Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA/TX-11/0-6538-1		

4. Title and Subtitle	5. Report Date
PLANNING TOOLS TO ASSESS THE REAL ESTATE LEVERAGING POTENTIAL FOR ROADWAYS AND TRANSIT: TECHNICAL REPORT	October 2010 Published: January 2011
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Sharada Vadali, Rafael Aldrete, Arturo Bujanda, Swapnil Samant, Yingfeng Li, Tina Geiselbrecht, Beverly Kuhn, Stacey Lyle, Kyle Dalton, Ming Zhang, and Shaun Tooley	Report 0-6538-1

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Texas Transportation Institute The Texas A&M University System College Station, Texas 77843-3135	11. Contract or Grant No. Project 0-6538

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Texas Department of Transportation Research and Technology Implementation Office P.O. Box 5080 Austin, Texas 78763-5080	Technical Report: September 2009–November 2010
	14. Sponsoring Agency Code

15. Supplementary Notes

Project performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration.
Project Title: Planning Tools to Assess the Real Estate Leveraging Potential for Roadways and Transit
URL: http://tti.tamu.edu/documents/0-6538-1.pdf

16. Abstract

A funding crisis exists for financing much needed transportation infrastructure projects across the nation and Texas is no exception. Texas has responded to the crisis by passing several bills allowing innovative financing and alternative options for project financing. Among these is Senate Bill 1266 (SB1266), which is a landmark legislation and was passed in 2007 as part of the 80th Legislature to provide the legal backdrop for the creation of the Transportation Reinvestment Zone (TRZ) to facilitate value capture of the tax increment from a future transportation project. This research aimed to provide various mechanisms to augment the implementation and understanding of SB1266 provisions across the state of Texas including but not limited to documenting the current understanding and knowledge of the legislative provisions, compilation of actual implementation case examples, development of standardized methods for screening, TRZ development and revenue assessments, and also presents the results of a workshop held to augment the understanding of TRZ for highway projects. An additional section of this research explores the implications of SB1266 for transit finance and discusses this aspect within the larger context for innovative finance of all transit infrastructure both those on the state highway systems and off. Finally, specific recommendations to the legal framework are made in the light of specific objectives of the research both for highways and transit in regard to the use of increment based finance.

17. Key Words	18. Distribution Statement
Value Capture, Highway Projects, Transit Projects, Transportation Reinvestment Zones, Innovative Finance, Land Development	No restrictions. This document is available to the public through NTIS: National Technical Information Service Springfield, Virginia 22161 http://www.ntis.gov

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	222	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

PLANNING TOOLS TO ASSESS THE REAL ESTATE LEVERAGING POTENTIAL FOR ROADWAYS AND TRANSIT: TECHNICAL REPORT

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Report 0-6538-1
Project 0-6538

Performed in cooperation with the
Texas Department of Transportation
and the
Federal Highway Administration

October 2010
Published: January 2011

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DISCLAIMER

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation. The researchers in charge of the overall project were Sharada Vadali and Rafael Manuel Aldrete.

ACKNOWLEDGMENTS

This project was conducted in cooperation with TxDOT and FHWA. The authors gratefully acknowledge the contributions of numerous persons who made the successful completion of this report possible. Thanks are extended to the Texas Transportation Institute (TTI) Advisory Team: Linda Cherrington. Special thanks go to Michelle Young and TTI Communications Staff for their editorial help. Special thanks are extended to TxDOT for support of this research project. The researchers also acknowledge the following members of the project monitoring committee, for their leadership, time, efforts, and contributions:

Project Director
- Gerardo Leos, P.E., El Paso District, TxDOT

Technical Advisory Panel
- Jim Patterson, TxDOT
- Charles Gurganus, TxDOT
- Melissa Montemayor, TxDOT
- Armida Sagaribay, TxDOT
- Eduardo Calvo, TxDOT
- Wayne Wells, TxDOT
- Lucio Vasquez, Texas Turnpike Authority

RTI Engineer
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Contract Specialist
- Frank Espinosa, Research and Technology Implementation Office, TxDOT

Special thanks also go to the numerous agencies and individuals for their support, cooperation, and contributions to this research. This set of individuals and agencies include:
- Teresa Quesada, City of El Paso, TX
- Alan Schubert, City of El Paso, TX
- Dennis Burleson, Chairman, Hidalgo County Regional Mobility Authority
- Brian Brooks, City of Forney, TX
- Capital Area Metropolitan Planning Organization; City of Austin
- Regional Mobility Authorities
- Raymond Telles, Camino Real Regional Mobility Authority
- Bryan Cassidy, Locke, Lord, Bissell, & Lidell, LLP
- Senator Pickett, Chair of the House Transportation Committee
- Jane Shang, City of El Paso, TX
- Workshop Participants
- City of Houston

- City of San Antonio
- City of Dallas
- Via Metro
- Dallas Area Rapid Transit
- Houston Metro
- Mr. Michael Chamberlain, TxDOT
- Barbara Zektick, Maryland DOT
- Jonathan Lane, City of San Antonio Tax Increment Finance Program
- Tim Douglas, City of Houston Economic Development and TIRZ program
- David Hawes, Principal, HawesHillCalderon LLP
- Texas Municipal League
- Texas Association of Counties and other survey participants

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CHAPTER 1: BACKGROUND AND INTRODUCTION

The nation's transportation system is in a financial crisis. The State of Texas has responded to the crisis by passing several bills allowing innovative financing and alternative options for project financing. Among these is the Senate Bill 1266 (SB1266), passed in the 80th Legislative Session, which provides the legal backdrop for the creation of an institutional arrangement called the Transportation Reinvestment Zone (TRZ). A TRZ facilitates value capture of the potential benefit or tax increment from a future transportation project. This research aims to augment the implementation of SB1266 provisions across Texas, more specifically, to address knowledge gaps and provide guidance with respect to the bill, make recommendations for needed amendments, and provide cost effective and standardized procedures for ascertaining the feasibility of TRZ implementation projects.

INTRODUCTION

The status of the Highway Trust Fund for the Fiscal Year 2009 had a negative change of 23.2 percent from the prior fiscal year balance (*1, 2*). This change in the balance, driven largely by the decline in the fuel tax revenues, will be reflected in the limited federal funds available to each state. Texas is no exception.

Texas is facing enormous and rapidly increasing transportation needs. Currently, TxDOT is responsible for maintaining nearly 80,000 miles of roads, in addition to supporting statewide aviation, rail, and public transportation needs. The funding required to meet these mobility needs for the long term is clearly beyond what traditional sources, like the dated fuel tax, can supply. Moreover, in October 2009, TxDOT was required to return more than $742 million to the federal government, as part of an $8.708 billion rescission of the highway project programming authority, contributing to the severity of the transportation funding crisis in the state (*3*). The state fuel tax, last raised in 1991, and the Texas' allocation of federal funds are falling short of current and projected needs.

SB1266, passed in the 80th Legislative session, allows for the establishment of a TRZ (*4*). Currently, there are three implementation projects using this funding mechanism: the City of El Paso, the City of Forney, and the Hidalgo County.

In the following sections, SB1266 in introduced and analyzed and TRZ related value capture is discussed. National increment initiatives are reviewed followed by a discussion of the

TRZ state of the practice in Texas. As part of the implementation guidelines and as part of a larger outreach effort, this chapter also seeks to highlight similarities and dissimilarities of TRZ to the much more commonly known concepts of Tax Increment Financing (TIF) and tax-increment-reinvestment zones (TIRZs). A lack of understanding of these similarities and differences is an important component of the education/outreach effort.

VALUE CAPTURE AS A PUBLIC PRIVATE PARTNERSHIP

Value capture (VC) is an innovative financing method that relies on leveraging the real estate potential brought by urban asset improvements. Most simply defined, value capture is the means by which capital infrastructure investment is financed through means of capturing either some or all of the added value of real estate property that results directly from that investment. Commonly known examples of such value capture are the TIF and the TIRZ models seen across the country. Also included in this category are special assessment districts, public improvement districts, impact fees, and other examples.

VC can be traced back to 18th century and can be attributed to works of Henry George when the theory of public finance first emerged, but interest in the concept has been renewed by the U.S. Department of Transportation as it explores innovative approaches for infrastructure financing. In its earliest from, it was discussed largely as land value taxation (LVT). LVT itself has been applied in at least 30 countries around the world. VC refers to the process by which all or a portion of increments in land value attributed to community efforts rather than landowner actions are recovered by the public sector. VC is hence essentially a benefit-capture method that offers an approach to ensure that the transportation system will remain adequate to serve mobility needs for the future when implemented with appropriate screening criteria.

VC is also a way of using and recycling transportation project public benefit revenue streams to fund specific projects within those zones. These revenue streams provide the opportunity to adopt project bond financing in designated zones. As such, it is a non-commercial inward looking form of a Public Private Partnership (PPP), a feature that distinguishes it from other forms of PPPs. SB1266 (*4*) adopted by the State of Texas in 2007 makes specific provisions for the development of municipal and county TRZs, a concept that encapsulates the principles of VC to supplement roadway project financing. TRZs are a mechanism for local governments to leverage local and state funds for infrastructure construction by using TxDOT's

Pass-Through mechanism at minimal risk to the municipality's credit rating (*1*).[1] After designating a contiguous area along a corridor as a TRZ, a local government entity (a city or a county) can securitize the incremental tax revenues along with TxDOT Pass-Through financing to obtain the funds necessary to bring a project to fruition. Funds generated from the securitization are used to pay for infrastructure projects in the TRZ, and investors are to be repaid from the combined revenue stream—the incremental tax revenues and TxDOT Pass-Through funds. Once the securitized debt is repaid, the additional revenues generated by the TRZ are redirected toward other municipal services. The Texas TRZ model is essentially a local entity revenue sharing partnership with TxDOT and is somewhat similar in many ways to the TIF or TIRZ model in its implementation

Minnesota's Department of Transportation also recently completed a research investigation also focusing interest on the use of the value capture concept for financing transportation infrastructure for legislative purposes. It recommends eight value capture strategies to finance transportation infrastructure, which include TIF, LVT, joint development, air rights, development impact fees, special assessments, and negotiated exactions (*5*).

VALUE CAPTURE LEGAL FRAMEWORK FOR TEXAS TRANSPORTATION PROJECTS

Two existing laws focus on tax increment value capture in the state of Texas:

- TIRZs using TIF authorized for use by municipalities and counties under Tax Code Chapter 311 (*6*) primarily used in connection with transit projects.
- Transportation Code Chapter 222 (amended by SB1266), permitting municipalities and counties to enter into agreements with TxDOT to establish TRZs and use surplus

[1] TxDOT defines Pass-Through Financing as a mechanism for project developers to finance and be reimbursed for the capital costs of constructing or expanding a state highway project. The public agency (e.g. a local government) or private entity developing the project finances, builds, maintains and/or operates a road project, and TxDOT reimburses a portion of the project cost by making periodic payments for each vehicle that drives on the highway. The remainder of the project capital costs may be met via a combination of traditional construction funds, toll revenue, or TRZ revenue.the capital costs of constructing or expanding a state highway project. The public agency (e.g., a local government) or private entity developing the project finances, builds, maintains and/or operates a road project, and TxDOT reimburses a portion of the project cost by making periodic payments for each vehicle that drives on the highway. The remainder of the project capital costs may be met via a combination of traditional construction funds, toll revenue, or TRZ revenue.

funds for supporting other transportation projects, which could include on-system transit projects (*3, 7*).

TIRZ Code

The TIRZ code allows the governing bodies of municipalities to finance public improvements. Chapter 311 Section 311.010 (b) allows the board of directors of a reinvestment zone and the governing body of the municipality or county to enter into an agreement as the body deems necessary, and does not specify what organizations or agencies are eligible for partnership agreement, such as TxDOT. Section 311.010(b) provides:

> (b) The board of directors of a reinvestment zone and the governing body of the municipality or county that creates a reinvestment zone may each enter into agreements as the board or the governing body considers necessary or convenient to implement the project plan and reinvestment zone financing plan and achieve their purposes.

Section 311.01005(b) discusses Bus Rapid Transit (BRT) and rail transportation, allowing applicable parties to:

> (b) …dedicate, pledge, or otherwise provide for the use of revenue in the tax increment fund to pay the costs of acquiring, constructing, operating, or maintaining property located in the zone or to acquire or reimburse acquisition costs of real property outside the zone for right-of-way or easements necessary to construct public rights-of-way or infrastructure that benefits the zone.

Section 311.01005(c) allows the board of directors of a reinvestment zone and the governing body of the municipality or county to "dedicate, pledge, or expend funds to pay the costs of acquiring land, or the development rights or a conservation easement in land, located outside the reinvestment zone" based on three conditions: 1) the zone is or will be served by rail transportation or bus rapid transit; 2) the land is acquired for preservation in natural or undeveloped condition; and 3) the land is located in the county where the zone is located. Chapter 311 in its current state permits the expenditure of funds for public transportation.

Senate Bill 1266

As amended by SB1266, the Transportation Code permits joint governing body cooperation but currently permits financing for highway projects on the state highway system (on-system) only. SB1266 amended Chapter 222 of the Transportation Code concerning Title 6 labeled "Roadways." SB1266 encapsulated the principles of value capture of property tax increments to supplement roadway project financing. It included specific provisions for the development of municipal and county TRZs. A pre-requisite for a local government agency to avail this mechanism is the Pass-Through agreement with Texas.

BILL ANALYSIS – SB1266

SB1266 makes specific provisions for the development of municipal TRZs, a concept that encapsulates the principles of value capture to supplement roadway project financing. This section provides an overview of SB1266, the legal framework governing the creation and operation of TRZs, its' institutional and financial implications, and to highlight amendments to this legal framework proposed during the last legislative session.

Summary Analysis of SB1266 Text

Enacted in 2007, SB1266 amended Texas Transportation Code Section 222.104 and added Sections 222.105, 222.106, and 222.107 (*3, 4, and 8*). Highlights of the bill's text, including the most significant amendments made to the Texas Transportation Code, include:

- Amendment to Section 222.104, by amending Subsection (e) to authorize the Texas Department of Transportation to use any available funds for the purpose of making a Pass-Through Toll payment except funds derived from the issuance of bonds under Section 201.943 (Pledge of State's Full Faith and Credit). [2]
- Amendment to Subchapter E, Chapter 222, by adding Sections 222.105, 222.106, and 222.107, as follows:

[2] TxDOT defines Pass-Through Financing as a mechanism for project developers to finance and be reimbursed for the capital costs of constructing or expanding a state highway project. The public agency (e.g., a local government) or private entity developing the project finances, builds, maintains, and/or operates a road project; TxDOT reimburses a portion of the project cost by making periodic payments for each vehicle that drives on the highway. The remainder of the project's capital costs may be met via a combination of traditional construction funds, toll revenue, or TRZ revenue. Designation of a TRZ within the local entity's jurisdiction is a consideration to authorize a Pass-Through agreement.

- Section 222.105. Provides that the purposes of Sections 222.106 and 222.107 are to promote public safety, facilitate the development or redevelopment of property, facilitate the movement of traffic, and enhance a local entity's ability to sponsor a project authorized under Section 222.104 (Pass-Through Tolls).
- Section 222.106. Provides the legal framework for the creation of Municipal TRZs:
  - Provides that this section applies only to a municipality that intends to enter into a Pass-Through Toll agreement with TxDOT under Section 222.104.
  - Stipulates that the TRZ must be a contiguous geographic area within the jurisdiction of the municipality and stipulates the public involvement requirements to establish a TRZ.
  - Requires the municipality to pay into the tax increment account for the zone an amount equal to the tax increment produced by the municipality from taxes collected on property in a zone.
  - Requires money deposited to a tax increment account to be used to fund Pass-Through Toll projects, including the repayment of amounts owed under a Pass-Through Toll agreement.
  - Provides that the TRZ terminates on December 31 of the year in which the municipality finishes repaying the money pledged to the tax increment account or owed under the Pass-Through agreement.
  - Provides that a TRZ terminates on December 31 of the 10th year after the year the zone was designated, if before that date the municipality has not used the zone for the purpose it was created.
  - Authorizes any surplus remaining on termination of a zone to be used for municipal transportation projects in or outside the zone.
- Section 222.107. Provides the legal framework for the creation of county TRZs, Tax Abatements, and Road Utility Districts (RUDs). Most of the provisions set forth in this section are very similar to those in Section 222.107 for municipal TRZs. However, there are some key specific requirements that make county

TRZs very different from municipal TRZs, the most significant of which are the following:

- Instead of requiring the county to deposit the tax increment into a tax increment account, it authorizes the county to enter into an agreement with the owner of any real property located in the zone to abate a portion of the ad valorem taxes imposed by the county.
- Concurrently, it authorizes the formation of a RUD that has the same geographic boundaries as the TRZ, in order to assist the county in developing a Pass-Through Toll project, and authorizes the Road Utility District to impose a tax on property within the zone at a rate equal to the amount of ad valorem taxes abated by the county. (It also provides that an election is not required to approve the imposition of the taxes.)
- It authorizes the RUD to enter into an agreement with the county to assume the obligation of the county to fund a Pass-Through project or to repay funds owed to TxDOT under that section.

The RUD concept in the act was included to enable counties to collect tax increments since there are constitutional limitations on the authority of counties to fully implement tax increment financing (*9*).

Institutional and Municipal Financing Implications of SB1266

Under SB1266, after designating a contiguous area along a transportation corridor as a TRZ, a local government entity (a city or a county or an agent such as a Regional Mobility Authority [RMA]) can securitize the incremental property tax revenues along with TxDOT Pass-Through financing to obtain the funds necessary to bring a project to fruition. Funds generated from the securitization will be used to pay for infrastructure projects in the TRZ, and investors will be repaid from both revenue streams—the incremental tax revenues and TxDOT Pass-Through funds. Thus, the amendments introduced by SB1266 are innovative from a municipal financing standpoint for two main reasons:

- First, TRZs are a mechanism for local governments to leverage local and state funds for infrastructure construction by using TxDOT's Pass-Through mechanism.

- Second, the TRZ creation process facilitates collaboration between public and private partners by encouraging the development of coordinated infrastructure investment strategies between governmental entities with the objective of stimulating private investment. More specifically, the development of the TRZ plan requires public and/or private sector partners to agree on their roles and project scope, and to determine the funding sources for the project(s), including the role of TRZ funding.

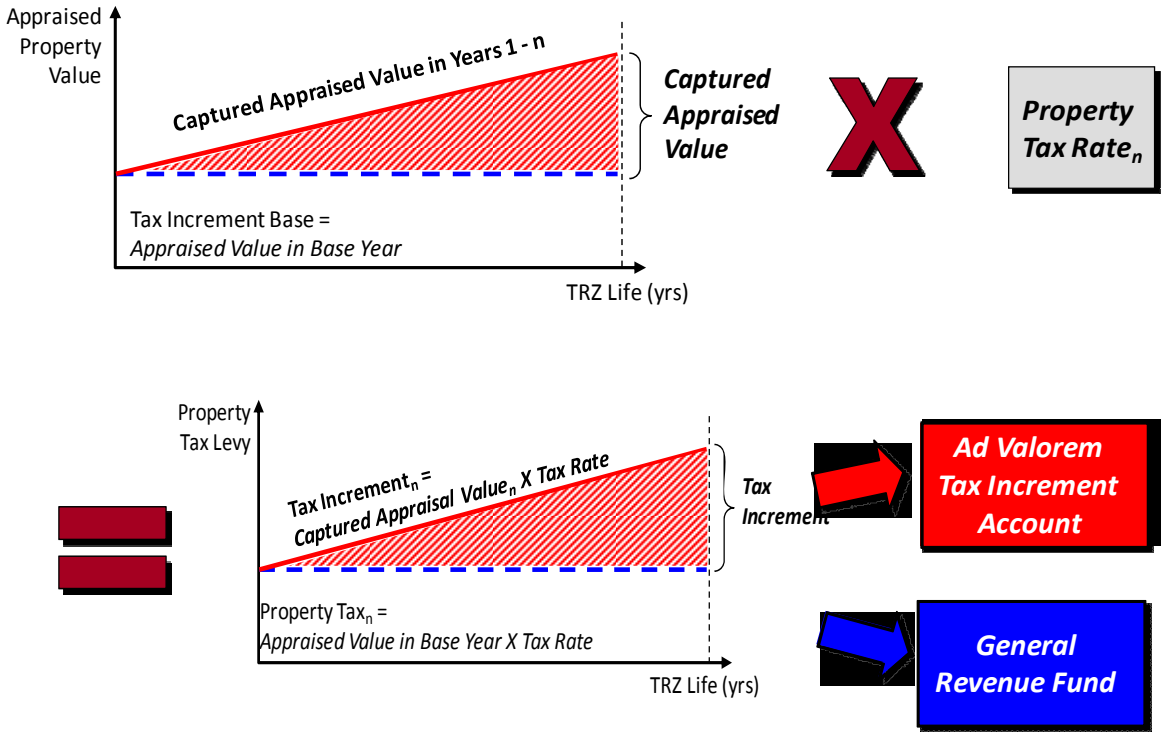

Figure 1.1. Municipal TRZ Tax Increment Calculation.

According to SB1266, the TRZ expires at the end of the year when debt service obligation is met, and any funds surplus available upon its termination may be used to fund transportation projects within or outside the zone. Once the securitized debt has been repaid and after the TRZ is terminated, the additional revenues generated by the zone are redirected toward the general revenue fund to pay for regular municipal services. The Texas TRZ model is similar in many ways to the TIF or TIRZ model in its implementation.

TYPES OF TRANSPORTATION REINVESTMENT ZONES

There are two types of TRZs that the legislation allows and these will be discussed next. The first type of TRZ is known as a municipal TRZ. Figure 1.2 graphically demonstrates both municipal and county TRZs.

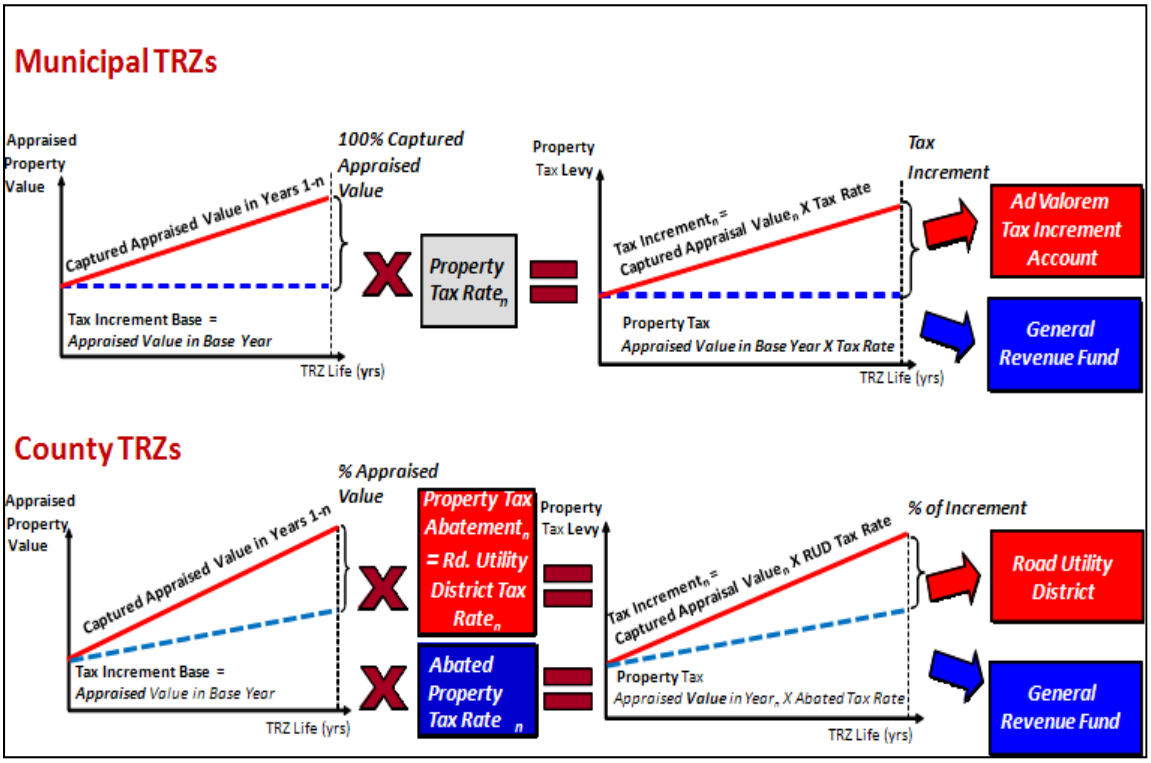

Figure 1.2. Municipal and County TRZs.

Municipal TRZ

Municipal TRZs are established in partnership with a city and are suitable for projects that are entirely within city jurisdictions. In the case of municipal TRZs, the tax increments are deposited directly into a tax increment account. The tax increment is defined as the captured appraised value multiplied by the municipality's property tax rate every year. These funds are then deposited in an Ad Valorem Tax Increment Account managed by the municipality. The municipality's general revenue fund continues to collect property taxes equivalent to the appraised value in the base year multiplied by the tax rate. These funds are used to repay investors the capital costs of the project. Once the debt or loan has been serviced, the balance in the account may be used for financing other transportation purposes. Under the current legislation for municipal TRZs the surplus uses are limited to those on the state highway system.

County TRZ

County TRZs are set up in partnership with county governments and are suitable within county boundaries but traverse several cities. In the case of a county TRZ, a tax increment base is calculated as the total appraised value of all real property taxable by the county within the TRZ in the base year (i.e., when the TRZ is established). The captured appraised value in each subsequent year is equal to the total appraised value of all real property taxable by the county and located within the TRZ less the tax increment base.

The tax increment for a year is the amount of ad-valorem taxes collected by the county for that year on the captured appraised value for taxable real property within the TRZ. The tax increment is defined as the captured appraised value multiplied by the county's property tax rate every year. In order to obtain the benefit of the tax increment, a county may abate taxes to the amount of the tax increment; form a RUD with the same boundaries as the TRZ; and allow the RUD to impose taxes in the district in an amount equal to taxes abated. This collection mechanism is necessary due to an apparent constitutional limitation on the authority of a county to implement tax increment financing (*9*). The RUD tax collected can be pledged against debt acquired to fund the TRZ and the annual tax revenue used to service the debt.

TRZ Duration and Surplus

There are no prescribed durations for the TRZ in the law as it stands. However, in practice TRZs are set up for duration of 20+ years, a period long enough to pay off the debt or loan set up for defraying the capital costs of building the infrastructure improvement. The surplus left over after debt is paid off may be used according to guidelines set up by the legislation. In the case of municipal TRZs, once the debt or loan has been serviced, the balance in the account may be used to finance any other transportation project within the jurisdiction. Under the current legislation for municipal TRZs the surplus can be used for any transportation within the jurisdiction. The annual tax increment collected by a city is limited by law to payments toward the TRZ project (which must be on the state highway system).

In the case of a county TRZ, the tax increment revenue can be used to meet the TRZ obligation of the RUD, and any money not used for this purpose, can be used for any other purpose within the RUD. In the event a RUD is used to collect the tax increment, funds not used

for financing of the project may be used for any district purpose. The scope of permissible uses of TRZ generated funds is therefore broader under the county/RUD structure. However, if the RUD has solely been set up for the TRZ project on the state highway system, in practice, the county TRZ is also limited to using the surplus on-system.

