larger area, such as an entire municipality, county, or corridor in multiple jurisdictions.
Tax increment financing (TIF) districts	TIF district boundaries should be consistent with local policy goals (e.g., affordable housing, job creation, reversing declining property values), should be based on a realistic evaluation of the site or area’s development potential, and must conform to qualifying regulations such as blight determination. State enabling legislation may allow TIF districts to be drawn to include blighted areas along with adjacent vibrant areas to use increment from the vibrant portion to help provide infrastructure that attracts development to the blighted portion. A common challenge is identifying a benefit area that is large enough to provide the revenue needed to fund the infrastructure, but not so large that it captures tax revenues from development that would occur even without TIF funds. Another challenge is ensuring that developments enabled by TIF districts don’t create additional demands on other public infrastructure and services (schools, public safety, affordable housing) while the TIF is active and segregating revenues from other taxing jurisdictions such as school districts or water/sewer districts.
Developer impact fees	Boundary areas are often called “service area,” “overlay area,” or “beneficiary area.” Enabling legislation tends to allow jurisdictions broad discretion in defining boundaries. Most state enabling legislation requires that the boundaries encompass the areas served by the infrastructure, and that fees collected from an area must be spent on infrastructure within that same area. Sometimes legislation allows the boundaries to include the entire jurisdiction, which is referred to as an “assessment area” because it represents the area where fees are assessed rather than the specific area served.

Sources: Value Capture: “Capitalizing on the Value Created by Transportation” (EDC-5 Implementation Manual), FHWA, August 2019; “NCHRP 873 Guidebook to Funding Transportation Through Land Value Return and Recycling (2018)”; NCHRP Synthesis 459 Using the Economic Value Created by Transportation to Fund Transportation” and EBP.

Three Case Studies of Value Capture Boundaries

Industrial Park Service Road TIF, Yankton County, South Dakota

A TIF district was established in rural South Dakota to fund a 4-mile industrial service road linking a state highway to a proposed rail-accessible grain-handling facility. The TIF district boundaries were drawn to include 190 acres, which encompass the 80-acre Dakota Plains Ag Center-Napa Junction facility and several adjacent properties more or less bound by the rail line to the east, new industrial access road to the south and west, and an east-west gravel road to the north.

The facility is surrounded by large grain fields located in an agricultural area about 9 miles from the nearest incorporated city. There are additional sites available for development on the west side of the access road, but they are not rail accessible. There are also agricultural properties all along the industrial service road that were previously only accessible by gravel road and could experience an increase in value as a result of the paved service road, however these impacts are speculative and thus these properties were not included in the TIF district.

The developer and landowner, Dakota Plains Ag Center LLC, proposed the boundaries in its application to the Yankton County Commission, as required to establish the district. The application also included the amount of investment the applicant would contribute if the industrial service road were enabled by the TIF, and projections of the impact of the investment on property values and property tax increment in the proposed district. Dakota Plains is a grain-handling facility operator with three other locations in the region, and the property tax projections could be substantiated based on comparable facilities elsewhere in South Dakota. As a result, the County Commission was able to accept the developer's proposed boundaries.

Protected Bikeway, Lincoln, Nebraska

The N Street Protected Bikeway runs east-west across 17 blocks in downtown Lincoln, Nebraska. The linear nature of the bikeway infrastructure could not be accommodated by the traditional TIF structure used in Lincoln and elsewhere, which consists of the property served by the new infrastructure and some adjacent properties. The bikeway infrastructure was not designed to serve a single development, but rather to be an amenity for the entire downtown area. Instead, the project was supported in part by revenue from three separate TIF districts along the corridor, each with development projects that would benefit from the facility. In fact, the boundaries of one of the TIF districts were expanded to include the bikeway to close a last-minute funding gap that otherwise would have delayed the project. The private developer agreed to the expanded TIF district boundaries in recognition of the bikeway's value to the private development for which the TIF was created.

Proffer Program, Chesapeake, Virginia

"Proffer" is the form of negotiated exaction enabled by Virginia. It is used by municipalities throughout the state, particularly those experiencing rapid growth. Proffers are provisions or donations voluntarily offered by developers in their application for property rezoning. The City of Chesapeake is a rapidly growing jurisdiction in the Hampton Roads region. The city's comprehensive plan states that proffers can be an important method of implementing the comprehensive plan and managing growth. Indeed, Chesapeake has been recognized by the state government for its innovative use of proffer for growth management.

The proffer program itself does not have defined boundaries and could be applied to an application for upzoning anywhere in the city, but proffers are highly site-specific, involving the exchange of property immediately adjacent to the proposed private development for infrastructure that is adjacent to or very nearby and made necessary by the development (such as a dedicated turn lane at the nearest major intersection). The city's master transportation plan indicates areas where the city will eventually want to acquire right-of-way for roadways of different sizes (e.g., collectors, arterials, freeways). Developers proposing rezoning for higher-density development in these areas can offer parcels the city desires for right-of-way in exchange for the increased density desired by the developer. This targets growth to certain areas and ties expansion of the city's transportation system in those areas to increased density of development in those areas.