TRZ and Taxes

In a typical TRZ implementation neither does the tax rate change, nor does the current allocation of tax revenues to finance local government operations. Only the additional tax revenues associated with the increased property values accruing to the local entity (city or county) (from a pre-project baseline) are used to repay the debt (see Figure 2). In addition, no diversion of other revenues from other taxing entities (school districts and community colleges, etc.) takes place. In other words, the revenue sharing portion occurs only based on the local entity's portion of the overall tax increment while still providing a benefit to other taxing entities.

CONCEPTUAL FLOW OF FUNDS UNDER SB1266

Figure 1.3 shows the flow of funds as conceptualized in the SB1266 TRZ model. As shown in the figure, every year during the life of the TRZ, tax revenue collected over and above an agreed upon base would go into an ad valorem tax increment account established by the local government. From the ad valorem tax account these funds would flow to the designated local entity (the local government itself or an RMA), where it will be complemented with Pass-Through funds. Finally, the designated local entity will securitize this annual revenue stream to obtain debt and fund construction of the transportation facilities. In terms of revenue risk, the TRZ legislation is neither clear nor explicit regarding its allocation, while the flow of funds shown in the figure seems to implicitly allocate the risk of financial non-performance to the designated local entity issuing debt.

In practice, the annual cash flow projections from the TRZ are estimated prior to its establishment, and represent simply a projection and not a binding commitment for the municipality. Rather, the municipality commits the entire tax increment in any given year over the TRZ life, regardless of whether the amount falls short or exceeds the projection. Consequently, the TRZ revenue securitized represent a contingent liability for the designated local entity, whose commitment to repay debt according to a pre-specified schedule remains.

The risk to bondholders in such a situation can be defined as the risk that property values within the TRZ do not perform as expected or development does not occur as planned. In such case, the designated local entity would face a shortfall in revenue, while keeping the obligation to meet its debt service according to schedule. The legislation does not offer any guidance in this regard.

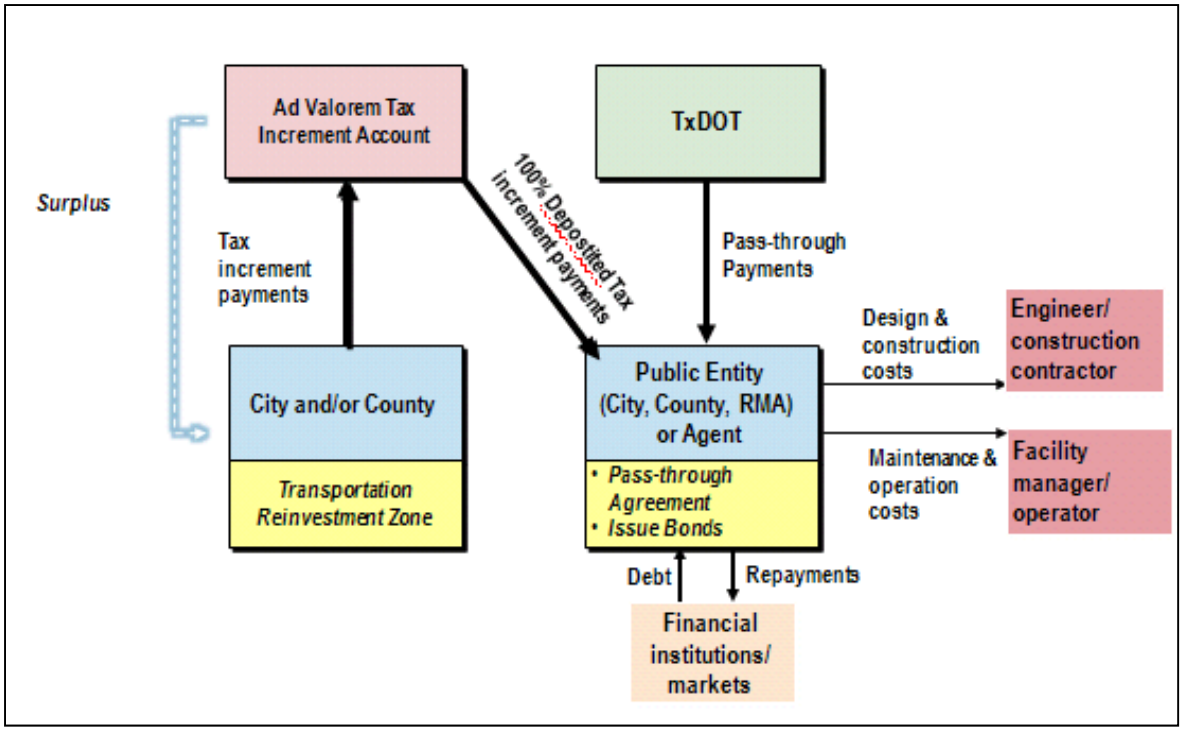

Figure 1.3. Conceptual Flow of Funds for TRZ Financing.

REVIEW OF AMENDMENTS TO SB1266 PROPOSED DURING THE 81ST LEGISLATIVE SESSION

In order to identify which specific changes to the statute have already been put forward to the legislature, the research team reviewed all legislative proposals that were circulated during the 81st Legislative Session. The review findings indicate there were seven legislative proposals that included TRZ language, but none of them passed, indicating that that the legal framework for TRZs remains the one set forth in the original SB1266. However, these bills remain relevant for this research because they reflect concerns about the current legal framework for TRZs and/or potential wider implications or reach of TRZs. These bills are reviewed in the following sections.

Senate Bill 2096: TRZ and Urban Transportation Authorities

SB2096 and its companion House Bill (HB) 4335, was captioned "Relating to the creation of and the powers of a comprehensive multimodal urban transportation authority." This bill proposed allowing urban transportation authorities to use funds from a TRZ in the same jurisdiction to pay for transportation projects (*10, 11*).

Senate Bill 2378: Decoupling the Pass-Through Link to TRZ

SB2378 and its companion HB1810 concerned a change that eliminated the requirement for a municipality to establish a Pass-Through agreement with TxDOT prior to creating a TRZ, and that transportation projects could include aesthetic improvements (*12, 13*).

Senate Bill 898: TRZ, Rail, and Freight Infrastructure

SB898 concerned authorizing a municipality to include the acquisition, improvement, or operation of a freight or passenger rail facility or system by the municipality as a purpose for designating a geographic area as a TRZ (*14, 15*).

Senate Bill 1671: TRZ Surplus Funds Use

SB1671 concerned allowing the use of TRZ funds to pay for municipal transportation projects not part of a Pass-Through agreement (*16*).

House Bill 300: TRZ, Rail Projects, Use of Surplus Funds, and Boundary Changes

HB300 included language relevant to TRZs including a number of amendments, including among others: allowing changes in the boundaries of a TRZ; the ability to fund rail projects; and the use of surplus funds in the tax increment account for any purpose (*17, 18*).

TRZ IMPLEMENTATION FOR HIGHWAYS

Comparison with Tax-Increment-Finance and Tax-Increment-Reinvestment Zones

The concept and processes of TRZ are similar to TIF/TIRZ (economic development tools) that are adopted by municipalities. However, the T in TRZ stands for transportation, while the T in TIF and TIRZ stands for tax (tax increment). This suggests that TRZs are for transportation purposes alone, while TIFs/TIRZ generally support non-transportation developmental objectives. As of 2010, there were 182 TIRZs in Texas and more than 60 percent

are in urban counties. A discussion follows but there are significant differences between TIF/TIRZ and TRZs. Table 1.1 summarizes various aspects of TIF/TIRZ/TRZ. Table 1.2 crystallizes these into a more succinct summary of key issues where TRZs share a common ground with TIF/TIRZ where they are different, and pros and cons of the arrangements.

Table 1.1. TRZ, TIF, and TIRZs: A Comparison.

	Tax Increment Finance (TIF)	Tax Increment Reinvestment Zone (TIRZ)	Transportation Reinvestment Zone (TRZ)
Legal Authorization	Chapter 311 Texas Tax code (Texas TIF Statute)	Chapter 311 Texas Tax code	Texas Senate Bill 1266. Sections 222.104, 222.105, 222.106, 222.107, Texas Transportation Code
Description	Tax increment financing is a method for financing public projects. Tax increment finance zones are statutorily able to engage in such financings.	Tax increment reinvestment zone is a method for financing public projects. Tax increment reinvestment zones are statutorily able to engage in such financings. TIRZs are the Texas cousins of TIF.	TRZ is a method for financing just transportation projects-currently highway projects as indicated in the Bill. TRZs are statutorily able to engage in such financings. • Requires a pass-through agreement or projects must be approved for Pass Through Finance
Operationalization	Established via ordinance by the City Council that creates the zone	Established via ordinance by the City Council that creates the zone	Established via ordinance by the entity that creates the zone (City Council) or by decree of County Commissioners Court.
Players and Roles	(City, Zone, Redevelopment Authority (RDA) or Board) City or County: Manages the program; appropriates revenue; deposits revenues into a fund; coordinates multiyear capital improvement plans. Board: oversees the financing and implementation plan including bond issues.	(City, Zone, Redevelopment Authority) City or County: Manages the program; appropriates revenue; deposits revenues into a fund; coordinates multiyear capital improvement plans RDA: oversees the financing and implementation plan	2 or more (City or county, TxDOT, Regional Mobility Authority) City: Appropriates revenues; Deposits revenues into the Transportation Reinvestment Fund (TRF) RMA: Oversees financing,if area is part of an RMA TxDOT: Manages the project(s) and oversees the project implementation plan

Table 1.1. TRZ, TIF, and TIRZs: A Comparison (Contd.)

	Tax Increment Finance (TIF)	Tax Increment Reinvestment Zone (TIRZ)	Transportation Reinvestment Zone (TRZ)
Initiation	City or sometimes owners by petition (only in the state of Texas)	City or sometimes owners by petition (only in the state of Texas)	City or County. • Pass-Through Provision is a requirement under the current Bill. • Cannot be initiated by petition NOTE Counties also have the authority to establish TRZs, under Section 222.104 of the Texas Transportation code (Chapter 441) (which are contained entirely within a city). An inter-local agreement has to be in place between the RMA and the County Commissioner's Court. However, when more than one county is involved even stronger inter-local agreements would have to be in place across counties and RMAs. • Requires a RUD: A RUD requires Texas Transportation Commission Approval under Texas Transportation Code Section 444.022. RUD also requires an election under Transportation Code Section 441.030
Geography	Contiguous area	Contiguous area	Contiguous area
Governance	TIF Board	TIRZ Board	Does not require a Board. SB1266 does not delineate fiscal roles. However, local governance is implied with or without partnership of the Regional Mobility Authority.

Table 1.1. TRZ, TIF, and TIRZs: A Comparison (Contd.).

	Tax Increment Finance (TIF)	Tax Increment Reinvestment Zone (TIRZ)	Transportation Reinvestment Zone (TRZ)
Risk/Default	City may cover losses and transfer shortfalls to Appraisal District	City may cover losses and transfer shortfalls to Appraisal District	Unclear. Governance aspects are unclear under SB1266. This aspect requires a clear discussion in the bill as to roles and responsibilities in the event of a default.
TIF Revenues	***Impacts all taxing entities.*** ***Revenue Sources :*** Improvements to existing property or land. New developments within the zone. Rising taxes on existing properties. Sales and sales tax.	Same as TIF. ***Impacts all taxing entities.*** ***Revenue Sources:*** Improvements to existing property or land. New developments within the zone. Rising taxes on existing properties. Sales and sales tax.	Once TRZ is established, only a portion of the revenues belonging to the city or county is frozen at the base year (pre-TRZ) level. There is no new taxation or no diversion of funds from other taxing entities who continue to enjoy their share of revenues. So, if the project is a beneficial improvement, everyone benefits. ***Impacts only a single taxing entity's revenue.*** ***Revenue Sources:*** Improvements to existing property or land. New developments within the zone. NOTE Unlike TIF, or TRIZ, TRZ do not involve higher or new taxes. Sales taxes not included.
Portability of funds	Revenues can be moved across "contiguous" TIFs. *1*	Revenues not portable across zones in Texas.	Revenues are not portable across zones. Surplus funds however can be spent anywhere inside or outside the zone (*SB1266 An Act*) but limited to state highway systems.

Table 1.2. Similarities and Dissimilarities of TRZ with TIF/TIRZ.

Issue/Subject	TIF/TIRZ	TRZ
Similarities		
Processes and protocols for adoption for City related TIF,TIRZ, and TRZ's	(Public hearings, ordinance) for municipal TIF/TIRZ.	Same as TIF/TIRZ for municipal TRZ's.
Geographic limits	Contiguous areas within jurisdictions	Contiguous areas within jurisdictions (municipal or County)
Collection mechanism/City Level	Ad valorem tax increment account.	Ad valorem tax increment account.
Dissimilarities		
Origination	May be initiated by petition	Cannot be initiated by petition.
Processes and protocols for adoption for County related TIF,TIRZ, and TRZ's	Constitutional impediments in collections at the County level.	In the case of County TRZ, the adoption is done by decree of the County Commissioners Court.
Collection mechanism /County level	Consitutional impediments in collections at the County level.	RUD collections in the case of a County TRZ.
Scope of project/Use of funds	Typically used to support transit oriented development, street and landscape improvements within the zone, but typically not used for capital costs of transport improvement. Hence, funds used in a development support role as opposed to creating the infrastructure.	Must have a pass though agreement. Funds must be used for transportation capital improvements. May be combined with TIF/TIRZ to support development and surplus funds to be used for transportation purposes approved by the legislation.
Governance	Governed by a TIF/TIRZ Board	Does not require a board

The TIF Process

The TIF process is discussed in detailed below because the TIRZ and TRZ processes are essentially similar and are important for TRZ implementation guidance. There are however, additional differences that TRZs will involve that build upon the TIF process itself. For this reason, the broad TIF process is first discussed. TRZ related specific nuances within any stage will be discussed within the discussion that follows and yet other differences will be discussed within the case studies themselves.

This discussion follows the protocols and processes adopted by the National Association of Realtors (NAR). The National Association of Realtors in its TIF Report (*19*) describes the TIF process in five steps: initiation, formulation, adoption, implementation, and termination. Each step of the process comprises of a number of actions to effectively use TIF. Figure 1.4 illustrates this process.

Figure 1.4. The TIF Process Adapted from NARS Report

Establishment of Authority

The TIF process is legally mandated in state statute, which also designates which local governing bodies have the authority to establish a TIF district. In a majority of states, only municipalities have the legal authority to designate TIF districts. However, some states such as Minnesota, Georgia, Florida, and Missouri grant redevelopment authorities or state economic development commissions the power to designate such districts. Common features of state enabling legislation include elements of the designation process (including any required notices and public hearings) and a list of which public and private expenditures may be lawfully financed by TIF. Once a municipality or redevelopment authority has decided to proceed to the TIF designation process, state-enabling legislation may set requirements for the physical boundaries of the proposed redevelopment project area. Many parcels may be included or excluded on the basis of how much property values are expected to escalate within the parcels (*19*). The TRZ process is based on enabling legislation (SB1266 State of Texas and Section 222.104 of the Texas Transportation Code).

Project initiation

Project initiation involves determining the project feasibility in terms of needs, benefits and area eligibility. This may be done through a feasibility report that justifies the use of TIF for the project. Once the project feasibility is determined, project initiation can come from either the public or the private sector. Many times the designation of a TIF district is suggested by property owners, private businesses, or developers who need assistance with either development or redevelopment projects on a specific site. Municipalities often prefer to initiate TIF districts based on a developer's solicitation of funding because it reflects the developer's willingness and interest in investing in the area. In the absence of private interest the public sector may choose to initiate a TIF project. Municipalities may decide to take the lead role in initiating TIF projects because they want to have more control over development activities in heated markets, they want to encourage development in areas where site impediments may discourage investment by developers, or they want to pursue a large project that may not otherwise be possible (*19, 20*). In practice, TIF and TIRZs tend to be implemented for an array of projects within the regions they traverse. In the case of TRZ, project initiation implies the development of feasibility analysis and studies to support the TRZ for the specific project(s) since TRZs are specifically project driven. The initiation of the TRZ has to typically start from the local government entity (city/municipality or county) but as a partnership with TxDOT and the RMAs, when applicable. TRZ's may not be initiated by property owners unlike TIRZ's and TIF's. In the event a county initiates the TRZ, an interim step, a RUD has to be established under the existing guidelines with the same boundaries as the TRZ to comply with terms of the Pass-Through finance agreement. The TRZ initiation requires a Pass-Through agreement to be in place with the TxDOT.

Formulation

Once the project has been successfully initiated, the formulation of a plan for the area begins. The first step in formulation is establishing the geographical boundaries of the TIF district.

Needs Assessment. Most states, require that the TIF project area meet both a "blight" and a "but-for" requirement as set forth by TIF legislation. Typically a blighted area is one where the built environment is older, deteriorated, depreciated, and excessively vacant or abandoned, overcrowded, or sparsely developed compared to the rest of the municipality. Definitions of

blight for TIF projects vary across states. In order for an area to be eligible for the use of TIF a municipality must also prove that the area would not develop in the absence of the use of TIF. In other words, "but-for" the TIF assistance, developers would not invest in the area. It is often very difficult to provide a definite answer to the "but-for" question. As such, municipalities usually use a set of questions based on the concept of public purpose to provide evidence that would satisfy the requirement. Some of the questions commonly used are, whether a prospective developer has adequate financial resources to fund the entire project, whether and what kinds of efforts have been previously attempted to improve the area, how long have the key properties in the proposed redevelopment area been abandoned or vacant, etc. In the case of TRZs, the governing body of a municipality could use criteria established under Tax Code, Ch. 311 to demonstrate an area is unproductive, underdeveloped, or blighted and therefore eligible for a TRZ.

Calculating Increments. Calculating future tax increments involves setting up a property tax base value. Any property tax revenues that exceed this base are captured as the tax increments and are returned to the developer. Figure 1.5 shows the TIF revenue process. Equalized Assessed Value (EAV) is used to spread the property tax burden in an area equally by assigning similar taxes to similar structures. The base EAV is calculated by totaling the EAVs of all properties within the district. When property values in the district increase due to improvements or development, the increases above the district's original tax capacity are captured and referred to as the captured tax capacity. The auditor also certifies an original tax rate in the TIF district when it is created. This is the total tax rate that applies to the district and includes taxes by all local governments in the district. The final tax increment in the TIF district is calculated by multiplying the original tax rate by the captured tax capacity. Local governments must take care in establishing an appropriate base rate. In the past, base rates have been established that do not include inflation, which results in an overestimation of the tax increment to which the developer is entitled. The increments are also known as payments in-lieu-of-taxes or PILOTS. In many cases, TIFs also have provisions for new economic activity taxes, which include sales taxes and utility taxes on new activity for the year prior to establishment of TIFs. Much like TIFs, TRZs, have similar provisions for the increments that are typically deposited in an account. TRZs do not, however, allow for revenue generation from other sources like sales taxes like TIFs.

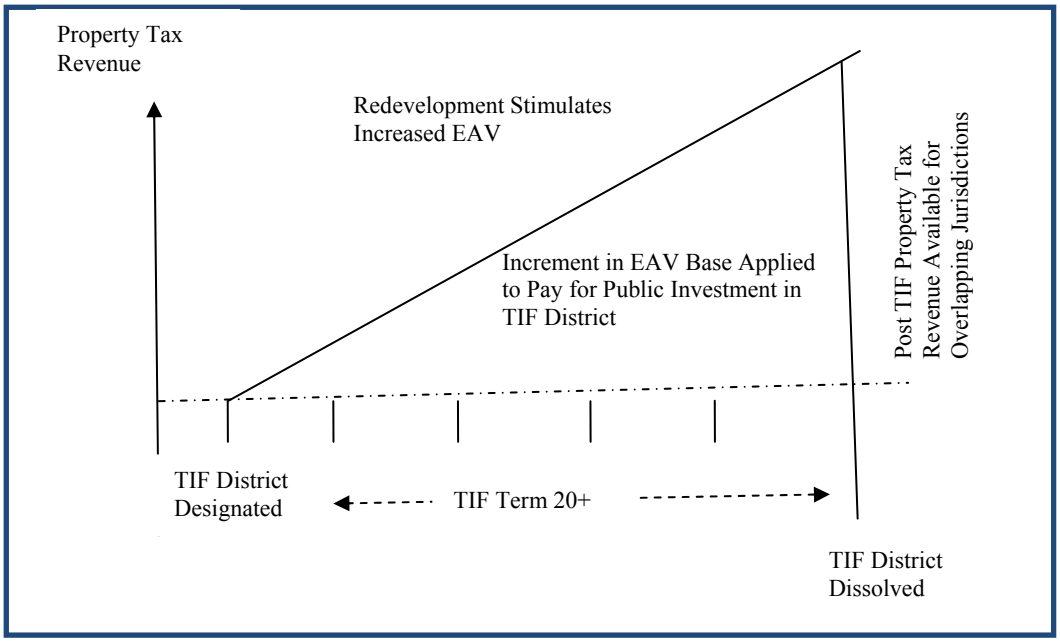

Figure 1.5. The TIF Revenue Process.

TIF Adoption. Most of the procedural requirements mandated by state legislation are completed during plan adoption. The adoption process involves conducting public disclosure as required by regulations and getting political and legal approvals. Many state statutes require some sort of public participation mechanism to inform and invite comments from the public. Depending on the state legislation the plan may be reviewed at a public hearing where all stakeholders are given an opportunity to voice their opinions and concerns. These stakeholders are not typically granted any legal powers to veto the proposed TIF district or modify the plan. The process of getting political and legal approvals involves drafting ordinances and agreements between the public and private sector players of the project.

Implementation

Once the TIF district has received all the required approvals and met all the regulatory requirements it moves into the implementation stage. The two key components of the implementation stage include securing a project financing method and beginning the physical construction process. Securing project financing involves selecting an appropriate method that may include bonds, interfund loans, or pay-as-you-go strategies. The construction process primarily consists of project management before, during, and after the project.

TIF Project Finance. There are a few finance alternatives that have been used to fund TIF districts.

- Bonds: The first, and the most commonly used, method for funding improvements or development in TIF districts is through bonds. These bonds are secured by tax increments and are usually issued when there is a need for initial investment in a TIF district. The bonds used are typically general obligation bonds that are backed by the full faith and credit of the TIF-enabling municipality. The bonds are usually easy to use since they can be issued without public approval if at least 20 percent of the debt service on the bonds is paid through tax increments in the district. Municipalities and redevelopment authorities also have the option of using revenue bonds that are solely dependent on tax increments within the district to pay for debt service. Such bonds may be issued without election, but carry higher interest rates than general obligation bonds. If bonds are used, the TIF enabling authority usually requires the developer to sign an assessment agreement or may even require other guarantees such as a letter of credit during the construction period and a guaranty of debt service in the case of tax increment deficiency.
- Pay-as-you-go: Pay-as-you-go is another method used for funding TIF districts. This method is good for TIF enabling municipalities and redevelopment authorities as it requires no upfront investment from them, nor does it require the issuing of bonds on their guarantee. In this method the developer usually pays the upfront cost associated with the TIF district and the authority promises to reimburse the developer from future TIF revenues that are generated in the district. In this case it is the developer that bears the risk of future TIF revenues being insufficient. This arrangement may be structured as a revenue note with an interest component to compensate the developer for the risks and for the costs of financing the improvements up front.
- Interfund Loans: A more recently adopted method to pay for TIF districts is through interfund loans. In this case the municipality must adopt a resolution stating the terms of the loan. Interest is limited to the higher end of the statutory judgment interest rate or the rate on unpaid income taxes.

The TRZ project finance mechanisms are dependant largely on bonds since pay-as-you-go methods are not applicable to TRZs since developer roles are not currently included in the accompanying legislation (SB1266).

Construction. Once financing for the project is available, the construction process can begin. The land for the project is obtained and prepared for construction to start. Construction management is important, as delays or increases in construction costs can significantly hamper the success of a TIF district. Finally, once construction is completed, post-construction management is used to keep the district healthy and functional so that the benefits of the construction may be captured through tax increments. With both TIFs and TRZs the construction stage associated with right-of-way acquisition of parcels presents challenges for success.

Monitoring and Termination

The monitoring and termination of TIF districts is pivotal to their success. Once a TIF project has successfully been constructed it requires constant monitoring to determine that the district is meeting its revenue expectations. Termination of the project is usually regulated by state-level TIF enabling legislation. Projects usually require a substantial amount of monitoring to ensure the successful and fair use of TIF. This is mainly due to the fact that a majority of state regulations and mandates regarding the use of TIF are applicable only until the implementation of the project. Once a project is underway, there is no significant guidance or regulations. Since the physical and financial landscapes of cities are fluid, the practical use of TIF requires frequent monitoring. To ensure that TIF projects are relevant and stay on track, many states have annual reporting requirements to track the status of TIF projects. Similarly, TRZs also require continuous or dynamic monitoring and evaluation to maximize fiscal responsibility and revenue compliance.

Plan Termination. In most cases the TIF enabling statues also regulate the period of time over which the objectives of the TIF project must be met. In terms of termination, the lifespan of TIF districts varies across states. In Massachusetts the time limit is 20 years, in West Virginia 30 years, and in Florida 40 years. Some states fix a maximum period and give the municipalities or redevelopment authorities the flexibility to terminate the district whenever they feel it is appropriate. On the other hand states such as Texas and Georgia do not specify a time limit but wait until the initiating jurisdiction votes to terminate the district, typically when all redevelopment costs have been paid. Even in states without legal limits, TIF districts tend to last for 20–25 years. This is because most TIF projects require 20–25 years to generate net benefits for local governments. Some states allow TIF districts to last as long as the project objectives are met or until the governing authority decides to terminate the project. In regard to the lifespan of

TRZ districts, the SB1266 provides the guidance with respect to maximum duration. The specific guidelines on TRZ termination are:

- 12/31 of the year when the municipality fulfills its requirement to reimburse TxDOT.
- 12/31 of the 10th year after the year the zone was designated IF before that date the municipality has not used the zone for its purpose (implement the project).

Figure 1.6 shows that the typical TRZ/process is almost identical to the TIF process. The only marked difference is that the TRZs being largely transportation project driven, need to have more up front assessments and feasibility early on in the process to facilitate partnerships.

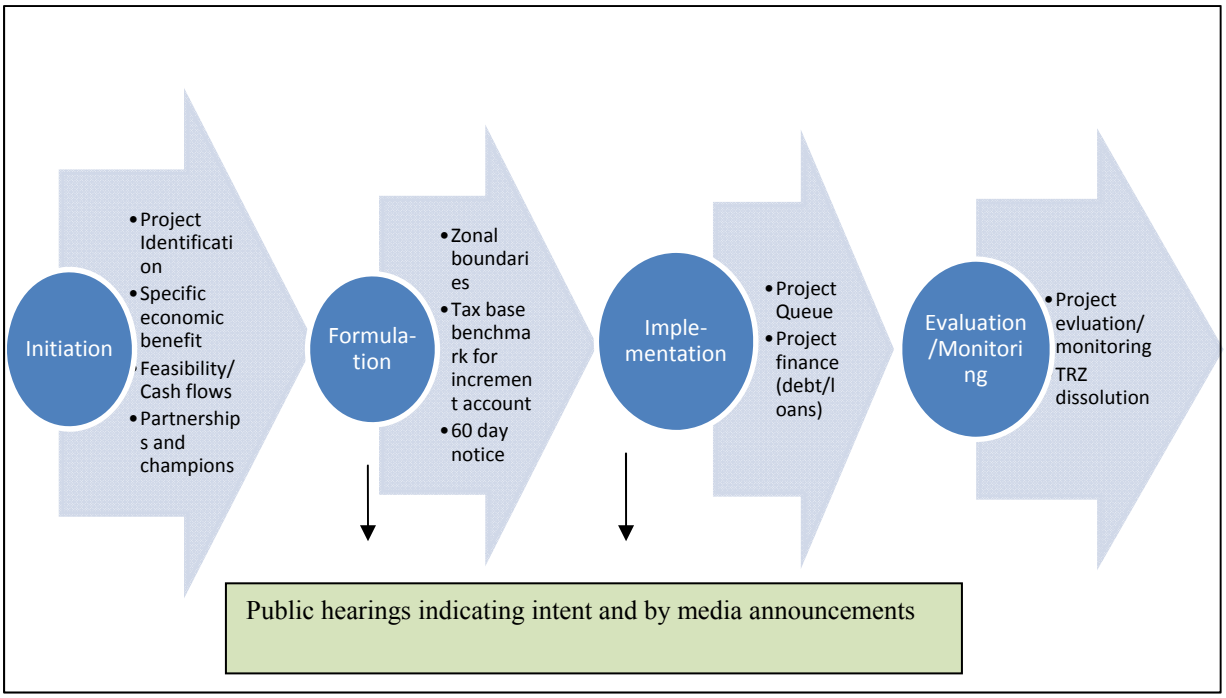

Figure 1.6. The Typical Sequential TRZ Implementation Process and Various Sub-Steps

TRZ – SPATIAL EXTENT AND BOUNDARIES FOR CONTIGUITY DEFINITIONS

Since TRZs are project driven, transportation projects have important local effects—at least some of them do. The literature on metropolitan spatial densities concur that transport project impacts tend to be somewhat local in nature, i.e., occurring primarily in the vicinity of project areas (*21*). The literature on highway projects is summarized below, since under the current Bill SB1266, highways are the subjects of interest. A later section will investigate the implications for transit. In the *American Journal of Economics and Sociology*, Batt discussed how a large-scale infrastructure project could have been financed using VC by capitalizing on

the land value created in the vicinity of transportation access nodes, and by discouraging speculators to continue holding their parcels off the market in expectation of future gains. He notes that the mechanism is likely to be stable, simple, administrable, progressive, and most of all, economically efficient (*22*). Among the key points made that are of relevance to this paper are how VC could have been deployed for a 9-mile stretch of I-87 (a portion of the New York State Interstate Highway) and within a 2-mile buffer-zone around the corridor. This was a Greenfield redevelopment project.

Price increases of up to 1,274 percent for remaining private lands within 1/2 mile of the corridor, 894 percent for lands between 1/2 to 1 mile, and 647 percent increase for those between 1 to 2 miles of the corridor for a total of 831 percent increase for the entire corridor lands over a period of over 35 years. A total of 30,516 acres were impacted and the gains in value were reported at $3.73 billion with gains highest to properties between 1–2 miles from the corridor.

Smith and Gihring emphasized the value of longitudinal models to predict increase in land values to support debt financing of transportation projects (*23*). In similar studies, Huang conducted research of roadway and transit projects and identified their impact on the property values. Moreover, he noted that most suggest a positive premium and a general pattern of diminishing premiums over older and newer studies (*24*). Carey also noted that impacts in value appraisal tend to be positive for multifamily and commercial properties (*25*), while Boarnet et al. (*26*) point to access premiums for single-family homes. In more recent studies Vadali (*27, 28*) concurred with Boarnet and Carey's findings, and described various aspects regarding area, location, size, and timing of impacts in real estate in conjunction with new capacity projects in the Dallas region. Using an extensive database of data-transactions over a 20-year period, spanning the boom and bust of the real estate cycle in Dallas for attached and detached housing, the results suggested that there were systematic location patterns in impact on property values. However, the size of the positive impact is anisotropic and is determined by the micro-location of the project in that it is greatest where the maximum synergies for capitalization exist (central business districts) and tends to diminish toward suburbs and exurbs. This pattern could have important implications for financing large scale infrastructure improvements via VC in congested urban areas. The impacts on real property were concentrated in regions within 1 mile, and extended to 2 miles especially in regions of contiguous development, such as on immediate segment of the corridors radiating out from the central business district. With respect to timing,

impacts tend to occur as early as 3–5 years from opening of transportation infrastructure as an anticipatory response.

The implications of all of these findings for planning and financing purposes of VC zones like a TRZ are:

- They should be set up early in the planning process of large scale transportation projects with significant capacity and access changes to capture anticipatory gains.
- They should cover a maximum of 1 mile around the corridor.
- Positive impacts cannot occur for all project types or conditions; only large scale projects that confer significant accessibility change (inter-regional or intra-regional) or new projects that open up regions for development via enhanced access provided to old and known new activity nodes offer the greatest potential for maximizing VC.
- They have the greatest potential in dense networks with developable land or rapidly growing regions that can benefit from accessibility benefits brought about by transportation projects.

All of these have significant implications for the Pass-Through component of SB1266 that allows a whole range project types to be considered for Pass-Through finance including safety and redevelopment. Not all of these Pass-Through projects can support value capture. Projects that enhance accessibility, connectivity by augmenting multi-modal access, and levels of service provide should be the primary projects that support TRZs. Other ancillary projects within those zones that meet Pass-Through requirements could then simultaneously benefit from increment finance.

The same literature also tends to suggest that theoretical boundaries of *contiguous* parcels that should be part of a TRZ boundary should be no more than 1 mile on either side from the project centerline for large scale projects. Smaller projects with even more local effects like interchanges should not exceed 1/2 mile on either side. Thereafter, within those maximum bounds, practical considerations like political support and revenue needs should be the guiding factors in establishing spatial boundaries for highway projects.

TRZ – IMPLEMENTATION EXAMPLES AND STATE OF THE PRACTICE IN TEXAS

To date, three local governments in Texas have implemented TRZs: the City of El Paso, the City of Forney located in Kaufman County, and Hidalgo County. This task identifies the

similarities and differences in the ways these local entities have approached the implementation of SB1266 and explains the circumstances driving those differences.

TTI investigated the following documents as primary sources to develop the state of the practice implementation examples:

- The Texas Transportation Funding Challenge report by Dye Management Group (*29*).
- Financial Evaluation of TRZ for the City of El Paso report (*30*).
- Keep Forney Moving website from Pate Transportation Partners (*31*).
- The Hidalgo County Road Builders original website, a subsidiary of Pate Transportation Partners and communication with the Hidalgo County Regional Mobility Authority (*32*).
- Hidalgo County Socioeconomic and Real Estate Analysis Related to the Hidalgo Loop (*33*) (by the company Txp).

The information in these documents has been complemented with direct input from stakeholders from the cities of El Paso and Forney, and Hidalgo County. Table 1.3 summarizes the implementation examples in a general manner. There is limited available information of the challenges associated with the evaluation of the value capture potential of a TRZ, the potential circumstances when they might be appropriate, and the requirements and challenges associated with the data acquisition, aggregation, and financial analysis processes and protocols. In other words, in the three cases studied there is no uniform approach to analyze the TRZ implementation feasibility in a determined location. The process was different in each of the three case studies.

Table 1.3. Comparison of the Three Municipalities in Texas with TRZ.

TRZ	City of El Paso	Hidalgo County	City of Forney
Project Funding Committed	$ 70 million	$102 million in tax increment revenue (need to confirm specific project funding committed)	$100 million projected growth
Year established	2008	2008	2008
Entity/Mechanism by which established	Series of public hearings/adopted by city ordinance	Series of public hearings/by decree of the Hidalgo County Commissioner's Court	Series of public hearings/adopted by city ordinance
Projects	Several Comprehensive Mobility Plan projects (within City of El Paso) Projects cross several jurisdictions	Hidalgo Loop (the first sections to be built comprise 67.5 miles of road within Hidalgo County, total project length is 130 miles, total project cost of $700 million) Projects cross several jurisdictions	US80/FM 470 interchange-single project within City of Forney, TX) and/or US80 projects Project is within City of Forney
Acres	9947	175,000	5000+
Collection begins	2010	2010	2010
Projected end date	2040	2030	2040
Tax baseline year	2008 City-Tax Base	2008 County-Tax Base	2008 City-Tax Base
Tax rate	0.671097 (2008)	0.5900 (2009)	0.680535 (2008)
Public entity	The City of El Paso & RMA	The Hidalgo County & RMA	The City of Forney
Termination Date	Upon complete payment of $70 million debt	No explicit termination date	No explicit date
Revenue sharing or allocation of TRZ revenues to tax increment account	100% increment	50% (Stated)	20% increment negotiated but 100% per law.
Surplus Treatment	As per Texas Transportation Code Section 222.106 to fund other transportation projects in or outside the zone	As per Texas Transportation Code Section 222.106 to fund other transportation projects in or outside the zone	As per Texas Transportation Code Section 222.106 to fund other transportation projects in or outside the zone
Right of way acquisitions	Yes, where needed	Yes	Not known
Buffer regions	Varying width with maximum of 1 mile from centerline	1 mile (7)	Not known
Debt/Loan	RMA in El Paso (CRRMA) (loan), TRZ Active	Not yet. RMA TRZ not active	City debt. Forney is not associated with an RMA. TRZ Active
Pass through Provisions	In place	Pending-Application submitted May 2009	In place

The City of El Paso TRZ

The City of El Paso's TRZ Nos. 2 and 3 (Figures 1.7, 1.8) will encompass approximately 9,947 acres. Collection of the TRZ revenues into the ad valorem tax increment account started in 2010 and will only impact the city portion of a property tax bill (City 2009 tax rate: 0.633 per $100 valuation). The 2009 city tax base was set up as the baseline for assessing increments over the duration of the TRZ. Tax revenue increments over and above the baseline value are assumed to be deposited in a dedicated account—the Transportation Reinvestment Fund. El Paso TRZ is designed to expire when the $70 million debt is paid off (in addition to interest and other financing costs), which is expected to occur by December 31, 2040. The revenues will be generated from properties along the following five corridors that form the TRZ:

- Loop 375 and Zaragoza Rd.
- Northeast Parkway and US 54.
- Transmountain Rd.
- Americas Ave.
- I-10.
- Montana Ave.

Financial Evaluation Approach

The framework used to conduct the financial evaluation of the City of El Paso TRZ Nos. 2 and 3 was based on three main sets of drivers of property value growth along a transportation corridor when a capacity improvement project is implemented (a with-project case):

- The type of properties that exist within the TRZ, which are divided into three real estate groups (shown in Figure 1.9):
  - Existing development.
  - New development.
  - Properties around access points.
- The development of vacant property in the TRZ (new development), including:
  - Timing of development.
  - Type of development.
  - Values attained upon development.
  - Pace or speed at which land is developed.

Based on the analysis framework described above, a discounted cash flow model was built to forecast TRZ revenues (*30, 34*). The revenues were estimated according to the provisions of SB1266, adopting the 2009 tax base as a baseline (2008 baseline in a preliminary analysis). The TRZ revenues in each subsequent year were then estimated as the tax revenue for that particular year less the baseline.

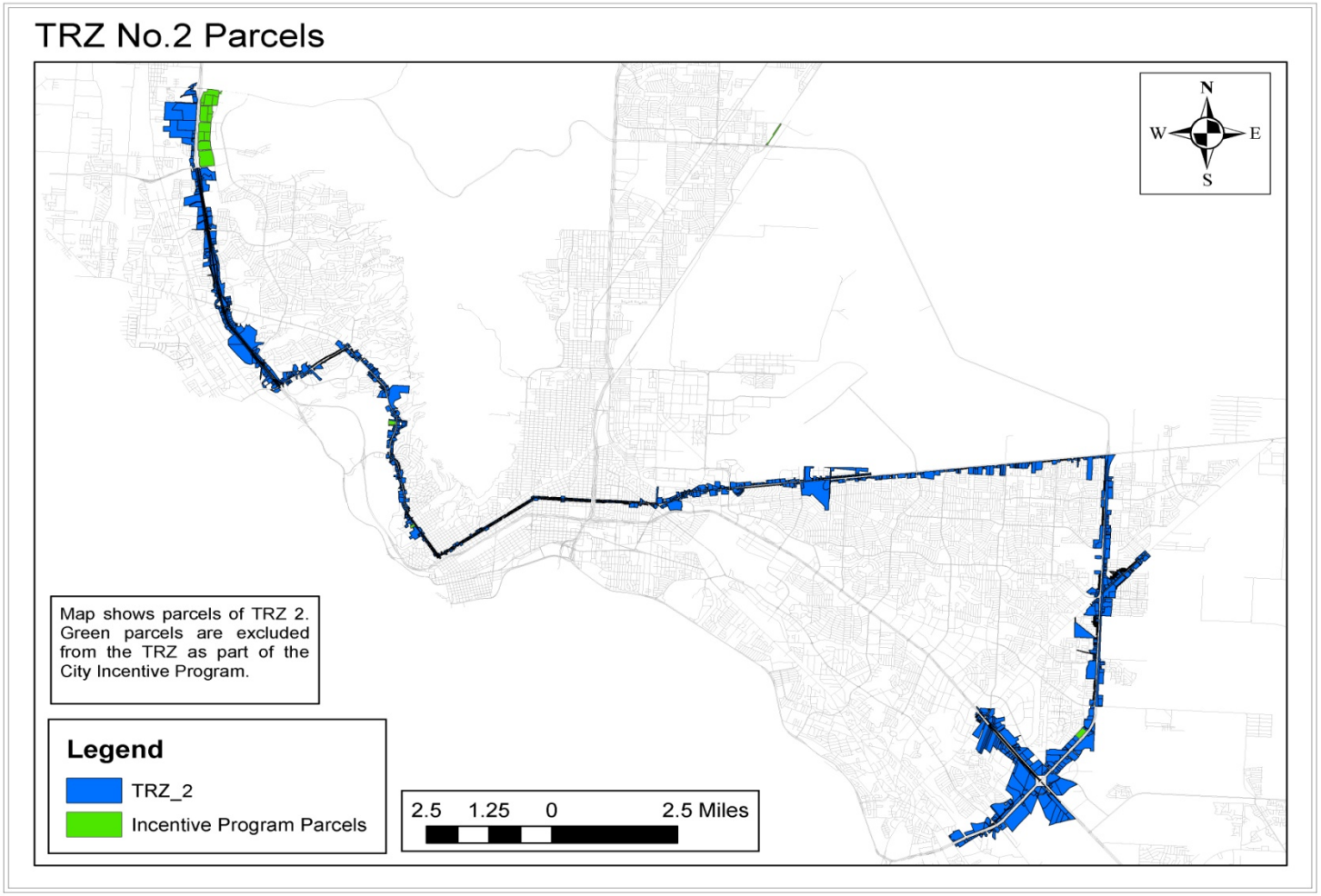

Figure 1.7. The City of El Paso TRZ No. 2 Boundaries.

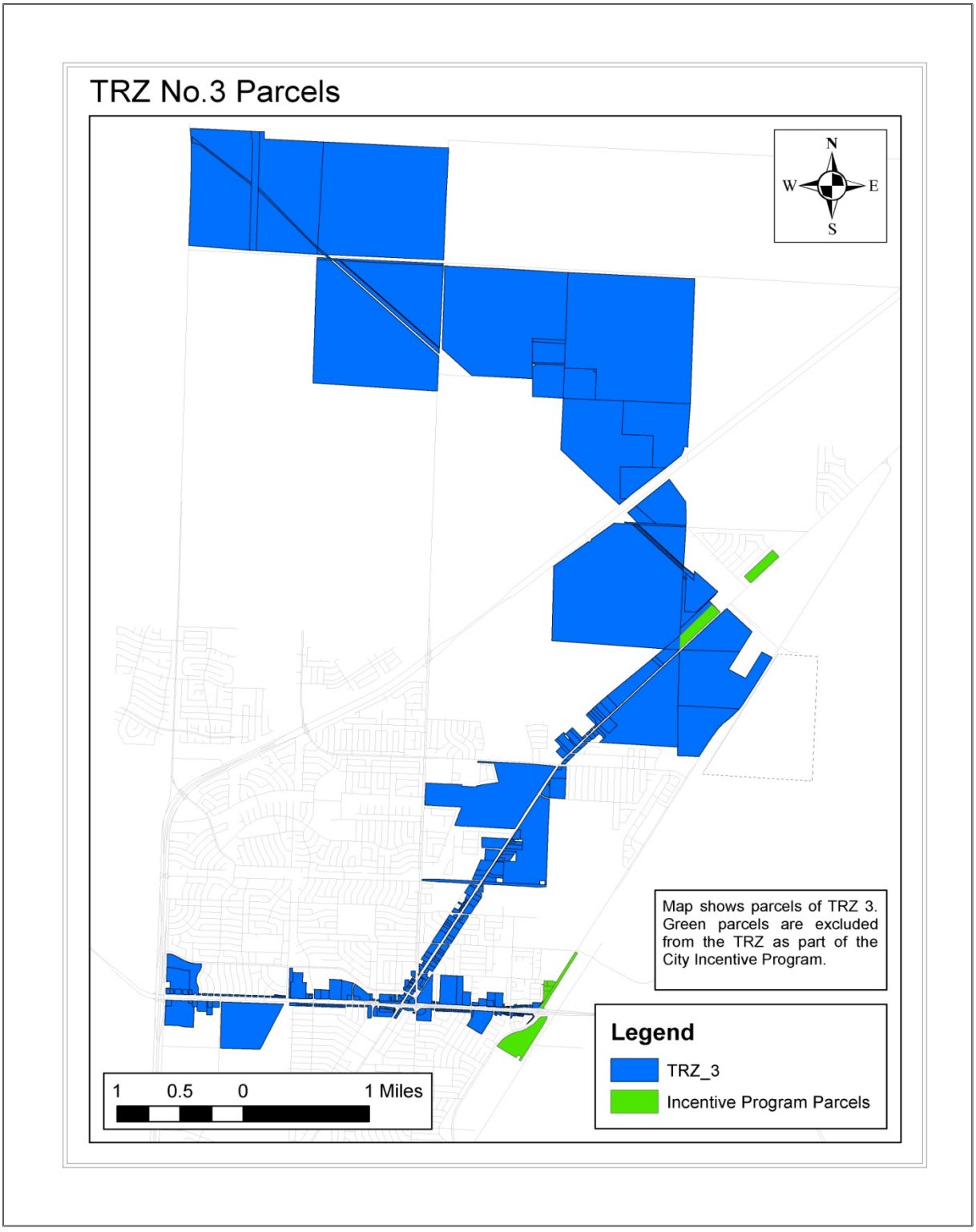

Figure 1.8. The City of El Paso TRZ No. 3 Boundaries.

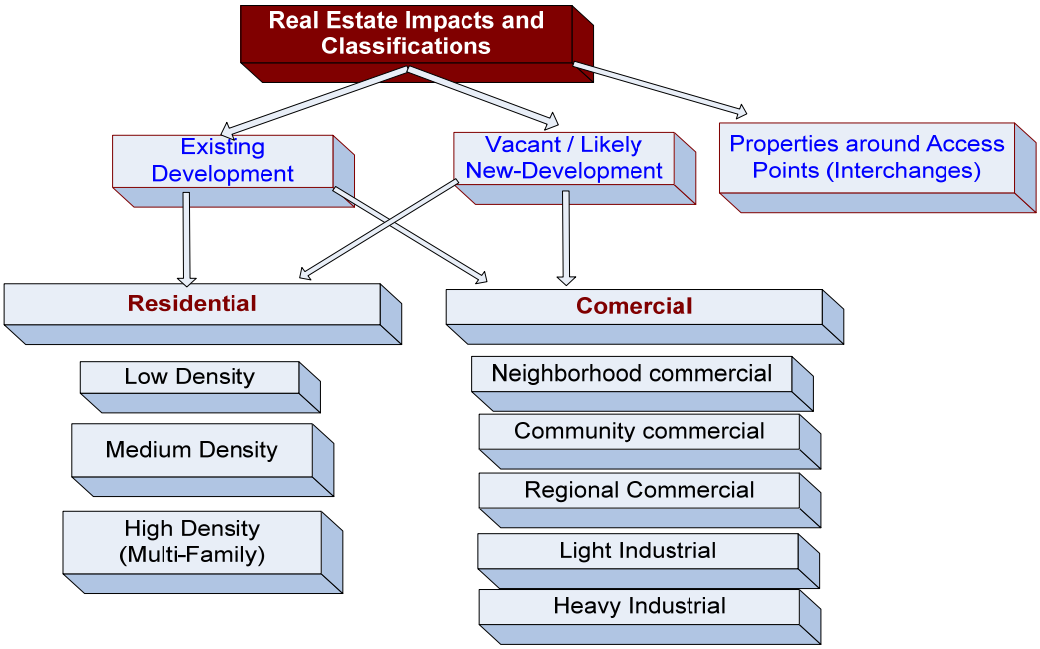

Figure 1.9 Land Use Typology Adopted in the El Paso TRZ Evaluation (*28, 32*).

The City of Forney, TX

The City of Forney is located in Kaufman County, Texas, in the Dallas-Fort Worth metropolitan region. The City of Forney's TRZ No.1 encompasses more than 5000 acres. Forney's TRZ (Figure 1.10) has no explicit expiration date but can be terminated or continued by local option. If not specifically terminated, the TRZ will continue to provide funds for additional transportation projects. In this respect, the Forney TRZ differs from the City of El Paso TRZ. The current revenue projection for Forney is approximately $14 million through 2038, different from the El Paso projections through 2040. Collection of the revenues will begin in 2009. The City of Forney TRZ will also only impact the city portion of a property tax bill and will be used for projects along US 80. The 2008 city tax base was set up as the baseline for assessing TRZ revenues (City 2008 tax rate: 0.680535 per $100 valuation). According to data from TxDOT's *Texas Transportation Funding Challenge* report (*29*), 20 percent of the city tax revenue increments over and above the baseline 2008 value are assumed to be deposited in the increment account for the life the TRZ.

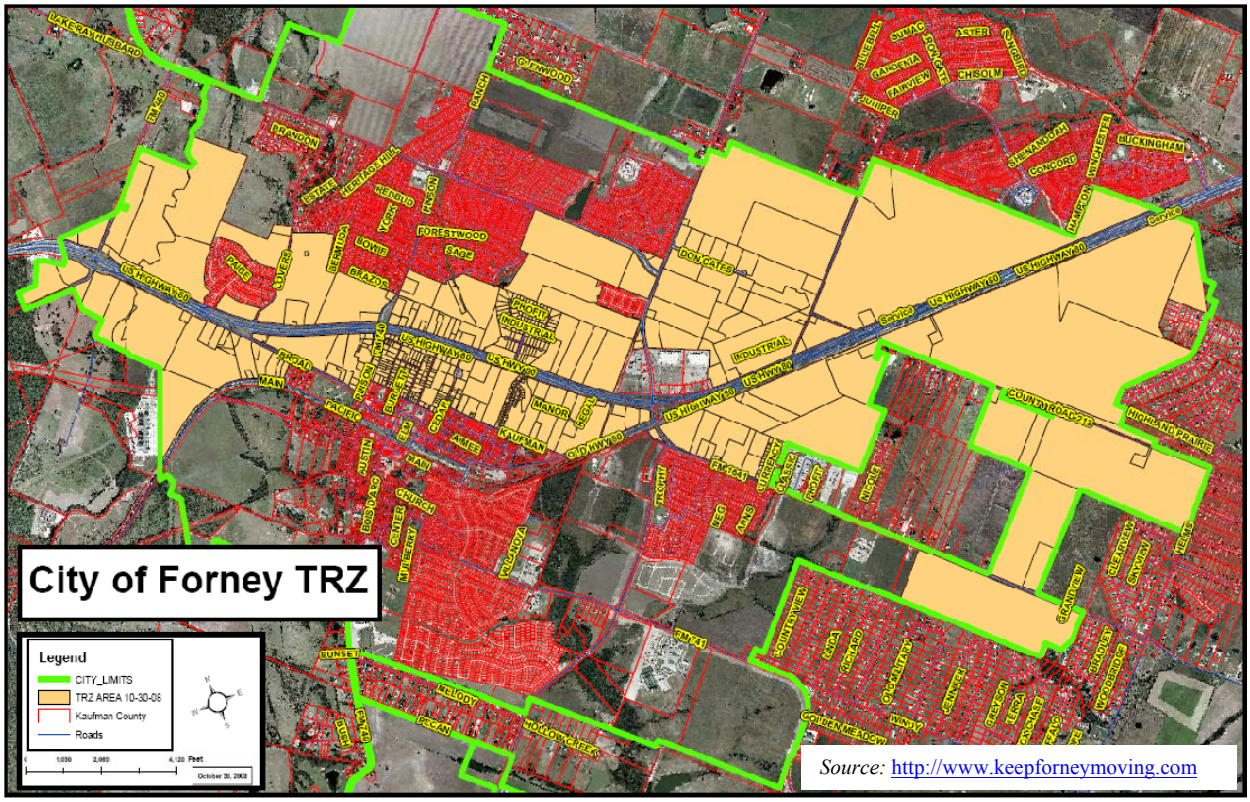

Figure 1.10. The City of Forney TRZ Boundary.

The Hidalgo County TRZ

The County of Hidalgo's TRZ will encompass approximately 175,000 acres as shown in Figure 1.11. Similar to Forney's, Hidalgo's TRZ has no explicit expiration date but can be terminated or continued by local option. If not specifically terminated, the TRZ will continue to provide funds for additional projects. Hidalgo County Road Builders anticipates the RMA could leverage future toll and TRZ revenues to increase local transportation spending by $2.2 billion between 2010 and 2030 to pay for the full RMA program TxDOT's *Texas Transportation Funding Challenge* reported; however, this was not suggested in the interviews conducted.

Financial Evaluation Approach

The 2008 county tax base was set up as the baseline for assessing increments over the duration of the TRZ. The 2009 tax rate for the County of Hidalgo of 0.5900 was held constant for the analysis period. This information was complemented with data collected from stakeholder interviews and the TxP Socioeconomic Report (*33*).

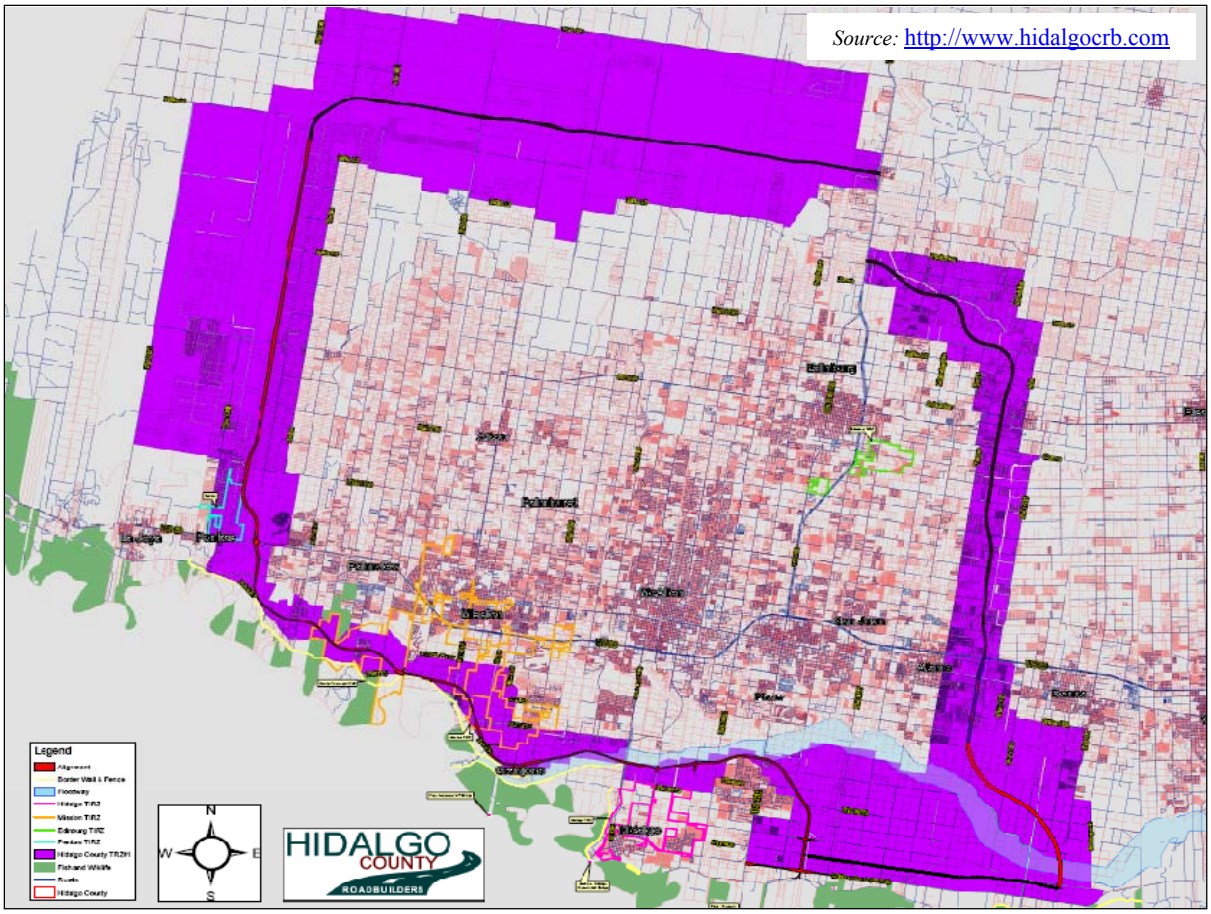

Figure 1.11. The Hidalgo County TRZ Boundary.

CHAPTER 2: SENATE BILL 1266 – IMPLEMENTER PERSPECTIVES AND GENERAL AWARENESS

With the passage of SB1266, local entities were empowered with another tool to help finance needed infrastructure projects—the TRZ option to facilitate value capture. However, as is the case with new legislation, numerous lessons are learned by early implementers about the practicality of the law and other issues associated with its implementation. The ultimate goal of this research was to see how TRZ development through SB1266 could be augmented. Therefore, it was critical to document and identify specific issue areas in the law as it currently exists. This chapter documents the results of interviews conducted with officials from the three local governments in the state known to have started the process of implementing a TRZ and a few other stakeholders. This chapter does not present any justifications or explanations beyond documenting the actual interview findings.

Researchers developed an interview guide that included questions ranging from issues such as the motivations for using the TRZ mechanism to the process and stakeholder consultations that were necessary to establish the TRZ, and any issues that were found in this process, particularly issues related to the guidance provided by the law. A list of individuals familiar with the establishment of the three existing TRZs was developed in consultation with the research panel. A total of seven interviews were scheduled and conducted with individuals from local and state agencies directly involved in the implementation of these TRZs. The interviews were conducted over the telephone and in person. Appendix A shows the interview guide, the list of interviewees, and list of questions presented to stakeholders.

The findings from the interviews have been aggregated and summarized around five main issue areas and researchers have avoided attributing comments to individual interviewees. The paragraphs that follow present the findings in each of these issue areas. The five issues/problematic areas identified by the interviewees are:

- County and Municipal TRZs.
- TRZ Boundaries.
- Coupling to Pass-Through.
- TxDOT's Role.
- Revenue Risk Allocation.

COUNTY AND MUNICIPAL TRZS

The provisions in the legislation for county TRZ and municipal TRZs have features that seem advantageous to one, but disadvantageous for the other, and vice versa.

Administration: County TRZ and Road Utility Districts

First, county TRZ requirements are administratively onerous and confusing to the public, making it difficult for officials to gain political support to move a TRZ initiative forward. This is because unlike cities, constitutional restrictions prevent Texas counties from directly leveraging tax increments through a bond sale. Additionally, cities have ordinance authority, while counties just have resolution authority.[3] As described in Chapter 1, the law prescribes that counties have to hold a referendum and have a body of elected officials charged with overseeing a RUD. The county property tax is has to be abated, and then a new RUD tax equal to the tax abatement enacted, which brings forth the question from the public about why are taxes being abated, and then a new tax enacted. One of the interviewees suggested that one way to address this issue would be to amend the Constitution to allow counties to collect a tax increment and also bond against it.

Percent Increment Allocations for Municipal TRZs

Second, municipalities are implicitly required to dedicate 100 percent of the tax increment collected in a TRZ to a transportation project, which is perceived as an onerous proposition for municipalities with TRZs located in areas that are significantly underdeveloped. In such a situation, future funding for police, traffic, fire, and other municipal essential services may be adversely affected. On the other hand, the legislation provides county TRZs with flexibility to dedicate only a portion of the increment to the transportation project. This may not be an issue in municipal TRZs where the expected revenue stream is not significant because the redevelopment may occur in areas that are already well developed, and the impact on the municipal general fund will not be significant. However, in TRZs where significant new development is expected, and where other public services and new infrastructure to complement the new road facilities will be needed the 100 percent set aside was perceived as problematic and leading to diversion of revenues from the general fund.

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[3] Ordinances are enforceable laws and resolutions are non-binding and unenforceable statements.

The purpose section of SB1266 states that if the governing body determines an area to be unproductive and underdeveloped, it may establish a TRZ to promote a transportation project that cultivates development or redevelopment of the area. Due to the 100 percent set aside requirement, the explicit purpose of the legislation to cultivate development was felt to be a contradiction in terms, because the mechanism itself could impose a burden on a municipality with TRZ in an underdeveloped area.

TRZ BOUNDARY ADJUSTMENTS AND CONTIGUITY REQUIREMENTS

Currently, the TRZ legislation does not provide express authority to local governments to amend or adjust the boundaries of a TRZ once it has been established. Although it would be possible to argue that local governments have implied authority to amend the boundaries of a TRZ, based on case law and opinion of authority, this was felt questionable. As a matter of fact, the need to amend the boundaries of the City of El Paso TRZ No. 1 was one of the reasons for its repealing and the establishment of the subsequent TRZ No. 2 and TRZ No. 3. This lack of clear authority to amend TRZ boundaries complicates bonding against the revenue streams, because investors and financial markets lose comfort when an aspect so integral to revenue itself is not clearly articulated and authorized. Therefore, it is important from a financing standpoint that provisions to change or modify the boundaries of a TRZ are clearly spelled out in the statute.

The lack of a clear definition of what constitutes contiguity within TRZ boundaries in the current statutory language is also an issue. This lack of clarity requires local governments to seek extensive legal assistance when defining the boundaries of a TRZ to ensure that its contiguity is not disrupted by a piece of property that may be within the geographic limits but belong to a different government entity (e.g., military facilities or state right of way).

COUPLING TO PASS-THROUGH

In the opinion of some interviewees, the coupling to Pass-Through of the TRZ model was felt to unnecessarily limit the use of TRZs and add complexity to the implementation process. This is because the coupling to the Pass-Through program limits the use of TRZs to projects on the state highway system, negating the possibility of its use for projects on arterials or other transportation projects. Additionally, TxDOT should not frequently change the Pass-Through requirements because it creates even more confusion.

Also the process to establishing a Pass-Through agreement between the local government and TxDOT was perceived as onerous because it is subject to a number of interpretations. For example, in the case of the City of El Paso, the TRZ No. 1 was to provide funding of a total of four projects, and one of the questions for the municipality in such situation was whether a Pass-Through agreement was required for every project or one would suffice. A second issue that illustrates this point is in the case of City of El Paso TRZ No. 1 arrangement; there was an agreement between the city and the Camino Real Regional Mobility Authority (CRRMA) for the implementation of the four projects. In this case, the city would implement the TRZ, but TxDOT would enter into the Pass-Through agreement with the CRRMA, creating an unclear situation that makes the parties uncomfortable. The process was perceived to add more steps to the administrative aspect of the project development process.

On the other hand, according to interviewees who were directly familiar with the legislation process that culminated with the enactment of SB1266, the TRZ mechanism was initially intended to help local governments to raise more money to leverage pass-through funds. This was one of the reasons why earlier versions of the legislation included the creation of a state transportation reinvestment fund. Because the pass through program was popular, the TRZs were intended to fulfill two purposes. The first one was to provide local governments with the ability to raise more money to leverage the Pass-Through dollars. The second purpose of the TRZ program was to help replenish the Pass-Through fund, through the state transportation reinvestment fund. Ultimately, the final version of the bill enacted did not include this provision.

TXDOT'S ROLE AS PERCEIVED BY INTERVIEWEES

Several interviewees concurred in lack of understanding or guidance of an explicit role for TxDOT in the use of the TRZ mechanism and concluded that this lack of guidance causes delays and confusion in the process of project implementation. The legislation currently defines very clearly the role of municipal and county governments in TRZ financing. However, the statute is silent regarding TxDOT's role in the definition, establishment, and facilitation of the implementation of a TRZ even though it is a partnership. As a result, TxDOT districts have to "muddle through" their role as the process moves along.

REVENUE RISK ALLOCATION

The TRZ legislation does not currently define in any way which party to the TRZ-Pass-Through funding arrangement is to bear the TRZ revenue risk. Development-based debt is always difficult to finance, particularly at a time when credit markets have significantly tightened for local governments. This is particularly true for institutions like Texas RMAs with extremely short credit histories. In these cases, TxDOT backing in some way or fashion has been common throughout the state. For example in the case of El Paso TRZs, the CRRMA, and the City of El Paso pursued a State Infrastructure Bank loan as opposed to a bond issue, because they were aware that issuing debt using a development-based source of funds would possibly get poor credit ratings, making it difficult and very expensive. Should the CRRMA have pursued bonding of the TRZ revenues, interviewees felt it would have been necessary for TxDOT to provide a backstop to make it happen. When interviewees were asked about their perception of the potential benefits of having a guarantee facility available to local governments to purchase TRZ revenue risk coverage, they stated that it would be of significant benefit as it would provide a clean way of dealing with revenue risk.

TRZ AND SB1266 – GENERAL AWARENESS ACROSS TEXAS CITIES AND COUNTIES

A survey of general awareness was conducted and distributed across Texas through agencies such as the Texas Municipal League, Texas Association of Counties, and Regional Mobility Authorities in Texas. The survey instrument is in Appendix A. The survey was active from December 1, 2009, until February 4, 2010. During that time period 54 responses were received. However, some of those responses were incomplete. The majority of the respondents were from counties although there were some responses from cities.

When responding to the question, *Please tell us what you know about SB1266, passed in the 80th Legislature*, very few respondents (5) indicated that were aware of the bill and TRZs. Ironically, eight respondents indicated that they were considering developing a TRZ. However, some of these responses did not include contact information and there was no way to determine who sent the response. This indicates that the general awareness of the bill was very low and only a few agencies/counties/cities had more knowledge of TRZs. Based on follow up phone calls, the following regions/individuals shared knowledge on TRZs or plans to consider TRZ.

Rockwall County Commissioner. Rockwall County had been in several discussions and formed several planning consortiums with neighboring entities to complete Loop 9. Loop 9 would be an outer loop that traverses Collin, Denton, and Rockwall Counties. The commissioner informed that Collin County has formed its own toll authority as a way to finance Loop 9. All the counties had completed some preliminary design of a three-lane roadway and the Commissioner was determining if the TRZ was the right step for Rockwall County.

Denton County Judge. Denton County may consider developing a TRZ between Denton and Ft. Worth. The TRZ tool was welcomed but preferred that any new tool the legislature put forth could be supported as long as the decisions stayed local. "It is important to leave all options on the table" according to this respondent.

Gaines County Judge. This respondent indicated that Gaines County is a very rural county with a small population of approximately 15,000. He does not envision much development happening in the county. However, the county would consider a TRZ for a project they have been discussing with TxDOT. The project would involve converting a county road to a farm-to-market (FM) road. This road would tie into existing FM 1788. Most of the project would be in Andrews County to the south. Completing this project would make an easy connection to State Highway (SH) 214 and improve access to Midland.

Refugio County Commissioner. Refugio County is a very rural county with a small population. Funding is very scarce because there is very little tax base. The Commissioner feels the county is too dependent on oil and gas revenues. The county typically cannot even meet the match required for TxDOT projects and was very appreciative of these research efforts. The county has very little staff that can devote time to researching new funding avenues and most do not understand even the tools that are available. The long-term need is to devote time to understanding the available options. The county also has issues related to the development of I-69.

Schleicher County Judge. The Schlieter County Judge was interested in determining if a TRZ could help to develop a transit district. He is interested in partnering with the Concho Valley Council of Government (COG). He would like the district to improve bus service and create stations for intercity buses. He would like for El Dorado to be the hub.

Chambers County Judge. The Chambers County Judge believed Chambers County to be too rural to take advantage of this as a financing tool.

City of Nolanville. The city had not heard of TRZs but was interested in their ability to fund city infrastructure projects and repair.

City of Pecos. The City of Pecos was very interested in developing a TRZ and had been contact with private partners, consultants, and TxDOT to develop a rural rail transportation district. The city has several industries that are interested in moving to the area so they would like to establish an industrial corridor. The TRZ would support several projects including a rail spur and switch.

TRZ AND SB1266 – GENERAL AWARENESS WITHIN REGIONAL MOBILITY AUTHORITIES

Often, it is necessary or beneficial for an entity that is considering implementing a TRZ to partner with a local RMA. RMAs can be entities that establish Pass-Through agreements, which are a requirement under SB1266. In addition in Texas, RMAs have the authority to issue debt for projects. In those regions with RMAs, cities and counties may wish to use this mechanism and risk exceeding their bonding authority. County TRZs in regions with RMAs do require inter-local agreements with the RMA. Therefore it was necessary to also contact the RMAs to assess their level of awareness of SB1266 and TRZs. Six of the eight RMAs in Texas were contacted to ascertain their awareness of TRZs. Hidalgo County and Camino Real were not contacted since they were already involved in the areas that have already created TRZs.

Grayson County RMA was not at all familiar with TRZs but they had been approached by several private firms that are interested in partnering with the RMA to complete a tollway through Grayson County. The Northeast Texas RMA (NETRMA) is very interested in developing a TRZ to help complete the Loop 49 project around Tyler. However, the board is opposed to the language in the statute that requires a Pass-Through toll agreement with TxDOT.

The outreach conducted as part of this exercise exposed the knowledge gaps regarding TRZs. Very little information is available and most entities do not have a clear understanding of the purpose or intent of this financing tool.

CHAPTER 3: TRZ CONCEPTUAL FRAMEWORK AND PROCEDURES FOR TRZ PLANNING, DEVELOPMENT, AND IMPLEMENTATION

The process of developing a TRZ project involves numerous steps. The type of project authorized to use a TRZ facility plays a critical role in its feasibility. This report was developed around a framework for supporting decisions related to the development of TRZ projects. The framework depicts the sequential elements that should be considered in implementing a TRZ project and builds on Figure 1.5. Features of the framework include the following:

- Incorporation of broader mobility, community, and financial goals, particularly those involving revenue generation, into the general policy framework for TRZ development specifically in the initial phases.
- Objective decision making in determining potential project types where TRZs are warranted and/or revenue generation might be of value.
- The involvement of other local governmental agencies in the process, as well as multiple opportunities for public input as mandated by the legislation.
- An evaluation and monitoring process to track revenues if expected performance does not meet desired outcomes since it is tied to a financial stream of annual payments to defray capital costs.

Figure 3.1 illustrates the broad framework showing the TRZ as part of a longer term planning strategy for regions that might consider it an additional financing mechanism to meet their long-term mobility needs.

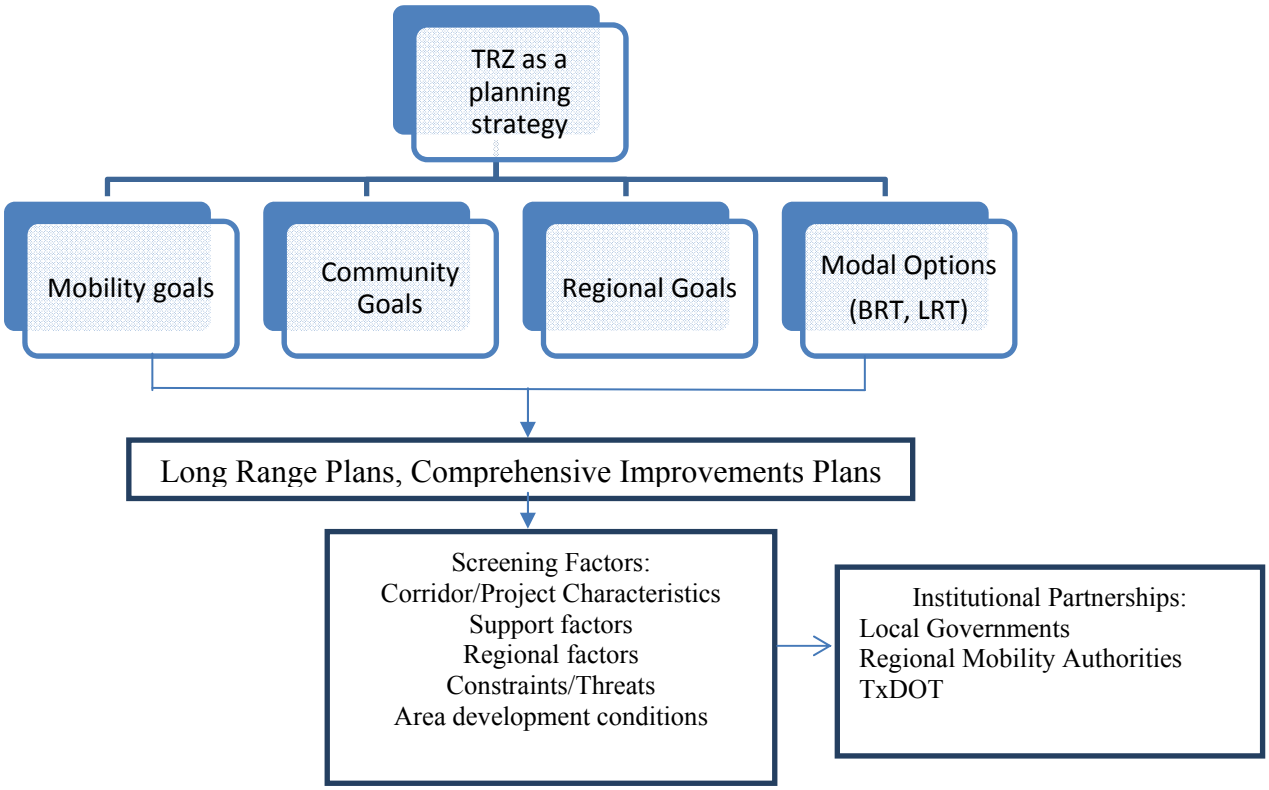


Figure 3.1. TRZ Conceptual Framework.

This chapter discusses the various steps involved in the implementation of TRZ and builds upon the discussion in Chapter 1. This chapter also introduces the development of standardized procedures for TRZ development as part of the larger framework for TRZ development.

TRZ IMPLEMENTATION

Initiation

Initiation is the first stage of the TRZ implementation process. It involves a series of steps. These specifically include:

- Project identification and need:
  - Specific benefit from project(s)-economic.
  - Area eligibility.
  - Preliminary feasibility analysis.
- Developing stakeholder relations and champions.

Project identification and need refers to the process of identifying specific candidate projects that might be significant from a mobility standpoint and provide other functions. One way to approach TRZs is on a project by project basis. On the other hand, TRZs may also be part of a long range strategy where projects from comprehensive plans or long-range plans are screened for TRZ feasibility. In the latter case, TRZ may also be included in the plans as a potential financing strategy and as an explicit funding source.

The projects chosen must be shown to provide benefits to the region and address aspects that lead to economic benefits—a good example is significant accessibility improvement. Demonstration of the eligibility of the area as undeveloped or underdeveloped is also a requirement under the legislation. In some projects, this analysis may also be used to satisfy environmental review documentation. The analysis specifically requires the following assessments:

- A benefit-cost analysis and/or, an economic impact assessment study of both regional benefit and local impact derivable from the project.
- A screening to assess whether the project can support a TRZ.
- A preliminary revenue feasibility analysis to assess a project as a TRZ candidate.
- Demonstration of unproductive or underdeveloped land in the corridor using maps.

These analyses could be used to initiate a dialogue with the local government entities and with other stakeholders to build support. In yet other cases, a local government entity may also initiate this process, but TxDOT has to become part of the dialogue. These processes and the entire implementation of a TRZ require a significant amount of interagency collaboration, as the information and support needed to complete the process has to be assembled from a number of stakeholders.

Data and Information Needs to Support Initiation

Both economic impact analysis and feasibility analyses involve significant data and information needs that must be compiled from:

- TxDOT.
- The appraisal districts.
- City council members.

- County commissioners.
- RMA, if the region is under the jurisdiction of an RMA.

The types of data include:

- Project related information (costs, tentative limits, general schematics, and project type).
- Parcel layers from appraisal districts and other sources to define various requirements like land eligibility followed by TRZ parcels and boundaries.
- Appraisal data.
- Land use information.
- Other supporting information to develop economic impact analysis and screening study such as demographics.

Hence, developing good solid stakeholder relations and TRZ champions is extremely important to facilitate various aspects of TRZ development—data sharing being a significant area of partnership and dialogue.

Zone Formulation

This second stage of implementation involves the following sub steps:

- Define boundaries, zones, parcels.
- Establish benchmark year for tax increment collection.
- Provide a 60-day notice.
- Refine the feasibility analysis.

The first step is to define zone boundaries and identify the parcels that will be within the TRZ. This requires that a zone map showing all the affected parcels and areas must be developed as TRZ and the zone must be assigned a number (example, TRZ #1). Following that, a benchmark year for tax increment collection has to be established as a basis for analysis, i.e., the base year for which the TRZ has to designated and benchmarked.

There is a 60-day notice period that needs to take place before the TRZ is designated. The legislation specifies that the local government hold a public hearing on the creation of the zone, not later than the 30th day before the date when the TRZ is expected to be designated by either the City Council or the County Commissioners Court. Not later than the 7th day before the date

of the hearing, notice of the hearing and the intent to create the zone must be published in a newspaper having general circulation in the municipality or county.

During this 60-day period the feasibility analysis must be refined to ensure that the cash flows will be sufficient to service the debt that the local government is committing to. This includes generating the highest possible cadastral (parcel) data and refining assumptions related to pace of development and property values. The revenue feasibility tool plays an increasingly important role in this phase in the development of revenue consistent buffers and zones. This tool will be discussed in greater detail in a later section.

TRZ Boundary Development

This is an important step of the zone formulation stage. It specifically involves the following additional steps:

- Declaration of unproductive/underdeveloped region.
- Actual zonal boundaries limited to a maximum of a 1-mile radius, around the project. In reality, however, political will and revenue considerations drive the development of zones.
- Boundaries may be established prior to knowing exact project limits.

TRZ legislation does not yet provide express authority to local governments to amend boundaries once they are established. Hence, great diligence must be adopted in this stage of zone formation.

Operationalizing Increment Capture

After the establishment of zones, there must be protocols in place with the local government to operationalize the capture of the increment. This typically includes the following sequence of steps:

- Establish Base Year and Base Year Appraised Value.
  - The year the TRZ is established.
  - The total appraised value of all real property taxable in the TRZ is defined as the base year appraised value (tax increment base).
- Determine Final Captured Appraised Value.

    - Total final appraised value (all real property) in TRZ − Tax Increment Base = Captured Appraised Value.
- Determine Tax Increment.
    - Amount of ad valorem taxes levied and collected by the municipality for the year.
- Use the appropriate tax rates—city or county tax rates to develop the portions of tax-increment set aside as the revenue share.

Adoption of TRZ

One the zones have been finalized, the adoption stage involves a series of opportunities for public input and comment per legislative mandates in the following ways:

- Public hearings.
- Ordinance (municipal TRZ).
- Decree of the County Commissioner's Court (county TRZ).

The public hearings provide an opportunity for public comment and feedback on zones of the TRZ and any other aspect of the TRZ itself. The adoption is finalized by ordinance in the case of a municipal TRZ and by decree in the case of a county TRZ.

Implementation

The implementation stage is characterized by the following steps:

- Develop a project queue for payout purposes if multiple projects.
- Determination of TRZ financing aspects including amount of debt or loan, payout schedule, pooling of funding sources, and partnerships to ensure all parties in the agreement are aware of the financing and recognize their roles in the financial collaboration.
- Ensure pass through application is in place.
- Facilitate collection processes:
    - Road Utility District for county TRZ under SB1266 (same boundaries as TRZ),
    - Inter-local agreement (RMA, county through County Commissioner's Court).

Payout Schedule and Pass-Through Application

In the case of a scenario with multiple projects, it is necessary to develop a payout schedule for payout purposes from the available funding mix to ensure which projects will be allocated the TRZ funds. This includes ensuring that a Pass-Through application is approved and that the payout schedule is in synchrony with the financing plan.

Financing Plan

The financing plan must determine the indebtedness or loan amounts to be incurred as well as bonding entity or loan issuing entity, which is typically an RMA in regions where an RMA exists or the local government itself in regions without an RMA and ensuring all parties in the agreement are aware of their roles. The financing plan must also specifically refer to various revenue sources or types of funds that will be combined together to defray the capital costs. Examples of various types of funds besides TRZ funds include federal dollars, state dollars, toll revenues, if applicable and other categories of funds. There must be legal counsel advising the partners on mixing funding sources as part of a financing strategy. This includes ensuring that a Pass-Through application is approved and in synchrony with the financing plan. It is also expected that project costs, base value of the TRZ tax base , and estimated yearly change in tax base over the duration of the TRZ are included in the financing plan. The last element of the financing plan is the determination of a strategy to deal with revenue shortfalls in the event there is such a shortfall.

Establish RUD and Inter-Local Agreement

Under the current legislation, in the case of a county TRZ, there is a need to establish a RUD with the same boundaries as the TRZ to facilitate the collection of revenues. If an RMA is to be the implementing agency for the project(s) an inter-local agreement should be established to enable the flow of funds to that agency.

Monitoring and Evaluation

Monitoring and evaluation are critical steps once such zones are established. To date, only the El Paso TRZ is also the first fully operational TRZ that has moved to the monitoring

phase. The Forney TRZ will be in this stage shortly, while the Hidalgo County TRZ is not yet at this stage due to issues in the development of RUD.

As part of this stage, local entities would find it in their interest to establish monitoring and evaluation of TRZ revenues so as to optimize revenue and payment streams. The El Paso TRZ is adopting a dynamic evaluation and monitoring protocol, whereby revenue may be tracked to assess how far projections were from actual realizations. This information may be used for multiple purposes. One example is to provide the greater local government insight into scenarios when revenue from new development may be lower than expected, allowing the implementation of targeted actions that may help facilitate development and bring the revenues to the expected levels.

TRZ DECISION MAKING TOOLS

These standardized procedures were developed because the three implementation examples indicated little commonality by way of methods or procedures that were adopted. These procedures are formalized into tool sets/toolkits which a stakeholder/user could use to determine various aspects of a highway project TRZ development. These tools are independent tool sets but work together toward a common goal. To make the process of TRZ development and planning easier, TTI has provided a set of three decision making tools. An attached disk contains the tools and the user guides for these tools. These tools are as follows:

- TRZ Screening Application Tool: Development of a user-friendly preliminary screening tool that helps users determine if a TRZ is meaningful for a corridor or a highway project at the sketch planning level. The specific purpose of this tool is to answer the question is the specific project located in a specific region TRZ worthy? TRZ worthiness is described as a situation where a TRZ can be set up and could be viable with other supporting conditions. This is designed as an Excel® spreadsheet and will take the stakeholders through an investigation on various aspects of the project. This tool can be used at various points of a project from very early stages to more advanced stages. This tool may also be used to screen more than one project at a time to weed out projects that may not qualify for TRZ development. This tool is best used well in internal stakeholder investigations by either the city or TxDOT

assuming the project will qualify for a Pass-Though application. It is recommended in the initiation phase.

- A GIS-Based Automated TRZ Development tool option that allows one to explore and optimize TRZ planning by enabling further scrutiny of land parcels in selected TRZ buffer zones. It also prepares the land parcels database for preliminary revenue assessments.
- TRZ Feasibility Tool: This is a tool that is designed to help users/stakeholders prepare preliminary revenue estimates for a TRZ once it is actually established. It has additional functionalities important to TRZ establishment including the development of revenue-consistent TRZ zones and more advanced revenue estimation facilitated by local calibration of the tool/model. It is designed as a web-based preliminary revenue feasibility tool. The TRZ Revenue Feasibility tool is currently hosted at: http://ciitr.tamu.edu/RMC.aspx. This tool is recommended in the initiation stage to obtain preliminary revenue assessments. It may also be used in the zone formulation stage, and with high level cadastral data and quality control on inputs at the local level it may be used to obtain revenue-consistent zones and to facilitate more refined approximations of revenue as might be needed to facilitate financial agency scrutiny of stakeholder financial proposals .

Each of these tools will be discussed in the chapters that follow.

CHAPTER 4: TRZ DEVELOPMENT DECISION MAKING TOOLS – TRZ WORTHINESS SCREENING TOOL

One of the main objectives of this research was to develop standardized procedures that may be used in the establishment of future TRZs. This chapter discusses the development of a screening application that stakeholders may use very early on in the process. The TRZ Screening tool presented in this chapter is developed to helps users decide whether an individual project or group of projects will have the potential for value creation. The first section conducts a review of factors that the research team feels are important and should be considered in a preliminary screening evaluation. The next section deals with the design of the tool itself, which is developed as a standalone spreadsheet tool (Software and Hardware Platforms for Tool Development). The screening tool represents a pre-feasibility tool to suggest if and when a TRZ would be worthwhile to pursue. It precedes more formal revenue and financial feasibility analysis performed with the TRZ Revenue Feasibility tool.

The screening tool does not build upon an existing framework, but starts from a community's inward-looking process of development and growth where several factors should to be taken into consideration to suggest whether it would be worthwhile to continue to a more detailed analysis. Due to its proposed end use, the screening application was conceived as a simple application relying on even simpler inputs combined with an ability to allow for introspection of regional flaws and opportunities for TRZ development when used dynamically.

FACTORS CONTRIBUTING TO A SUCCESSFUL TRZ

The screening tool allows agencies to decide whether support conditions exist for the establishment of a successful TRZ. This initial screening tool is followed by a more advanced preliminary revenue feasibility tool that allows agencies to further assess projects that have passed the tier 1 screening for additional information such as likely revenues, payback amounts, and bondable capacity if needed. The presence of local financing options through TRZ finance is noted to be a favorable aspect for obtaining a Pass-Though finance application (*35*) since SB1266 requires it.

All TRZs will generate some level of income as long net tax rolls are added to. A project influences tax rolls in two ways: a) in the short term it takes away via tax base loss if there is right of way acquisition, and b) in the medium to long term it adds to rolls by enhancing values

of remaining properties and adding new tax base or new developments. The real question is if the conditions exist to support the TRZ and if TRZs can be successfully deployed for raising local matching funds. Many factors can affect TRZ potential associated with transportation projects. Based on a literature review and previous project experience, a comprehensive set of factors that have pertinent relationships with TRZ establishment and land development are identified (*34, 36-39*).

FACTOR GROUPS

Figure 4.1 shows five categories of factors that could contribute toward a successful TRZ. These are broken down into:

- Support factors: These factors are highly critical in the physical establishment of a planning initiative like TRZ much like TIFs and TIRZs. This category refers to factors that are important in establishing boundaries. The following three groups point to the ability for TRZ's to be successful.
- Project specific factors: These factors pertain to the specific project(s) that warrant the TRZ since not all projects are TRZ-worthy in the sense that, not all projects are capable of creating a positive influence on development.
- Area development conditions and development constraints: These two sets of factors point to land conditions in project vicinity and explore the potential for land favorable development impacts.
- Regional factors are those associated with the regional macroeconomic conditions and trends that create conditions for successful land development.

Factor Scores and Global Weight Scores

To facilitate the design and application of the screening tool, a standard score range of 0–5 is assigned to each of the factors, with five indicating maximum TRZ potential and zero indicating no potential. Each factor is further assigned a global weight score at a macro level (0.25–1 with one representing most significance) to reflect its significance in the overall assessment of TRZ potential. Global weight scores are established for global factors, i.e., those factors that are known to be directly associated with either establishment of TRZ as a planning initiative or TRZ potential once established. Global weight scores are established at four levels

(0.25–1) based on whether a factor is of primary, high, medium or of low significance. These scores are constants and cannot be changed during the evaluation process. Individual factor scores, on the other hand, are user supplied and range from 0–5. Through the screening tool, the sum of the weighted scores for each factor can be compared against a threshold to estimate whether support conditions exist for the establishment of a TRZ.

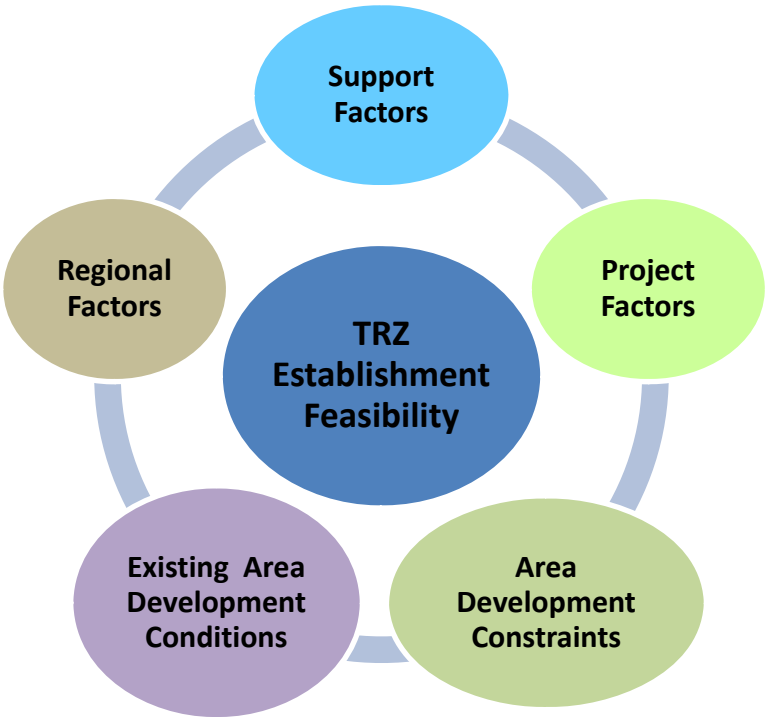


Figure 4.1. TRZ Establishment Screening Factors under SB1266.

Table 4.1 summarizes list of 17 individual factors along with sub-factors and secondary risk or influence factors associated with each factor. Figure 4.2 illustrates the hierarchy of the factors, sub-factors, and risk factors, followed by more detailed descriptions of the factors. While these factors are generally drawn for highway projects, some of them are equally important for transit and would require modest revisions to consider transit projects. The discussion of each of the screening factors follows Figure 4.2.

Table 4.1. List of Key Factors Likely to Impact TRZ Outcomes.

No	Factor	Variable/Observable Measure Examples	Factor Weight	Significance	Source	Secondary Factor Influence/Risk	Secondary Factor Sources
Data and Stakeholder Readiness to Enter into Collaborative Agreements (3)							
1	Data readiness	Parcel layer data quality established by Texas Geographic Information Consortium (TGIC)	Primary (x1)	Lack of good cadastral data limits the ability to enter into planning initiatives pertaining to actual parcels that will part of such an initiative	TGIC data layers recreated for 254 counties in Texas (2009)	None	NA
2	Stakeholder readiness	Based on willingness to partner or enter into inter-local agreements (city or county, RMA, TxDOT)	Primary (x1)	Lack of political will in developing local partnerships for financing mobility projects can be significant limitation	Panel input based on group dialogue and discussions	None	NA
3	Anticipated citizen support as necessitated in TRZ establishment protocols	Likely support from citizens/City Council Representatives	Primary (x1)	TRZ development will require a series of public hearings and an ordinance from the city all of which are contingent on support.	Panel input	None	NA
Facility or Project Level Factors (5)							
1	Facility and construction type	Added capacity – new alignment (5) Added capacity – other (3) Added capacity –widening (4) Added capacity – interchange (3) Added capacity – managed lanes combined with added capacity (4) Added capacity – with Managed lanes or HOV lanes (3) Added-capacity – Pure toll projects (2)	Medium (x0.5)	Actual project type is an important consideration in a potential land development impact	Panel input	Land side access (multimodal connectivity) (+) Access to employment subcenters (+) Project location (+ or −) Greenfield/Brownfield for toll projects (+/−)	Panel Input GIS data layers Visual assessment Data from Economic Development Organizations (EDC)
2	Land use compatibility	Metropolitan TIP project	Medium (x0.5)	Greater likelihood of compatible uses	MPO City	None	-
3	Number of proposed projects	Number of projects	High (x0.75)	More eligible projects allow risk pooling/ consolidation	Panel	All projects within a regional boundary (single city) (+) Projects across multiple cities-Projects across multiple counties (−) Projects across ETJs (−)	GIS or Panel input
4	Nearby roadway density/Nodal connectivity	Number of nodes within 1 mile (scale)	Medium (x0.5)	Roadway network of lower density	GIS Road network layers	None	-

Table 4.1. List of Key Factors Likely to Impact TRZ Outcomes (Contd.)

No	Factor	Variable/Observable Measure Examples	Factor Weight	Significance	Source	Secondary Factor Influence/Risk	Secondary Factor Sources
5	Service quality measure	Level of service improvement Safety improvement Travel time Improvement likely	Low (x0.25)	Improvements in service quality tend to capitalize in land over the longer term	MPO	None	TxDOT
Project Area Type and Development Conditions (4)							
1	Area type	Urbanized (200,000+) (5) Urbanized (50,000–199,999) (4) Small urban (5000–49,999) (3) Rural (1–4999) (2)	Medium (x0.5)		Panel MPO Census	None	-
2	Development constraints in the proposed corridor(s)	Percent land with absolute constraints Percent land with natural resource constraints Legal constraints on commercial developments Legal constraints on residential developments	Medium (x0.5)	These variables work to determine if land developments impacts can accrue in the presence of other conditions	MPO TxDOT City Corridor analysis and environmental study results	None	-
3	Neighborhood factors	Crime rate Poverty level	Low (x0.25)		Census Data	None	-
4	Property type and acreage	Land use mix (percent land in various developed uses)	Medium (x0.5)	Land use diversity is good for TRZ development. Land use mix beyond certain levels could actually work to the detriment of dominant land values.	GIS parcel layers; Panel input on percents	None	-
Regional Factors (5)							
1	Historical trends on land developments and property values	Percent increase in building permit activity (county or region five-year average) Percent increase in taxable values (five-year average)	High (x0.75)		Texas A&M Real estate Center & State Comptroller's Office	None	-
2	Local demographic information	Population density (per square mile) Employment density Recent Regions Bond Ratings (Municipal or otherwise)	High (x0.75)		Census Data and Local inputs for Bond Ratings	None	-

Table 4.1. List of Key Factors Likely to Impact TRZ Outcomes (Contd.)

No	Factor	Variable/Observable Measure Examples	Factor Weight	Significance	Source	Secondary Factor Influence/Risk	Secondary Factor Sources
3	Concerted or targeted efforts for economic development	Specific region identified for development Specific actions taken to promote development	High (x0.75)	A TRZ would have a much better chance to create value increment if it is within a specific region identified for development by regional economic development agencies or undertaking specific actions to promote development	Panel input	None	-
4	Area-specific factors	Border trade for border cities	Medium (x0.5)		Visual	None	-
5	Existing TRZs, TIF districts, or TIRZs	Number of existing TRZs, TIF districts, or TIRZs	Low (x0.25)		Panel input	None	-
Total 17 factors							

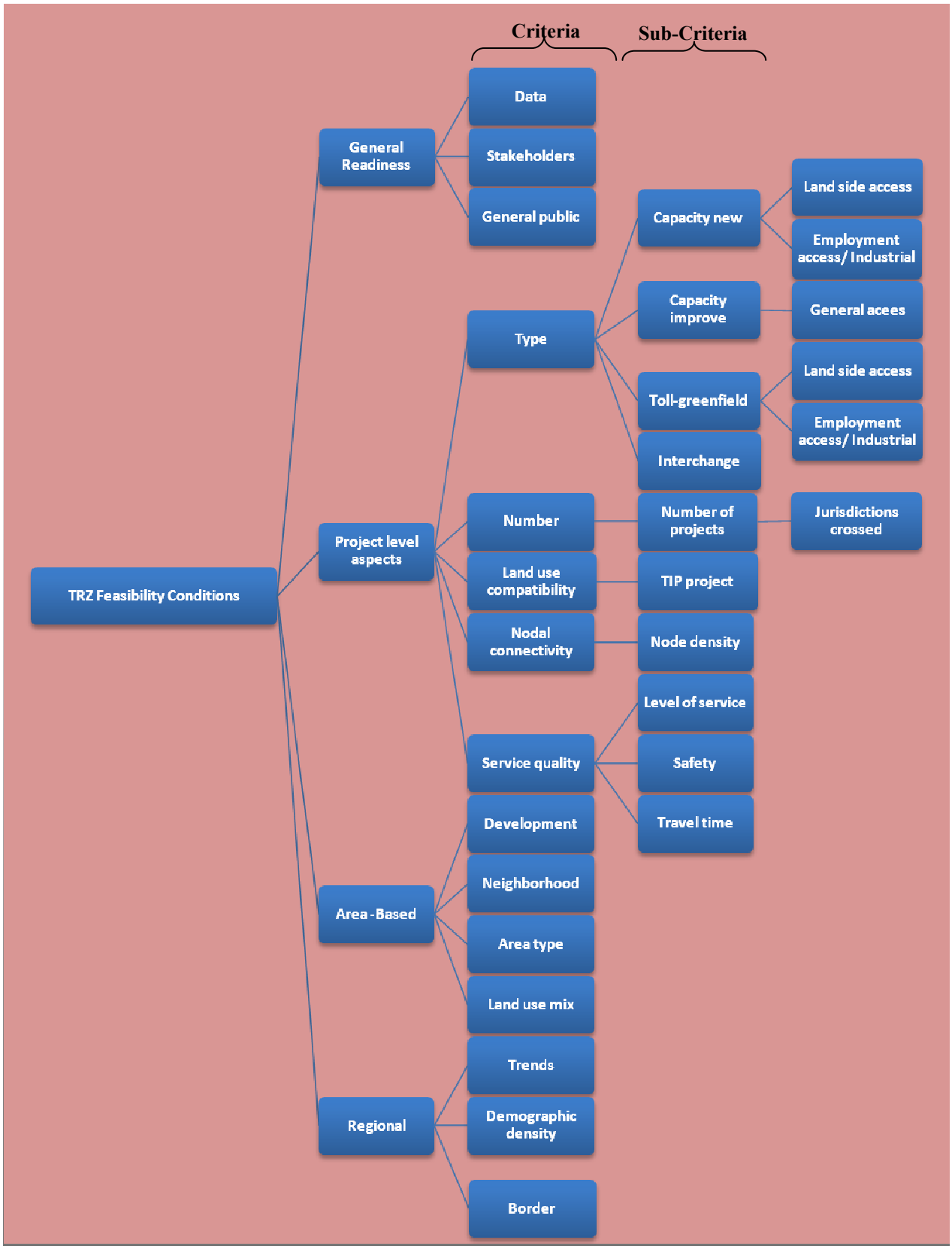


Figure 4.2. Proposed Factor List Schema.

Stakeholder Readiness to Enter into Collaborative Agreements

These factors could impact the speed and reliability with which TRZ planning arrangements could proceed in the near term. As such these are not watertight measures, since transitions are possible at any stage based on data quality, awareness, and discussions. This group includes the following factors:

1. **Data readiness**. The availability of necessary data especially parcel data in a geographic information system (GIS) format is highly critical for TRZ implementation and management. Since TRZ feasibility depends on tax increments, which are estimable from parcels, the non-availability of such data can be a significant impediment. According to the Central Appraisal District surveys conducted by the State Comptroller (Figure 4.3) approximately 75% have data in a digital format. A GIS layer showing the GIS parcel data status has been recreated based on the survey results. Based on Figure 4.3, Figure 4.4, and Appendix Table s(B and C1.1), a large number of counties and regions are ready for such mechanism, but a greater number of counties may just not be ready. However, it is quite likely that the graphic would be representative of more recent initiatives that might be ongoing at individual appraisal districts. According to the ability to provide or have in possession reliable parcel layers in the immediate short term (1–2 years), a project can be assigned with one of the following scores:
    - 5 (high): a region has in its possession fairly reliable parcel layers or is willing to make available such layers. Based on Figure 4.3 approximately 20 percent of the counties (52) in Texas are very data-ready (shaded very dark green) as of 2009–2010. These are counties with 100 percent of parcels digitized. Notice that most of these counties are located around urban/metropolitan areas. There are three implementation TRZ projects underway—all three are from regions with good parcel data (El Paso – darkest green or best quality; Hidalgo County and Kaufman region – dark green shaded regions).
    - 4 (medium high-dark green shaded): counties with 75–99 percent of digitized parcels (Hidalgo and Kaufman fall in this category). Approximately, 26%of regions have more than 75 percent of data available in a digitized format. This would suggest that approximately 46%of the regions may be data ready.
    - 3 (medium): counties with 50–74 percent of digitized parcels.

- 2 (medium low): counties with 25–49 percent of digitized parcels.
- 1 (low or difficult): regions that currently have very limited (1–24 percent) parcel data layers in a digitized format (counties with little or no digitized data).
- 0: regions that currently have no digitized parcel data.

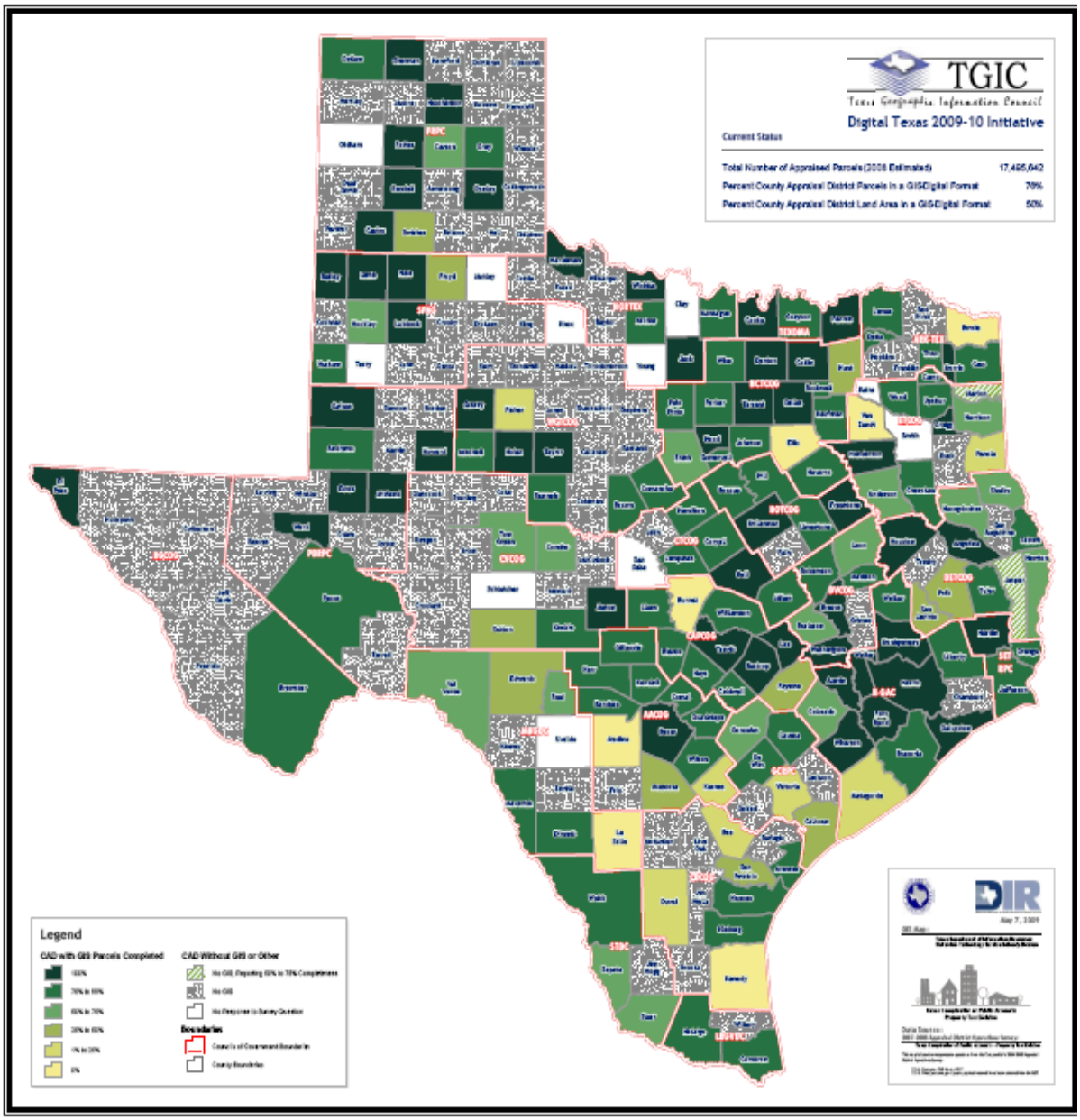


Figure 4.3. Appraisal District GIS Digital Parcel Data Status 2009.

2. **Stakeholder readiness**. Data readiness is key technical aspect suggesting that 46% of regions may have a TRZ opportunity, however, other support factors are even more critical in TRZ establishment. This factor refers to the ability and political will of stakeholders, local governments, and key entities in the decision making process, such as TxDOT, city, county, and/or RMAs to come together to recognize the need for critical projects and the need for public-private partnerships that would be necessary for this mechanism to work. Depending on the level of stakeholder readiness, a project can be assigned with one of the following scores:
    - 4–5 (high): critical stakeholders and local governments are willing to come forward and discuss financing options including setting aside tax increments for the project. The key parties include TxDOT, the relevant RMA, the county representatives, and/or city representatives.
    - 2–3 (medium): some key stakeholders are reluctant to actively participate in the setup of a TRZ.
    - 0–1 (low): none or only limited stakeholders have the willingness to support a TRZ and relevant policy/regulation makings.

    Certain broad common regionwide planning goals might be critical in obtaining support across stakeholders. Many factors may lead to shared goals across stakeholders including but not limited to: common vision for the strategic future of the region in terms of economic growth, trade, connections and sustainable outcomes including those of air quality and an understanding of mechanisms to achieve those goals including the role of transportation infrastructure as discussed in the conceptual framework for TRZ.
3. **Anticipated citizen support as necessitated in TRZ establishment protocols**. Public support for transportation projects as well as setting aside a portion of the tax increment for the TRZ to be set up is an important consideration for the TRZ to be successfully established. According to the level of support from the affected public/voters, a project can be assigned with a score between 0–5 with 5 indicating the highest possible level of public support.

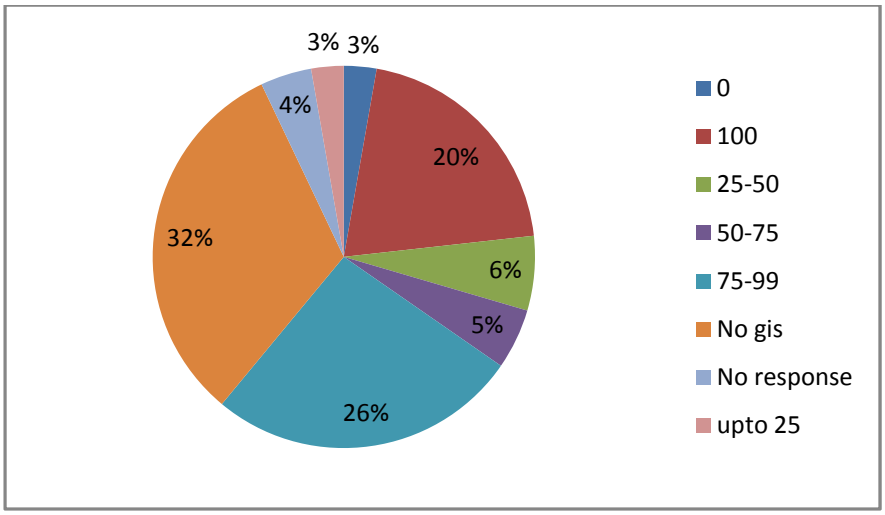


Figure 4.4. Distribution of Texas Counties by Percent Digitized *2*.

Facility or Project Level Factors

These factors include those that directly depict the transportation projects being considered for TRZ. Typically capacity projects are those that are associated with land development impacts but there are several tempering factors that serve to influence the size of likely impact. These include the actual type of capacity project and other sub-factors.

1. **Facility and construction type**. Different types of facilities and constructions will result in different extents of TRZ Potential. The literature suggests that not all projects are uniform in their impact on land development. While added capacity projects (both new and widening) are valid candidates, there are many others that do not satisfy this criterion. For this research, the various projects could be classified on a development potential scale ranging from least or no potential (0) to maximum potential (5). Several secondary influence factors were also identified that can be used to further adjust the score based on the project type. To determine the factor score of a project, users should use the score assigned according to the project type and then make reasonable adjustment based on applicable secondary influence factors. For the time being, this list is only developed for highway projects since the bill is currently directed to highway projects alone. Subsequently, this could be expanded to consider transit projects.

   Based on a review, some key project level aspects seem more conducive for augmenting land development effects, given certain conditions. For instance, the entire range of

capacity projects can be meaningfully broken down into three types of broad capacity/mobility characteristics: tollway, non-tollway free capacity improvements, and finally options that combine both features. Minor improvements such as reconstruction and resurfacing are not considered if they are part of a main project. While the jury is still out on some aspects, tollway projects tend to be riskiest in terms of generating widespread land developments while free options tend to generate the most widespread effects. This aspect is used to develop the rating scale. This scale is tempered by the broad type of access features a project provides.

Two risk factors, connectivity and access, are considered along with micro-location. Therefore, every project can be considered as five categories. In principle, there are more risk factors, but we have decided to focus on the most critical and perhaps easiest to note based on planned project routes. The risk factors, when positive, are assigned with a score of 0.5 on top of the base score assigned based on project type (0–5).

2. **Land use compatibility**. The consistency of a proposed project with the local land use plans as well as other transportation plans may affect the probability of a project creating compatible land uses and maintaining values in the area. For example, a metropolitan transportation improvement program (TIP) project is likely to be consistent with existing zoning patterns and have a greater possibility for generating predictable development patterns consistent with those considered in land use plans. Therefore, one indicator is whether a project is part of a long-range plan or a metropolitan transportation improvement plan. Projects that do not belong in these categories can lead to incompatible uses and lead to fluctuations in value. A binary score is assigned to this factor: a score of 0 indicating the project is not a TIP project while a 5 indicating the opposite.

3. **Number of projects that are considered**. The numbers of major proposed projects in the TRZ and their scales/types have an impact on TRZ potential. Multiple projects that lead to synergistic network influences frequently prompt more significant value increments in the region. However, the significance of this factor to the success of a TRZ

also depends on the number of jurisdictions the projects cross. The land developments associated with projects that are completely contained within a single jurisdiction are generally easy to identify and manage, simplifying the assessment of TRZ potential. In contrast, crossing borders of multiple cities or even counties will inevitably complicate the management of a TRZ and increase the difficulty of achieving sufficient investment return. In addition, due to the lack of zoning in regions beyond extra territorial jurisdiction (ETJ) boundaries revenue assessments become a challenge. A project of which a large part traverses an ETJ may have a lower level of feasibility of setting up a TRZ primarily because the degree to which land use conversions occur in these areas is a function of several additional factors. To determine the score of the projects in the aspect, users should first assign a score based on the number of projects (3 for one project only, 4 for two projects, and 5 for three or more projects). Reasonable adjustment can be made on top of the base score based on the number of jurisdictions the projects cross:

- All projects within a regional boundary: minus 0.
- Projects across ETJs: minus 1.
- Projects across multiple cities: minus 2.
- Projects across multiple counties: minus 3.

Projects that traverse multiple counties are multi-jurisdictional by nature, requiring strong inter-local agreements. These projects may be broken down by county for analysis purposes since support has to be generated at the county level.

4. **Nearby roadway density**. An existing dense nearby roadway network is likely to maximize the potential of a new highway project leading to significant further developments. As such, this measure is an indirect accessibility measure. This tool uses the number of nodes (i.e., intersections) within the 1-mile radius of the project(s). This can be further refined by type of opportunity afforded. The following criteria are used when assigning a score:
    - 0 if no intersections within the 1-mile buffer.
    - 1 if 1–2 intersections.
    - 2 if 3–4 intersections.
    - 3 if 5–6 intersections.

- 4 if 7–8 intersections.
- 5 if 9 or more intersections.

5. **Service quality measure**. Projected service quality has potential impact on TRZ potential for both transit and highway projects. Commonly used performance measures such as predicted levels of service (LOS), safety, and congestion (travel time conditions) may be used as indicators of service quality. Travel time improvements can be capitalized in land values as can safety measures improve the amenity factor. To determine the overall score for a project associated with this factor, users should first assign separate scores (0–5 scale) based on the potential improvements to LOS, safety, and travel time. The overall score is the average of these three scores.

Project Area Type and Development Conditions

The factors in this group depict the development conditions within a potential TRZ. All of these are best quantified in GIS, but none of which may be readily available for this analysis. If those exist, an external analysis can facilitate this process. In subsequent efforts, the tier 1 screening tool may be upgraded to include ready access and calculation of all of these aspects internally; however, good parcel layers are a requirement for this process. To maintain simplicity and ease of use as a TRZ facilitation tool, it was decided that this effort should retain the capability for users to resort to either expert judgment or a more quantitative assessment of the following sub-factors.

1. **Area type**. The development type of the TRZ area has an impact on TRZ potential and therefore value capture after a TRZ is set up. Examples of variables or observations for this factor include urban, suburban, and rural. We suggest a simple classification based on a population classification scheme for classifying macro-location. These factors will be rated on a 1–4 scale:
    - 4 for urbanized areas with a population ≥ 200,000.
    - 3 for urbanized areas with a population between 50,000–199,999.
    - 2 for small urban areas with a population between 5,000–49,999.
    - 1 for rural areas with a population less than 5,000.

2. **Development constraints**. The ability of land developments to occur depends on the amount of vacant land that is developable and constraint free, among other factors (*40*). Development constraints include absolute constraints, natural constraints, and legal constraints such as restrictive zoning, which limit the development potential by reducing the amount of vacant land that is developable. The overall score for this factor is estimated as the sum of those determined based on the following variables (cannot exceed five):
    - Absolute physical constraints include features such as existence of water bodies, major utility rights of way, roadways, or railroads. Absolute constraints are riskier than resource related constraints since they can cause land to not be available for development. A base score can be determined based on the percentage of land with absolute constraints within the TRZ: 2.5 = 0–20 percent, 2 = 21–30 percent, 1.5 = 31–40 percent, 1 = 41–50 percent, and 0.5 = 51 percent and up.
    - Natural resource related constraints include features such as flood plains, detention ponds, landfills, environmental constrains (e.g., wetlands), and high terrain. The score of this variable is determined based on the percentage of the land with natural resource constraints within the TRZ: 2.5 = 0–20 percent, 2 = 21–30 percent, 1.5 = 31–40 percent, 1 = 41–50 percent, and 0.5 = 51 percent and up.
    - Legal constraints on commercial developments, which will inevitably decrease the potential of transportation project catalyzing further developments. This is a binary variable with 0 indicating no existing legal constraints and −3 indicating existence of legal constraints.
    - Legal constraints on residential developments, which may result in a reduced likelihood of commercial land developments. This is also a binary variable with 0 indicating no constraints and −2 indicating the existence of such legal constraints.

3. **Neighborhood factors**. Some neighborhood factors such as local crime rate and poverty levels may have impact on the TRZ potential of a transportation project(s). These work in a similar fashion as development constraints and higher values serve to detract rather

than contribute. Poverty level is rated lower because poverty features are partly a requirement in the establishment of TRZs. A score can be assigned as following:

- Crime rate in the region: 1 for low, 3 for medium, and 5 for high (may be based on percentages from Census data or quick expert judgments).
- Poverty level: 1 for low, 3 for medium, and 5 for high (may be based on percentages from Census data or quick expert judgments).

4. **Property type and acreage**. Different types of properties within a TRZ may have different rates of further development and therefore TRZ Potential. Land use diversity or mix to a degree is beneficial for TRZ development. However, land use mix beyond certain levels could actually work to the detriment of dominant land values. While there are complex measures that can be used to describe this, an entropy measure based on percentage of uses is simple and can be useful in this context. Values closer to 0 are reflective of homogeneity in the distribution of developed land while values closer to 1 are reflective of diversity. Following Frank et al. (*41*), this is an entropy measure reflecting the evenness of distribution of several land-use types within the region.

   This factor is a single index value and attempts to capture information only on already developed land in the immediate project corridor (say, within a 1-mile radius of the project). Expert opinion from city officials or those familiar with land use can provide these inputs, while precise assessments may be made if parcel data are available. The aim of this attribute is to capture the developed land use mix in the region. This factor is often used in the context of trip generation; however, it can be of importance in influencing developmental trends in the region and is of even greater significance in the case of transit projects. The specific measure being adopted to address this is the land use entropy index, which is commonly calculated through the following formula. The measure is bounded between 0 and 1 and represents the land use balance in a region.

$$\frac{\{-\sum_k [P_i ln P_i]\}}{lnk}$$

P represents proportion of the various developed land uses in the corridor; *i* = the specific type of distinct land uses (developed); *k* = the number of land use types. *Ln (Pi)* is the log of the proportion to the base 10. The index spells out the proportion of each of the land use types such as single family residential, multi-family residential, commercial, industrial, public institutional, and park uses. This factor is broadly correlated with micro-location. For instance, suburban areas will tend to have homogeneous use, while more urban locations will tend to have a mix. In general, closer the index is zero, the less the potential for TRZs. The closer the index is to 1 the greater is the indication of a more developed corridor and of limitations to development. Hence threshold values between 0.3 and 0.7 are likely to be conducive to TRZ growth.

Regional Factors

Factors listed in this group are those that describe the relevant characteristics or macro conditions of the relatively large region (e.g., region in a city, city, or county) where the proposed TRZs are located. Many of these factors may be obtained from Census data, discussions with the Appraisal Office in the region, and the city planning offices.

1. **Historical trends on land developments and property values**. Historical trends on land developments and property values are an indicator of economic health of the region. The score associated with this factor for a project can be estimated as the average of the two determined based on the following two variables:
    - Percent increase in building permit activity (five-year average). A score is assigned based on the increased percentages: 0 = 0–4 percent, 1 = 5–9 percent, 2 = 10–14 percent, 3 = 15–19 percent, 4 = 20–24 percent, and 5 = 25 percent and up.
    - Percent increase in taxable values (five-year average). A score is assigned similarly based on the percent increase as follows: 0 = 0–4 percent, 1 = 5–9 percent, 2 = 10–14 percent, 3 = 15–19 percent, 4 = 20–24 percent, and 5 = 25 percent and up.

2. **Local demographic information**. Local demographic conditions may affect the extent of further developments. Several demographic variables need to be considered while

assessing the feasibility of a TRZ. An overall score between 0–5 associated with this factor can be then computed as the average of the scores based on the regional employment and population densities as well as recent bond ratings. Information about population and employment densities is available at sources such as Census (*42*), local planning agencies, and other local public agencies. Information about local municipal bond ratings is available from various bond rating websites.

- Regional employment/employment density:
  - 5 if 80 or more per square mile.
  - 3 if 20–80 per square mile.
  - 1 if less than 20 per square mile.

- Regional population/population density:
  - 5 if 80 or more per square mile.
  - 3 if 20–80 per square mile.
  - 1 if less than 20 per square mile.

- Recent regional bond ratings (municipal or otherwise):
  - 5 for best quality (AAA).
  - 4 for high quality (Moody's: AA1–AA3; S&P or Fitch: AA+–AA−).
  - 3 for upper medium grade (Moody's: A1–A3; S&P or Fitch: A+–A−).
  - 2 for medium grade (Moody's: BAA1–BAA3; S&P or Fitch: BBB+–BBB−).

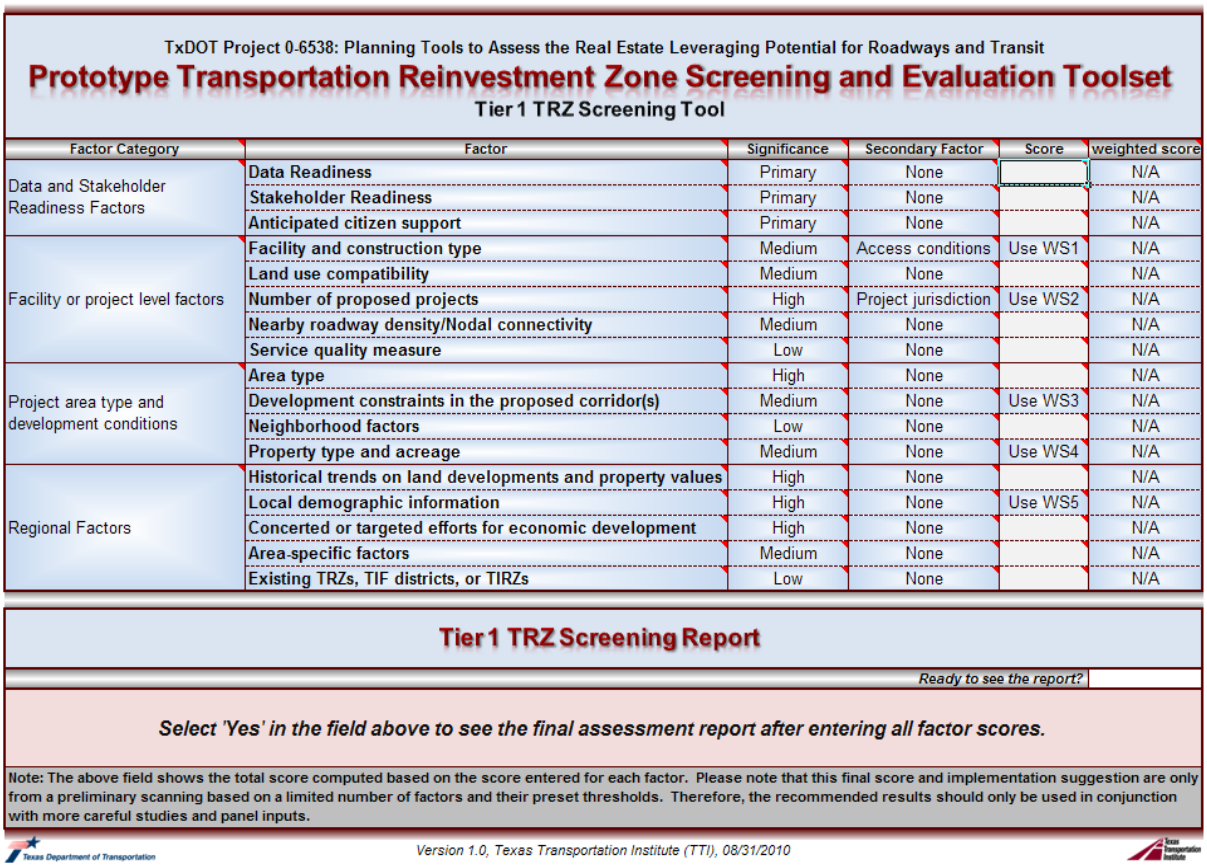
3. **Concerted or targeted efforts to promote economic growth and development**. This is a collateral action at the regional level that can impact development trends in the broader region as well as the TRZ, if it is undertaken. For instance, if the local and regional economic development agencies and the city have identified specific regions for development, have incentives for promoting development, or have undertaken specific action items to promote development, a TRZ would have a much better chance to create higher increment. A binary score of 0 or 5 can be assigned to this factor with 5 indicating the existence of such efforts or actions.

4. **Area-specific factors**. Other factors that are specific to the region where the project is located may also have impact to value increment. An example of such factors is border trade trends for border regions. Depending on the existence of such factors and their potential contribution to value increment, a binary score of 0 or 5 can be assigned with 5 indicating the existence of such significant factors.

5. **Existing TRZs, TIF districts, or TIRZs**. Too many existing TRZs, TIF districts, or TIRZs in a region might cause conflicts with the implementation of additional TRZs since they tend to reduce the TRZ potential. This is quite likely to be the scenario in the urban areas of Texas (Houston, Dallas, Arlington, San Antonio, Austin, etc.). Few TIFs or TIRZs are an indication that the region is ready to undertake such ventures and is aware of the protocols and processes of TRZ. It is also an indication of concerted effort of regions to develop the regions in those boundaries. A score may be assigned based on this factor as follows:
    - 5 if no existing zones.
    - 3 if one to five existing zones.
    - 0 if more than five zones.

TIER 1 SCREENING TOOL DESIGN

The screening tool involves the evaluation of several factors, suggesting a multi-attribute decision theoretic framework with attendant factor scoring. In principle, this type of a framework lends itself well to development as either a desktop or web-based solution. This tool lends itself well to development as a stand-alone executable program or spreadsheet. The screening tool was therefore developed as a standalone spreadsheet on an Excel platform making it very simple to refine with additional factors over time. The tool contains two information tabs, a tool interface tab, and five worksheet tabs. Figure 4.5 shows the tool interface tab.



TxDOT Project 0-6538: Planning Tools to Assess the Real Estate Leveraging Potential for Roadways and Transit

Prototype Transportation Reinvestment Zone Screening and Evaluation Toolset

Tier 1 TRZ Screening Tool

Factor Category	Factor	Significance	Secondary Factor	Score	weighted score
Data and Stakeholder Readiness Factors	Data Readiness	Primary	None		N/A
	Stakeholder Readiness	Primary	None		N/A
	Anticipated citizen support	Primary	None		N/A
Facility or project level factors	Facility and construction type	Medium	Access conditions	Use WS1	N/A
	Land use compatibility	Medium	None		N/A
	Number of proposed projects	High	Project jurisdiction	Use WS2	N/A
	Nearby roadway density/Nodal connectivity	Medium	None		N/A
	Service quality measure	Low	None		N/A
Project area type and development conditions	Area type	High	None		N/A
	Development constraints in the proposed corridor(s)	Medium	None	Use WS3	N/A
	Neighborhood factors	Low	None		N/A
	Property type and acreage	Medium	None	Use WS4	N/A
Regional Factors	Historical trends on land developments and property values	High	None		N/A
	Local demographic information	High	None	Use WS5	N/A
	Concerted or targeted efforts for economic development	High	None		N/A
	Area-specific factors	Medium	None		N/A
	Existing TRZs, TIF districts, or TIRZs	Low	None		N/A

Tier 1 TRZ Screening Report

Ready to see the report?

Select 'Yes' in the field above to see the final assessment report after entering all factor scores.

Note: The above field shows the total score computed based on the score entered for each factor. Please note that this final score and implementation suggestion are only from a preliminary scanning based on a limited number of factors and their preset thresholds. Therefore, the recommended results should only be used in conjunction with more careful studies and panel inputs.

Texas Department of Transportation

Version 1.0, Texas Transportation Institute (TTI), 08/31/2010

Figure 4.5. TRZ Screening Tool Interface Tab.

On the tool interface, the users are led through the factors systematicaly to evaluate the potential of the projects for TRZs in a multidimensional manner. Several secondary factors require the use of separate worksheets to facilitate the estimation of the scores. When necessary, an individual cell on the interface containing additional information is activated when the cursor hovers over it (Figure 4.6). To use the tool, a potential score between 0 and 5 is first to be established for each factor. An overall potential score is then determined as the sum of the individual scores multiplied by the corresponding global weight score. When all scores are entered into the corresponding cells (including all worksheets), the final score and associated implementation recommendation is displayed. Figure 4.7 shows the flowchart of the decision-tree interface that facilitates the overall score development and final recommendations to go forward with a TRZ.

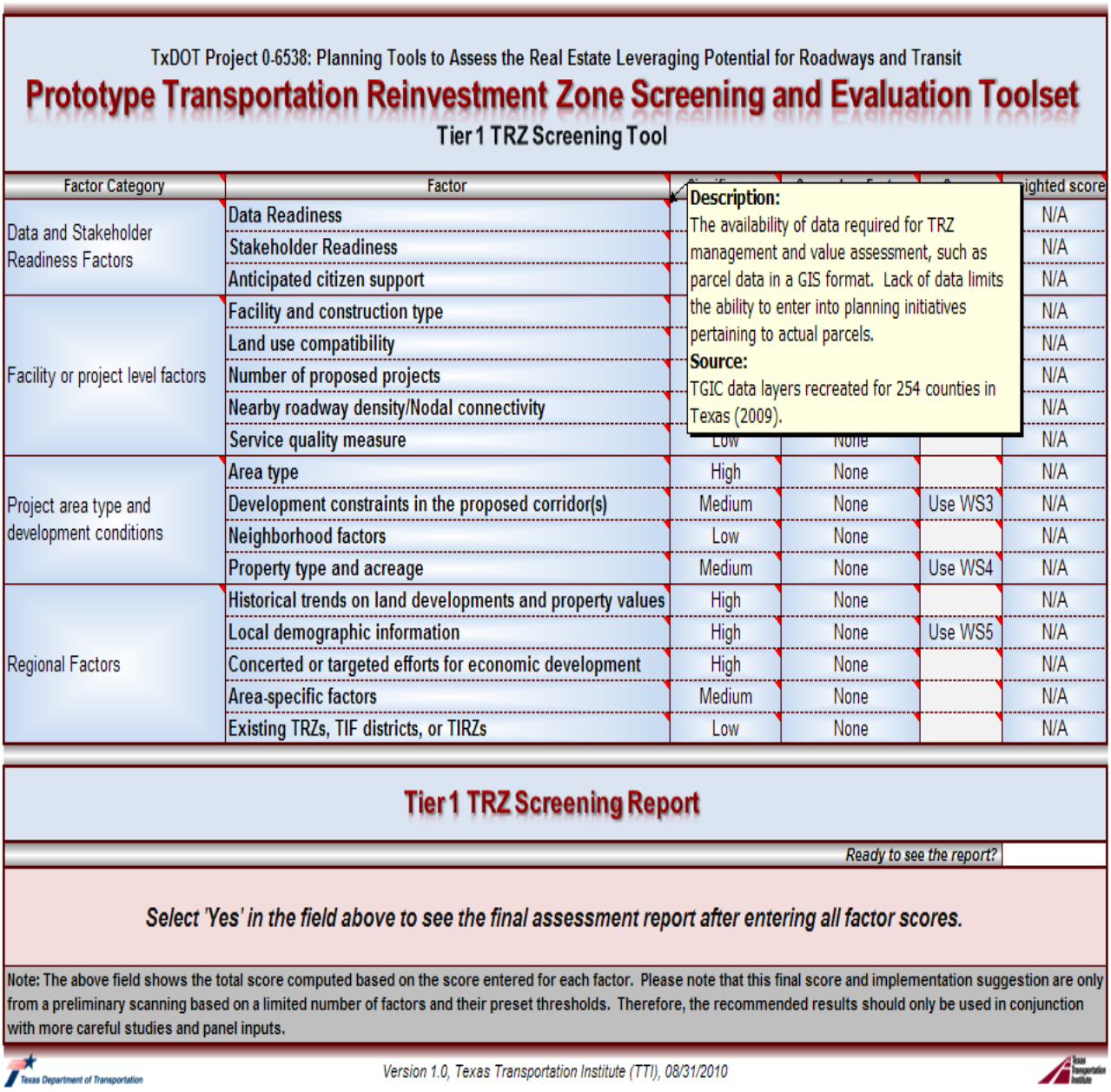


Figure 4.6. Additional Information Window on the Tier 1 Tool Interface.

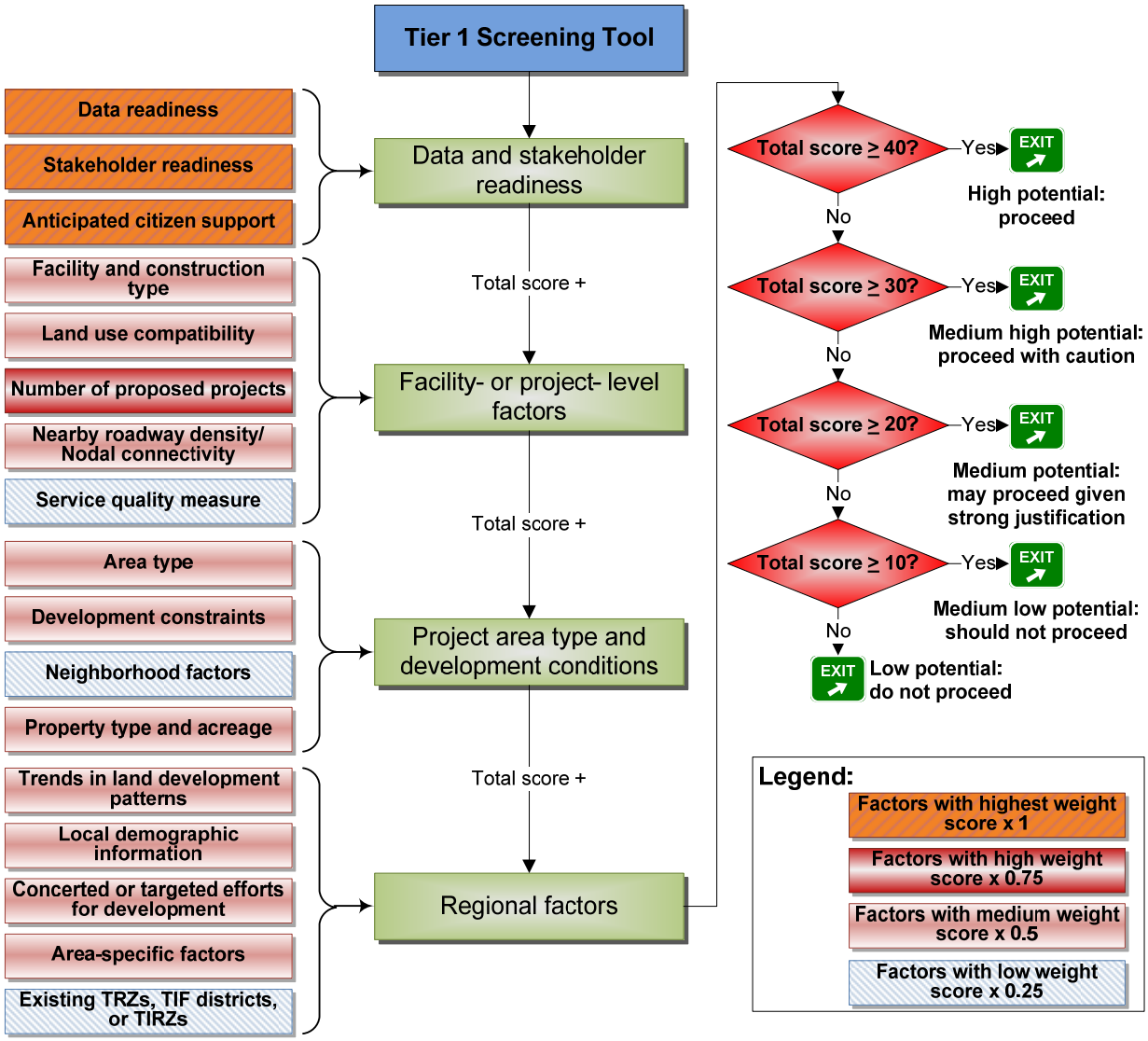


Figure 4.7. Tier 1 Tool Decision-Tree Interface Flowchart.

Theoretically, a perfect project can obtain an overall potential score up to 52.5. The TRZ worthiness potential of the evaluated project can be classified based on its overall scores into the following five groups:

- High potential (overall score > 40). Projects in this group have a great potential for setting up a TRZ and for creating value increments as indicated from various aspects. The results suggest that a TRZ set up based on these projects is likely to succeed.
- Medium high potential (30–39). Projects in this group outstand in many aspects toward a successful TRZ. If cautiously implemented, TRZs based on these projects may generate sufficient value increments.

- Medium potential (20–29). Projects in this group have a moderate potential for TRZs. However, if conditions justify and with adequate risk analyses, a TRZ plan may still be successful; however, it is best to scrutinize both the projects and the conditions further in this case.
- Medium low potential (10–19). Projects in this group have a very low potential for generating revenue increments if a TRZ is set up. It is generally not recommended to implement a TRZ for such projects.
- Low potential (0–9). These projects have little or no potential for generating value increments within a TRZ. It is not recommended to implement TRZs based on these projects.

The screening application may be used very early on from conceptual stages leading all to the way to TRZ consideration. It may be used at various points dynamically to assess whether conditions are ripe for a region to pursue a TRZ. Careful planning, strategy, shared visions and goals are all part of the process in achieving convergence combined with introspections on regional conditions.

CHAPTER 5: TRZ ZONE DEVELOPMENT TOOL AND DATA NEEDS

A critical part of TRZ Development is an assessment of data quality and standards for data across regions in Texas. A second element is the automation of TRZ to facilitate various aspects of TRZ planning and development as well as to facilitate preliminary revenue assessments. Each of these aspects is discussed in this chapter.

Researchers reviewed the data quality and the data needs to develop a TRZ. A cadastral system of land ownership was determined to meet the needs. Existing state cadastral systems were investigated for a standard and methodology for determining land to be used within the buffer of the TRZ. Cadastral systems are land ownership databases or GIS. Most cadastral GIS in Texas are made and owned by the County Appraisal District (CAD) or a third party private owner. This chapter discusses the details on GIS data across the 254 counties in the State of Texas and discusses the development of the actual prototype tools. The survey reported below details more information on the GIS data status across the state. An additional aspect discussed in this chapter pertains to the specific platforms that could be used for the development of revenue tool of which TRZ zone development is the most important primary step. The final aspect discussed in this chapter is the prototype tool to facilitate TRZ zone development. The prototype tools may be used by CADs themselves or by TRZ stakeholders as long as the use requirements for GIS data are in place.

SURVEY OF CENTRAL APPRAISAL DISTRICTS CADASTRAL DATA

A survey of the CADs GIS to be used to create TRZ shows that, of the 99 districts reporting, very few of those have a GIS or spatial database that can be queried using geospatial techniques for TRZ development. Appendix B includes the survey instrument.

Survey Findings

Even more importantly the results of the survey indicate that the GIS may not always have the most up to data system to use. As an outside company is often in charge of maintaining the GIS; records must be submitted to the outsourced company and then entered into the GIS.

This is an important consideration for TRZ development as up-to-date parcel information is key to assessing TRZ potential. Since there are no standards for parcel information collection CADs often collect information across many databases that are not generally tied to one another. The survey results also indicate that most CADs only have a limited amount of information within their GIS. In regards to TRZ development CADs or other stakeholder groups will have to manage to tie all relevant information to the GIS prior to using the development tools. As there are no standards on the data structures it will be the responsibility of the CADs and other bodies to decipher their own data and create datasets that are used specifically for TRZ development tools. Appendix B contains results of the survey. Appendix C shows the results of the Texas Comptroller's Office 2006–2007 survey.

- The number of CADs with a GIS totaled 159 out of 254 counties.
- Reporting CADs had entered 79.7 percent of their appraisal records in the GIS.
- Six CADs with a GIS had not yet entered appraisal records into the system.
- Eighty-four CADs did not have a GIS and two CADs did not answer this question on the survey.

There is currently no common standard with CADs on GISs being built and/or used. Some cadastral GISs have been built by other agencies other than a CAD. These other cadastral GISs might not have current land ownership information needed to plan, build, or maintain a TRZ. The CAD's GIS data content is owned by two indices:

- CADs own all the data and have the right to share data and dispense data to other agencies.
- Private companies have entered into agreements with CADs to build a GIS. Data are owned by the private companies, but can be used by the CAD to build a TRZ.

Both owners would require that the TRZ sponsor work with the CAD. The survey was conducted of all the CADs to determine the status and quality of the cadastral GISs. The attached report offers results of the reporting CADs. The GIS software that seems to be the most prevalent in the CADs is ESRI ArcGIS. Versions vary with each CAD.

SOFTWARE PLATFORM

A critical task in the development of a combined TRZ zone development tool with revenue assessments was to determine the optimum software and hardware platform that would

provide reasonable functionality, compatibility, and flexibility. As part of this project, the researchers explored several advanced software options for the combined tool, including desktop options and web-based options. A web-based prototype option was selected as the final option for the screening tool based on input from the panel and research team. Table 5.1 summarizes the pros, cons, and challenges associated with each of the options explored for the development of the combined zone and revenue tool, followed by a detailed discussion of the options.

Table 5.1. Software Platforms - Summary of Advantages and Disadvantages for A Combined TRZ Zone and Revenue Tool Option

Option	Desktop Options		Web-Based Options	
	Simplified ArcGIS	ArcGIS Plug-in	Prototype	Final
Functionality	High	High	High	High
Accessibility	Medium	Low	High	High
Portability	High	High	NA	NA
Compatibility	High	Medium	High	High
Programming effort	Low	Low	High	Very high
Installation requirement	Low	Low	Medium	High
Maintenance requirement	Low	Low	Medium	High
End user requirements	• Some familiarity with ArcGIS • Requires the simplified ArcGIS to be available	• Familiarity with ArcGIS • Plug-in needed	• Familiarity with ArcGIS not needed	• Familiarity with ArcGIS not needed
Update simplicity	• High for developers • Medium for users	• High for developers • Medium for users	NA	• High for developers • No effort at user end
Data sharing	Low	Low	High	High
Major advantages	• Portability • Functionality • Less programming demand • Moderate requirements on associated documentations		• Accessibility • User control • Ease of use • Data sharing • Installation, maintenance, and updates are only required at the host location • Functionality if well developed • No software or ArcGIS familiarity needed by end users	
Major limitations	• Accessibility • Update/upgrade • Data sharing • Software requirement at the user end for the ArcGIS plug-in option and other financial modeling required for revenue tool.		• Programming demand (less for a prototype) • Maintenance (less for a prototype) • Issues associated with compatibility, firewall, and bandwidth (less for a prototype) • Documentation requirements for IT products with databases	

Desktop Option

A desktop-based application is generally self-contained and can be installed through an executable (.exe) file. Due to the GIS component stemming from TRZ zone parcels, the

researchers explored two desktop options including a customized ArcGIS® desktop application and an ArcGIS desktop plug-in, in the form of a customized ArcGIS toolbar.

- The former option would be a simplified ArcGIS desktop with only limited analysis functions as necessary for screening. This option has limited requirements on software and hardware at the user end. If well developed, the tool would be easy to use and have maximum compatibility with ESRI shapefiles.
- The latter option (toolbar only) would require users to install a plug-in onto their existing ArcGIS desktop software. Such a tool would be easy to install and use for existing ArcGIS users. However, it would require users to have ArcGIS first and might have compatibility challenges with different versions of ArcGIS software.

Both desktop options would require relatively less development effort than a web-based tool yet provide optimum portability. Because these options are based on existing ArcGIS software, they would eliminate the additional efforts of developing a GIS data viewer and a graphic user interface. Both options would require limited installation and maintenance efforts and would simplify the associated documentation effort (e.g., user manual and installation guide). This type of application generally has limited accessibility since users are required to have the tools installed first in order to use. Updates and upgrades are difficult since they would need to be distributed to all end users. Furthermore, there are attendant difficulties of providing multilevel functionality for different user groups, and individual users would need to be responsible for data gathering and uploading.

Web-Based Option

A web-based application does not require additional software at the user end and in comparison to a desktop application, it does allow various degrees of user access. Data that are necessary for carrying out analyses can be uploaded and updated at a central location, easing the data requirement for individual users. In addition, developers and users may upload data to the application, which can be then shared by other authorized users. Updating software becomes easier since it needs to be done only on the host server. A web-based application is typically complex to develop and requires intensive maintenance efforts at the central host location.

Combined TRZ Zone and Revenue Tool – Final Recommendations

After an objective discussion of software platforms presented earlier, it was decided to pursue two independent options for the prototype instead of a combined tool. The first of these tools is the independent TRZ Zone Development desktop tool discussed in detail in this chapter. The second is a web-based revenue tool using external inputs provided by the TRZ zone tool. An enduser would need to have both prototype components available and use them in sequence.

Prototype Option. The term "final tool" hereafter refers to a tool that is developed such that it can be implemented on TxDOT servers as a production tool without additional modification and upgrades. Since a prototype is a proof-of-concept tool that demonstrates the feasibility of such a tool, it typically has moderate requirements on implementation issues. In addition, it has lower requirements on the interface, requires limited number of users for demonstration purposes, and may require data only from a limited number of cities/districts (thus reducing the requirements on data quality and compatibility issues when compiling GIS data from all districts in the state). Because a prototype is not intended to be used as a production tool, users outside the TxDOT network may not access the tool, reducing the efforts required for addressing issues such as bandwidth, firewall, link connectivity, and hardware requirement during this research phase.

Final Tool Option. A final tool will need to be developed such that it can handle a large number of users, cope with various versions of internet browsers, and have a sophisticated interface that is consistent with a production-level tool. It will need high-quality parcel data from all CADs for which users would like to use the tool. Such a tool would not only require a much greater level of development effort than a prototype, but also testing efforts to make sure it can be deployed as a production tool. In addition, the research team would need to ensure smooth migration to the TxDOT systems with issues such as bandwidth, firewall, compatibility, and maintenance. It would require developers to collect and process high-quality data for the regions considering it.

Both tools, despite being prototypes, are made compatible to TXDOT standards for information technology (IT) deliverables.

TRZ PROTOTYPE TOOLS FOR TRZ DEVELOPMENT

ESRI ArcGIS is the standard for the CADs and best to be used for creating the TRZ prototype tools. While an ARCGIS Desktop tool was proposed, this research went one step forward and three separate prototype tools (including the ARCGIS option) were developed to assist the TRZ sponsors with creating the data to be used by the screening tool. Table 5.2 describes the advantages and disadvantages to each prototype tool/database. The two datasets needed for the tools are the cadastral area of the TRZ and the road network to buffer to build the TRZ with minimal datasets, which might not include zoning information. The ESRI ArcGIS Geodatabase format used will utilize the current CAD's format, in order to obtain the linked information to the needed format. Multiple layers from many other sources held by TxDOT or TRZ stakeholders may also be used in the GIS software. Use of CAD or other third party data owners must follow those owners data use agreements.

Some CADs will not allow direct links to databases or complete copies. In order to use the data it was decided that a tool that extracted the data as provided would be queried to feed into the TRZ screening tool. A prototype Geodatabase could not be created in all cases with CAD parcel databases. Most data in the State of Texas is owned by private companies that do not allow users to have copies and reformat data into a standard format for the TRZ Geodatabase. Additionally, some parcel data information needed by the TRZ screening tool is only available with a connection to the CAD database, requiring an Open Database Connectivity (ODBC) connection.

The TRZ Zone Development GIS Prototype Software Tool does not include entities and variables. If the CAD, local entity, TxDOT, or other party does not have some of the data needed by the screening tool then it must be added before the screening tool and cannot be added by the TRZ Tool as additional layers. The goal of the tool was not to create new data, but to get the latest data from CAD and combine it with most relevant information for TRZ development and to facilitate TRZ feasibility assessments. A classification parcel data GIS TRZ Prototype Software Tool was developed that converted the CAD's data into a format that could be used by the TRZ revenue tool in Microsoft Excel. The tool allows users to interact with the Geodatabase and extract the various fields needed for an assessment of TRZ zones and to facilitate TRZ zone planning and feasibility. The tool created an automated approach to link CAD appraisal data to parcel to enhance accuracy for revenue estimation. Extraction of various existing geospatial data

in terms of ownership, taxation status, property value, land use and classification, and other information is possible with the TRZ GIS Prototype Software Tool.

Table 5.2. Comparison of GIS Prototype Software Tools.

Tool	Advantage	Disadvantage
Net TRZ GIS Tool	Works as standalone program to convert the TRZ zone to comma separated value (CSV) format. Works in a standalone format to study zone parcels and land developments and acts as an immediate input for revenue feasibility assessment tool.	Security with distributed EXE or DLL.
VBA TRZ GIS Tool	Works within an ArcGIS project and has no security issue. Can be distributed to run an ArcGIS TRZ GIS tool only solution, remove all other aspects of ArcGIS.	Requires that future TRZ sponsors install support from VBA.
Python TRZ GIS Tool	Limited user interaction. Creates TRZ quickly and seamlessly with supplied data sets.	Requires that an ArcGIS user operate.
Jscript TRZ GIS Tool	Similar to Python TRZ GIS Tool.	Requires that an ArcGIS user operate. Potential to move to an online solution.

Additionally, this tool might also facilitate not just roads (line features) but parcels around point features as well (like interchange improvements, transit stations). In the case of point features, the point layer might be added as a separate layer or points may be identified on the roads layer. Specific types of projects like interchanges might be represented as point features on the road network layer.

The TRZ GIS Prototype Software Tool was built as an interface to the TRZ revenue assessment tool and will output a CSV file that may be used independently to analyze the TRZ parcels and to facilitate the direct calculation of revenue. Several tools were generated to create the CSV file, all serving essentially the same purpose, but developed with longer term development potential and ease of use as criteria. In this regard, the Jscript provides the best opportunity for transitioning to a future web-enabled solution. Figure 5.1 shows the design of the prototype tool.

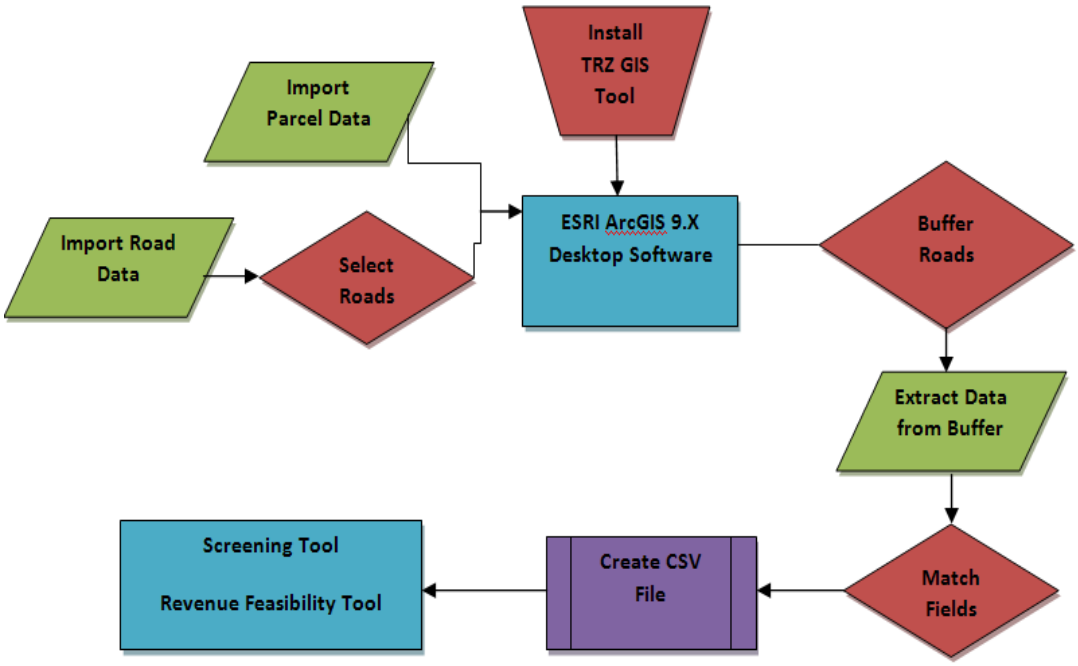


Figure 5.1. TRZ GIS Tool Prototype Software Design 1.0.

TRZ GIS PROTOTYPE SOFTWARE TOOL DESIGN

The TRZ GIS Prototype Software Tool is developed to be in several formats and software languages to support different CADs and platforms. The tool runs within ESRI ArcGIS 9.3 software. It must have access to two datasets.

Data and Software Needs

The data, software and information needs for the GIS toolbar are as follows:

- Road Network Layers (ESRI shapefile format).
- Project information.
- Parcel layers (ESRI shapefile format).
- Any other layers around which parcels need to be selected.
- ESRI ArcGIS ArcVIEW, ArcEditor, or ArcInfo 9.X or higher.

Operation

After installation, and once the Parcels and Roads have been added, then user may use the Select Features tool to drag and select road segments for which a TRZ is desired. Multiple selections from different areas can be made by holding the shift key down while selecting roads (Figure 5.2).

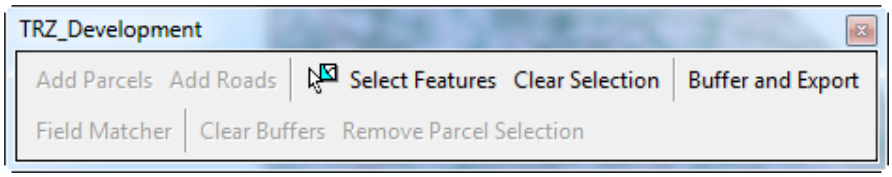


Figure 5.2. Selection of Features in the GIS Tool for TRZ Development.

Once the roads have been selected the user may click the buffer and export button to begin the analysis. The user can now input a buffer distance and proceed by clicking the buffer button on the buffer distance dialog box (Figure 5.3).

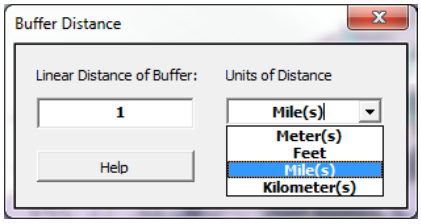


Figure 5.3. TRZ Zone Development.

In the last step, the users will need to export the final datasets as CSV files. These files are key inputs for the next stage of the analysis. The TRZ GIS Prototype Software Tool has the ability to select the roads if the roads do not contain the TRZ only roads. Next, the tool allows the user to select the buffer size to extract the parcel information for the TRZ Screening Tool. Once the data are extracted, the user has the opportunity to reference the data fields to the needed into for the TRZ Screening Tool. A CSV is created for the standalone spreadsheet Excel Screening Tool containing the following minimum information for parcels shown in Figure 5.4.

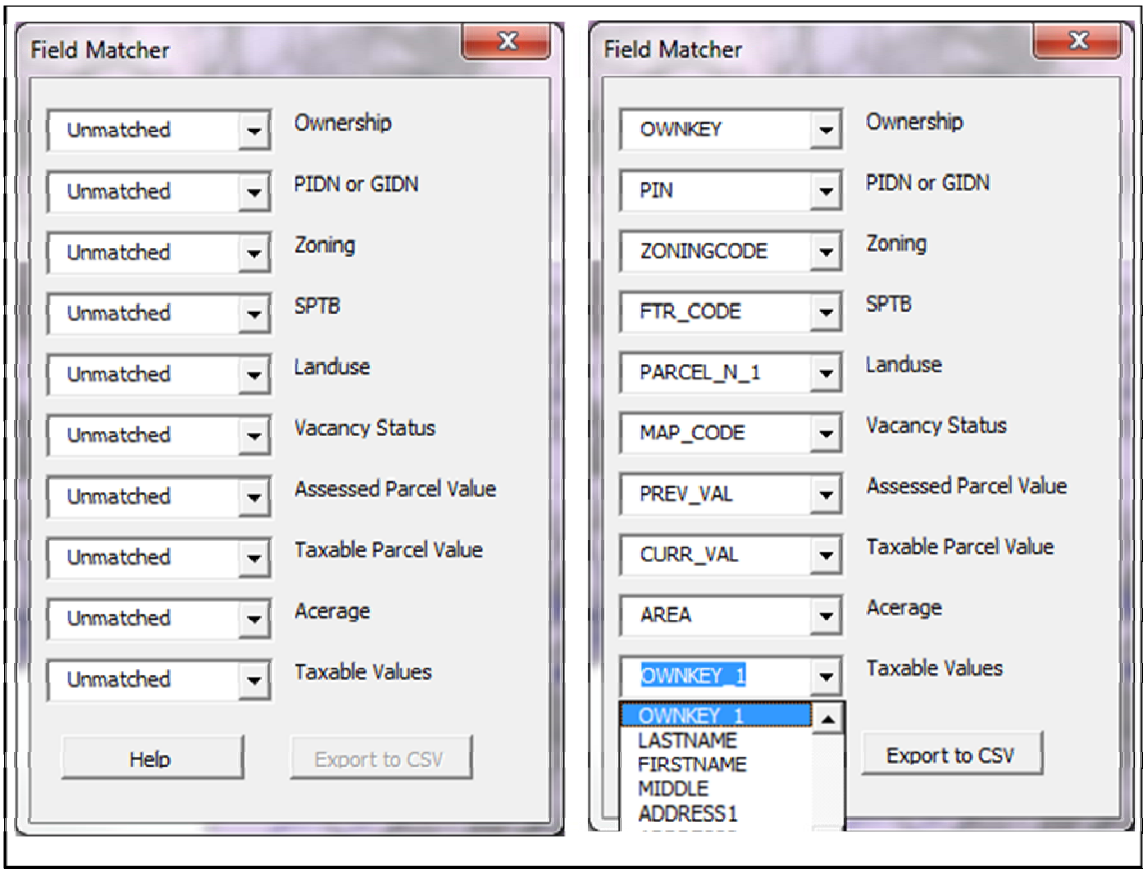


Figure 5.4. Minimum Drop Down Fields to Facilitate Revenue Analysis.

CHAPTER 6: TRZ REVENUE FEASIBILITY TOOL

This section discusses the conceptual elements behind the TRZ Revenue Feasibility tool for determining the preliminary revenue feasibility of a proposed TRZ zone. Under SB1266, after designating a contiguous area along a proposed transportation project as a TRZ, a local government entity such as a city, county, or RMA may securitize the incremental tax increments to obtain necessary funds to bring the project to fruition. This chapter discusses the development of the TRZ revenue feasibility tool.

TRZs provide a good mechanism to capture tax increments generated by large scale capacity improvements; however, before implementing a TRZ multiple questions emerge that are integral to any tool that must determine revenue:

- What should be the geographic extent where capacity improvements produce economic impacts on property values and development trends?
- How much revenue can a specific TRZ buffer-size support?
- What values can be attained after TRZ development (for both existing property uses and newly developed land)?
- How does one deal with vacant land development or pace of absorption in the timing of TRZ cash flows?

OBJECTIVES OF THE REVENUE TOOL

The TRZ Revenue Feasibility tool can help a local government entity to analyze these questions and arrive at a decision whether pursue or not the implementation of a TRZ based on actual preliminary revenue estimates. Numerical results from the tool include the present value of the following cash flows: net capital available, aggregate TRZ revenues (existing plus new development revenues), existing development, and new development. The specific objectives of this tool are to:

- Assist in the preliminary valuation of TRZ revenue potential by estimating the Present Value (PV) of the cash flows resulting from the tax revenue differential accruing to the TRZ over time.

- Assist in providing needed early cash flow estimates for planning purposes and for facilitation of dialogue with stakeholders.
- Facilitate sensitivity, scenario, and risk analysis of alternate scenarios of development, appreciation rates though Monte Carlo simulation.

REVENUE TOOL INTRODUCTION

The TRZ Revenue Feasibility tool is hosted at: http://ciitr.tamu.edu/RMC.aspx (Figure 6.1). The web-based format was selected for this prototype primarily due to its maximum accessibility and lower requirements for additional software at the user end. Users may upload the TRZ zone parcel data in a text file format (CSV format) obtained from the desktop TRZ Zone Development Tool. Following that, the tool processes these values and returns the results along with charts and graphs necessary for decision making. This tool is programmed in ASP.net and C while dynamic charting is made possible by using Highchartslibrary for jQuery Javascript framework. This tool and all other tools are made compatible with TxDOT standards. Appendix D contains the logical and physical models, and data dictionary for the revenue tool developed per TxDOT standards.

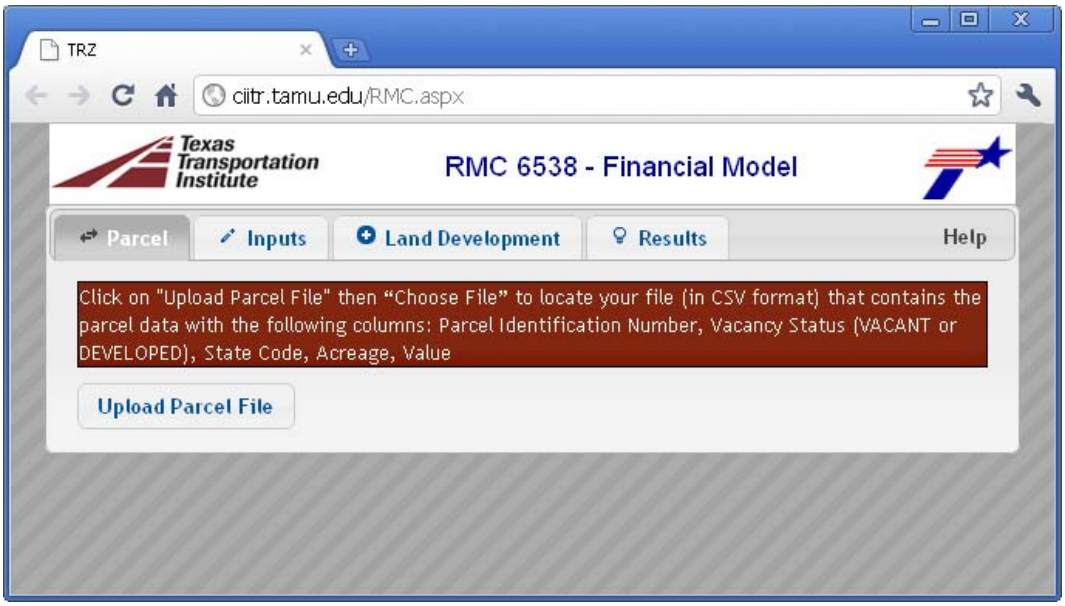


Figure 6.1. Main Screen – TRZ Revenue Feasibility Tool.

The TRZ Revenue Feasibility tool estimates revenues according to the provisions of the SB1266 Act: adopting the tax base of the year the TRZ as a baseline (the tax base is calculated by aggregating all the individual values for the baseline parcels within the TRZ). The TRZ revenues in each subsequent year, through the end of the TRZ, are then estimated as the tax revenue for that particular year—appraised value multiplied by tax rate in effect minus the baseline, as illustrated in Figure 6.2.

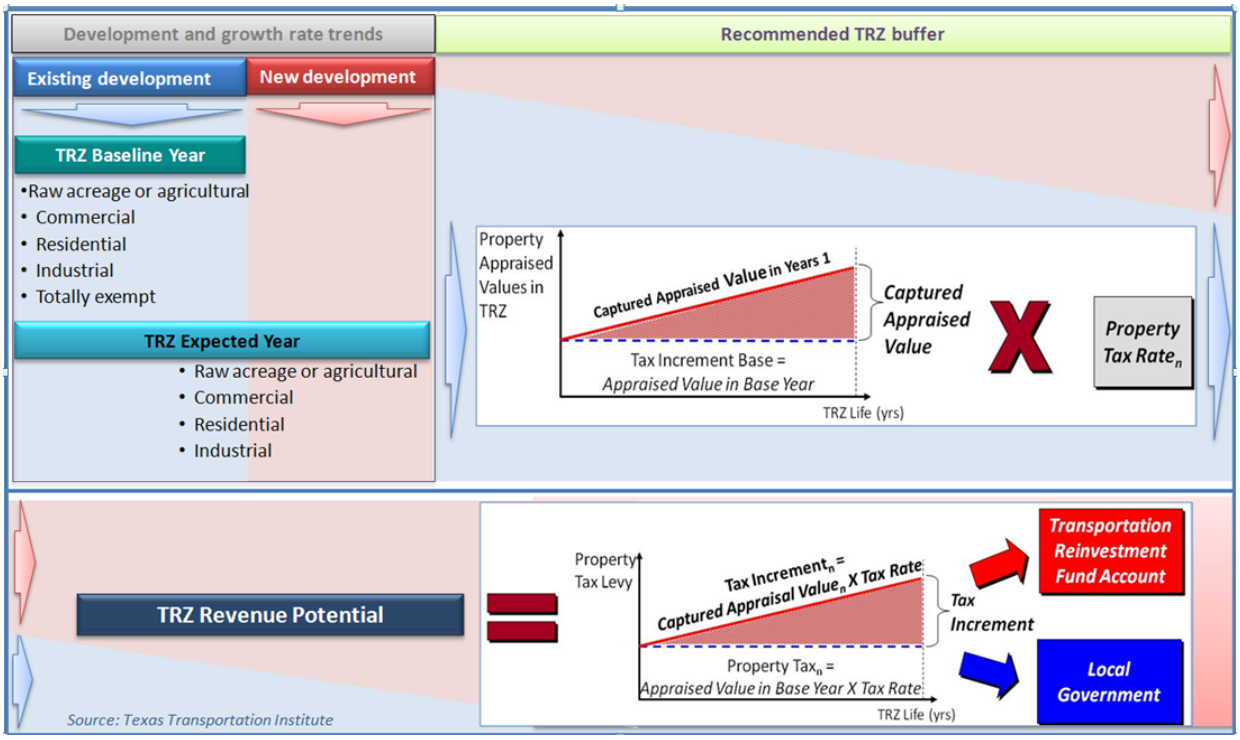


Figure 6.2. TRZ Revenue Calculation Approach—Conceptual Model Used in the Tool.

The TRZ Revenue Feasibility tool combines information from GIS with a powerful financial model. By linking GIS parcel information to key input parameters, this tool allows one to assess the potential land-related revenue implications from transportation projects. The tool can help build scenarios and plan for optimum, likely, and pessimistic conditions. The tool will create scenarios based on a combination of different TRZ sizes (i.e., 300 vs. 2,000 acres), different timeframes (i.e., a 15-year vs. a 30-year obligation), different financial parameters (i.e., a 5 percent vs. a 12 percent discount rate), etc. In the section that follows, the framework for utilization of this tool is presented.

FRAMEWORK FOR APPLICATION OF THE TOOL

The TRZ Revenue Feasibility tool was developed under a framework based on value capture theories and key drivers of property value growth when a capacity improvement project is implemented along a transportation corridor. Property values and land developments are sensitive to capacity improvements and macroeconomic conditions, and properties located near an infrastructure project generally capitalize economic benefits over time for significant projects. Only projects that generate large accessibility changes, cultivate economic development, and lead to regional mobility improvements typically foster the potential to generate TRZ revenues dependant on other conditions. Under the TRZ Revenue Feasibility tool framework, smaller scale projects, like aesthetic improvements, are not considered significant revenue generators.

The assessment of TRZ revenue potential requires making several assumptions and builds upon prior work (*30, 34, and 37*) with the most salient ones listed below:

- Identify the geographic extent of the TRZ boundary.
- Ensure the preservation of a legally contiguous geographic boundary within the local government entity's jurisdiction—pursuant to state statute (SB1266).
- Quantify the real estate inventory within the TRZ: parcels, acreage, and their assessed property values categorized by land use.
- Identify the type of land uses for vacant and non-vacant parcels: commercial, industrial, residential, agricultural, etc. and their development trends (or land use typology).
- Tax exempt parcel and vacancy status
- Assumptions on the pace or speed of vacant land development—the pace of absorption and the timing of development from opening an infrastructure project.
- Appreciation rates of values.

The proposed framework also includes the usefulness of analyzing different buffer widths along a project corridor to determine the geographic extent of the TRZ boundaries, and other aspects, as illustrated in Figure 6.3. The TRZ revenue potential is then calculated using a discounted cash flow (DCF) analysis including financing costs. Buffers can be further reduced or expanded to target only the capital needs. Some corridors might experience economic impacts that extend beyond the final parcel selection that forms a TRZ. A sensitivity analysis must be performed to the growth rates of the recommended TRZ.

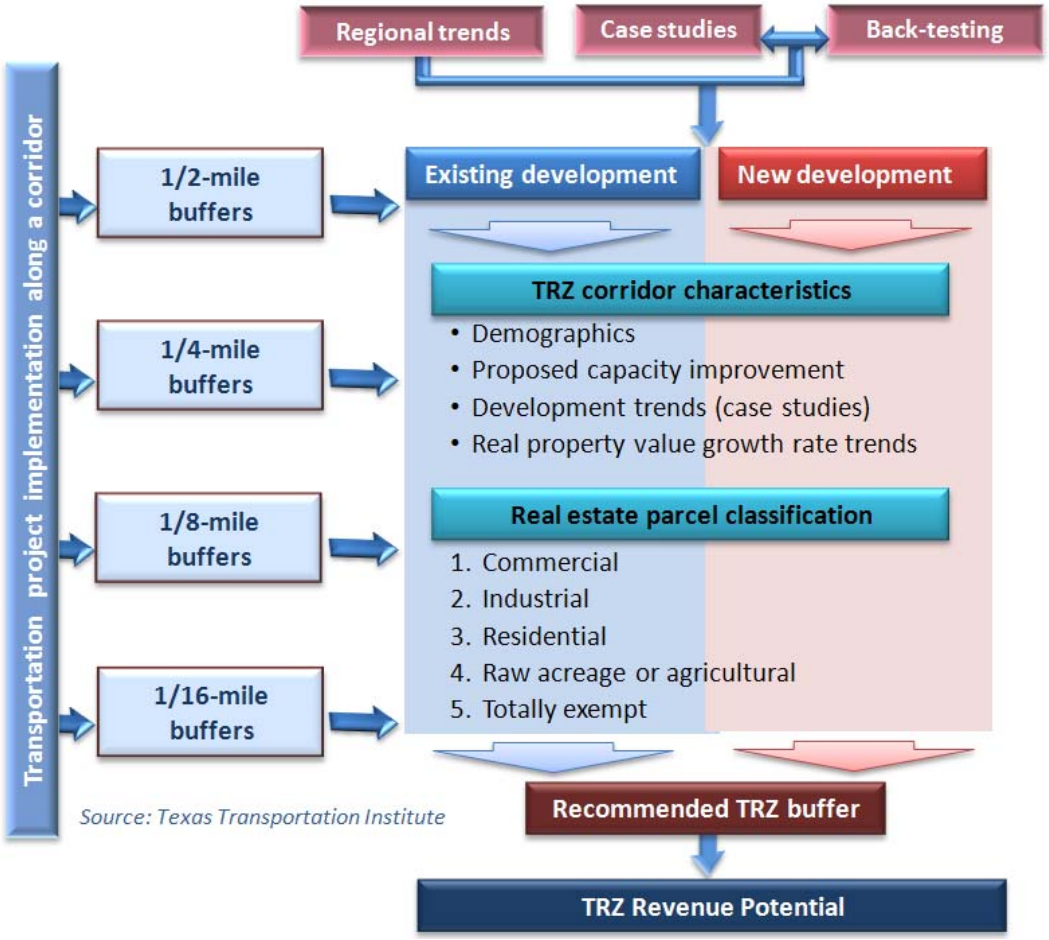


Figure 6.3. Framework for Developing TRZ Revenue Projections.

FINANCIAL MODEL STRUCTURE

This section discusses the various elements of the DCF financial model for estimating TRZ revenues. This financial model was created with two objectives in mind.

General Structure and Assumptions

The financial model in the TRZ Revenue Feasibility tool is designed to link GIS parcel information, specifically acreage, land typology, and property value, to key input financial and land-use modeling parameters. Numerical results from the analysis include present value of the following cash flows: (i) Aggregate TRZ revenues (existing plus new development revenues); (ii) Existing development; (iii) New development; and (iv) Vacant Land TRZ-revenues only.

The structure of the model is designed to incorporate an inventory of temporal and fixed (non-temporal) assumptions that are referenced in subsequent paragraphs and outlined next:

- The TRZ analysis is conducted considering each proposed capacity improvement in a specific corridor independently, and the results are aggregated to produce the overall TRZ revenue projections—in the case of multiple corridors.
- The model assumes that new development (new PIDNs, parcels, or subdivisions) taking place within the TRZ boundaries will be incorporated into the TRZ and their expected revenues will contribute to the TRZ cash flows.
- The time period considered for the PV analyses encompasses the TRZ duration, from the base year (the year when the TRZ is expected to be established) to the year of termination.
- The parcel inventory uploaded to the TRZ Revenue Feasibility tool, with its corresponding land use typology, acreage, vacancy, and property values, will be used to establish the tax base or baseline.
- TRZ revenues in each subsequent year are estimated as the tax revenue for that particular year—appraised value multiplied by tax rate in effect—minus the baseline (until the year of termination).
- All cash flows estimated are nominal, and real discounted to the base year, as the TRZ revenue estimation requires it.
- The discount rate is estimated based primarily on the cost of capital (inflation unadjusted); municipalities often have discount rate estimates based on previous debt agreements.
- Up-zoning or changes in ownership from government-owned vacant parcels is not considered.
- Risk analysis and uncertainty are considered using Monte Carlo simulation using a conservative 90 percent confidence interval.
- Projects open to traffic as per the specified opening year.
- The pace of development around a capacity improvement is modeled with distribution functions (slow initial development, then rapid dissemination, and slowly approaching market saturation) in combination with Monte Carlo Simulation.
- All existing and new developments are assessed using the property tax mechanism—changes in the tax rate will impact revenue projections.

- The model produces an estimate of the net capital available from a TRZ considering the interest on debt (discount rate) and the interest earned during construction.
- Interest earned through construction assumes earnings over 50 percent of the time between bond issue and facility opening.
- Right of way is not considered.

DATA NEEDS

The only data and information need for a preliminary analysis of revenue is the actual CSV file obtained from the TRZ development tool with the minimum features listed in Figure 5.2 from the previous chapter in addition to assumptions needed on growth parameters. The assumptions and parameters are very specific for each region, TRZ corridor, and macro and microeconomic conditions. An advanced analysis could utilize additional local information than simple assumptions.

INPUTS SCREEN

The Basic Input section of the TRZ Revenue Feasibility tool incorporates (Figure 6.4) most of these assumptions of into the financial model. The Inputs tab is divided in two main sections:

- Basic Inputs.
- Timing of Development.

The base year is the year the TRZ is implemented. The construction start year is when the proposed capacity improvement or transportation project begins to be constructed. Once construction is complete, the opening year is when the project opens to the public. The year the debt is issued gives flexibility if the municipality or county plan to issue an obligation in a year other than the base year (otherwise the base year is retyped). The TRZ entity tax rate should reflect the property tax component of the entity that established the TRZ.

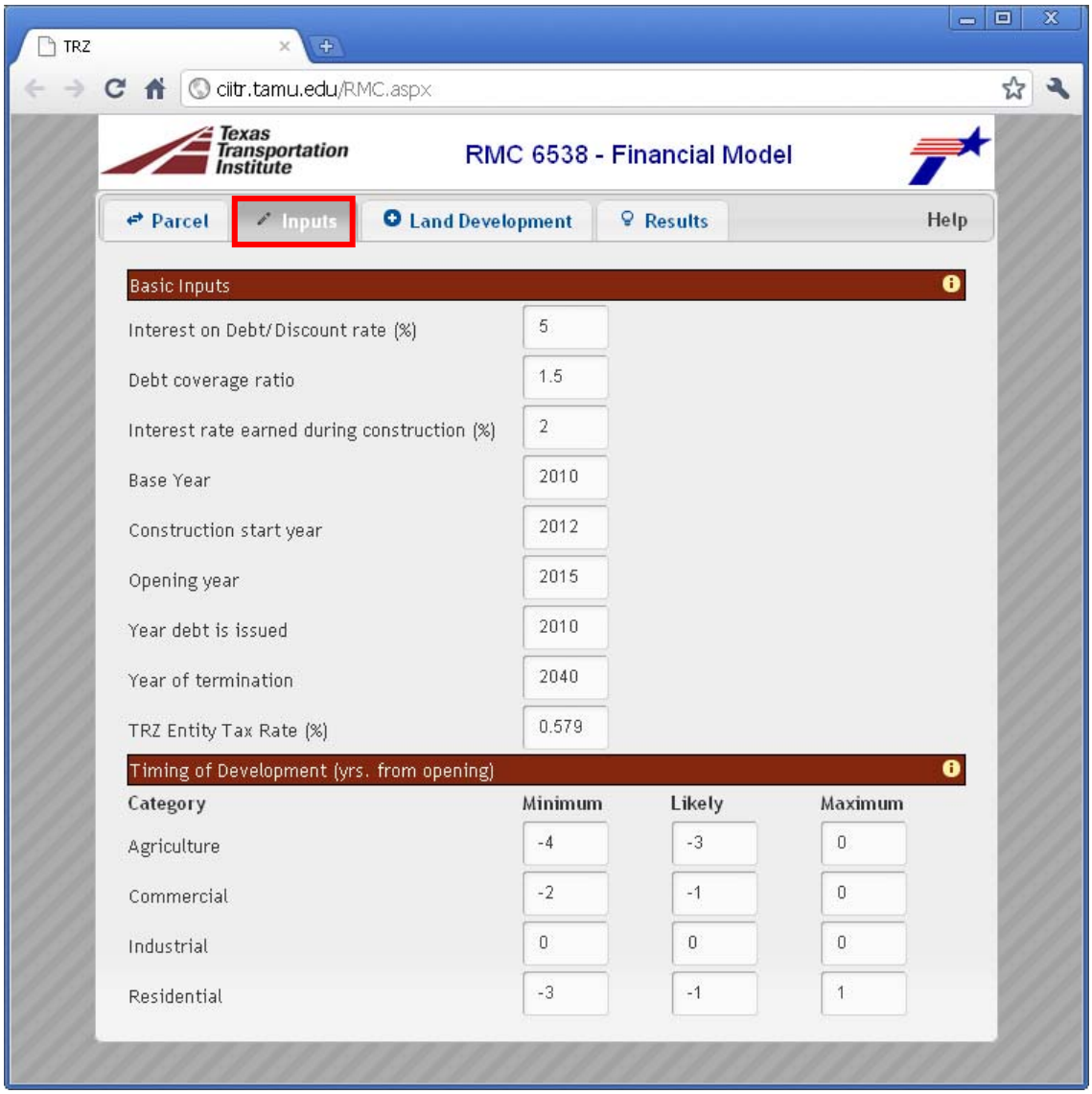


Figure 6.4. Basic Inputs Section of the TRZ Revenue Feasibility Tool.

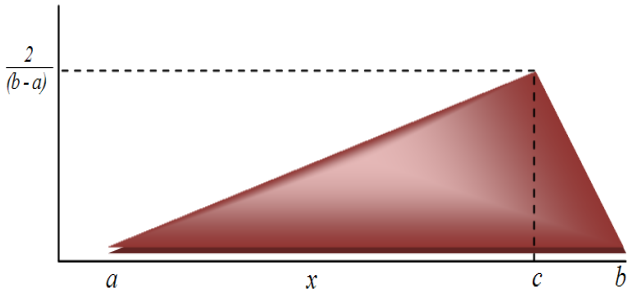
Monte Carlo Simulation

Monte Carlo simulation is incorporated into the financial model as a hidden process in the TRZ Revenue Feasibility tool to account for randomness (or risk) in all the variables used. Monte Carlo simulation generates a large amount of random samples from specified probability distributions for each variable to represent risk in a financial system, and it is widely used to develop value-at-risk estimates (*43*).

In order to make the inputs for each variable as simple as possible and suitable for the general users of the tool, the use of triangular distributions was determined to be the best choice to account for randomness of each variable in the model. The triangular distribution is a

continuous probability distribution with: (i) lower limit a, (ii) mode c, and (iii) upper limit b (Figure 6.5).

$$f(x|a,b,c) = \begin{cases} \frac{2(x-a)}{(b-a)(c-a)} & \text{for } a \le x \le c \\ \frac{2(b-x)}{(b-a)(b-c)} & \text{for } c \le x \le b \\ 0 & \text{otherwise} \end{cases}$$



Source: Texas Transportation Institute

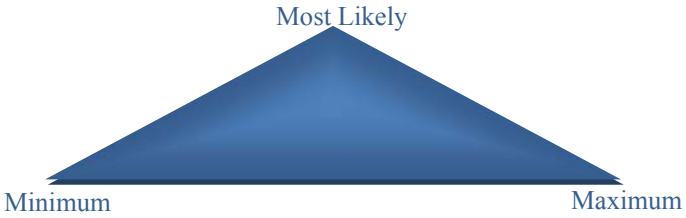
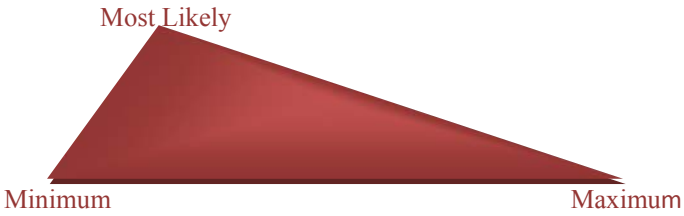
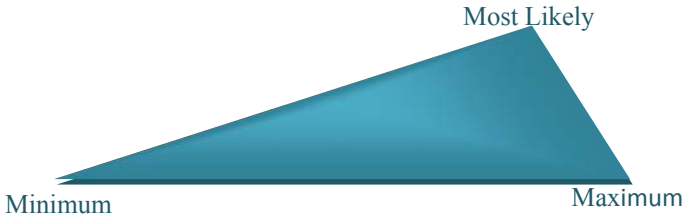
Figure 6.5. Definition of a Triangular Probability Distribution.

For the use of triangular distributions in the TRZ Revenue Feasibility tool, aiming to provide practical definitions to the general users, the mathematical expressions describing the parameters of the distribution where changed for the following words:

- *Minimum* (for lower limit a). These are the estimates for a lower bound (minimum) value that the user believes, or has an educated guess about, that a random variable can have.
- *Most Likely* (for mode c). These are the estimates for the mode (most likely) value that the user believes, or has an educated guess about, that a random variable can have.
- *Maximum* (for upper limit b). These are the estimates for an upper bound (maximum) value that the user believes, or has an educated guess about, that a random variable can have.

In the TRZ Revenue Feasibility tool, there are variables that cannot be less than zero (i.e., timing of development), variables that can be negative (i.e., property values growth rates), and positive variables. The more certainty the user has about the possible range of a variable, the smaller the range (the distance from *a* to *b* in Figure 6.5) between the minimum and maximum values will be. Table 6.1 provides examples of three general cases of triangular distributions configurations (i.e., symmetrical, skewed left, and skewed right) and their significance in the financial model.

Table 6.1. General Cases of Triangular Distributions and their Significance.

Symmetrical. In this case, the range of the possible values for a variable has the same probability of falling above or below the most likely values (the mode). Repeated trials will produce more result around the most likely values.	
Positively Skewed. In this case, the range of the possible values for a variable has more probability of falling in the lower bound. Repeated trials will produce more result around the minimum and most likely values.	
Negatively Skewed. In this case, the range of the possible values for a variable has more probability of falling in the upper bound. Repeated trials will produce more result around the maximum and most likely values.	

Each trial involves drawing a combination of random observation from the predetermined set of triangular distributions. Based on a predetermined number of iterations, repeated trials within the tool produce a frequency distribution for the net capital available accounting for changes in the valuation of TRZ revenue potential by estimating the PV of the cash flows (Figure 6.6).

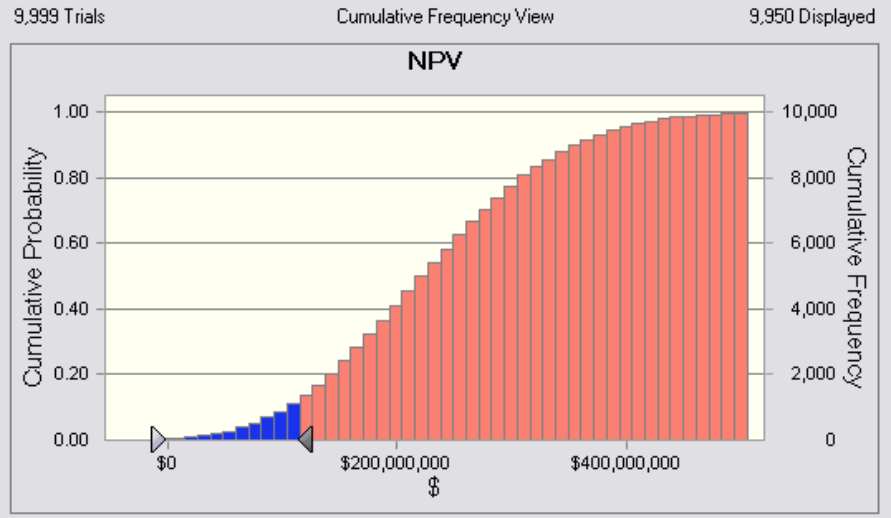


Figure 6.6. Cumulative Frequency Distribution of the Net Capital Available (PV).

The following variables are considered in the tool via Monte Carlo simulation within a broad land use typology to facilitate better approximations (Figure 6.7):

- Timing of Development (years from opening).
- Timing of Maximum Development.
- Estimated Net Taxable Value Growth Rates.
- Remaining Undeveloped (residual vacant).

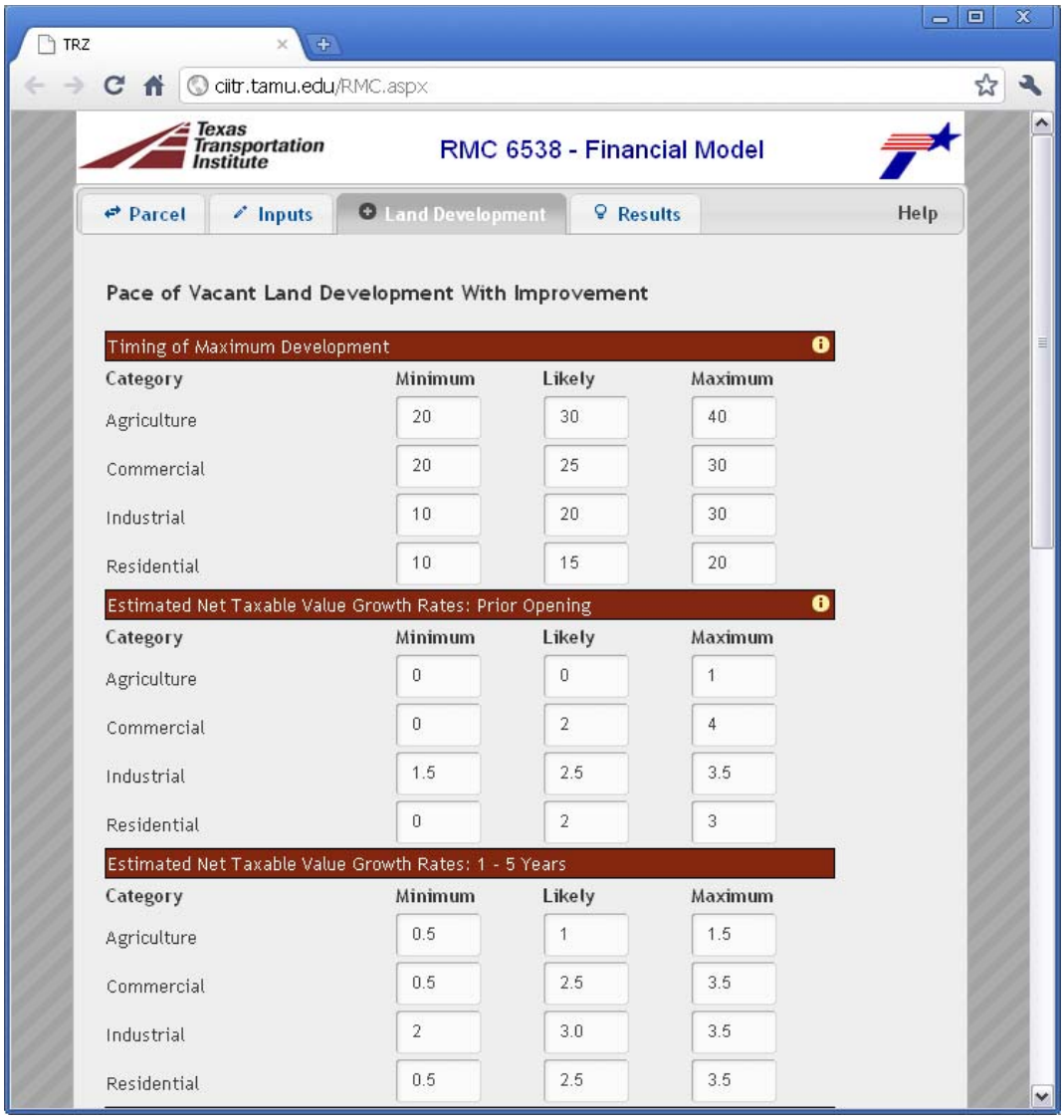


Figure 6.7. Illustration of the Input Variables that Use Triangular Distribution.

Land Development

In the TRZ Revenue Feasibility tool, the pace of development around a capacity improvement is modeled by using Monte Carlo simulation, in combination with a series of distribution functions. Accordingly, for the purposes of the financial analysis, land demand is modeled following a series of normal S-curves over the number of years (that in the judgment of the user has the most likelihood of occurring) required to reach full occupancy; this number of years are specified in the section Timing of Maximum Development of the Land Development section of the tool.

In order to consider changes in the speed of development normal distributions were adopted as working assumptions to address how long it will take for existing vacant land along a

transportation corridor to be developed for each of the real estate categories used by the tool (agricultural, commercial, industrial, and residential). The characterization of demand by the tool tends to be slower in the start-up years, then accelerates in the middle years, and gradually decelerates as the TRZ reaches the last stages of development and full saturation (slow initial development, then rapid dissemination, and slowly approaching market saturation). This is reasonable since many factors including, but not limited to local land use policies and macroeconomic conditions that determine those saturation levels.

The Remaining Undeveloped (residual vacant) section of the Land Development part of the tool allows the user to apply assumptions for such variables, combining Monte Carlo simulation with the normal distribution functions (Figures 6.8, 6.9). Some vacant land remains undeveloped either because a parcel remains undeveloped or other conditions. In extreme cases, tracts of land may remain undeveloped for decades, especially for risky green-field projects.

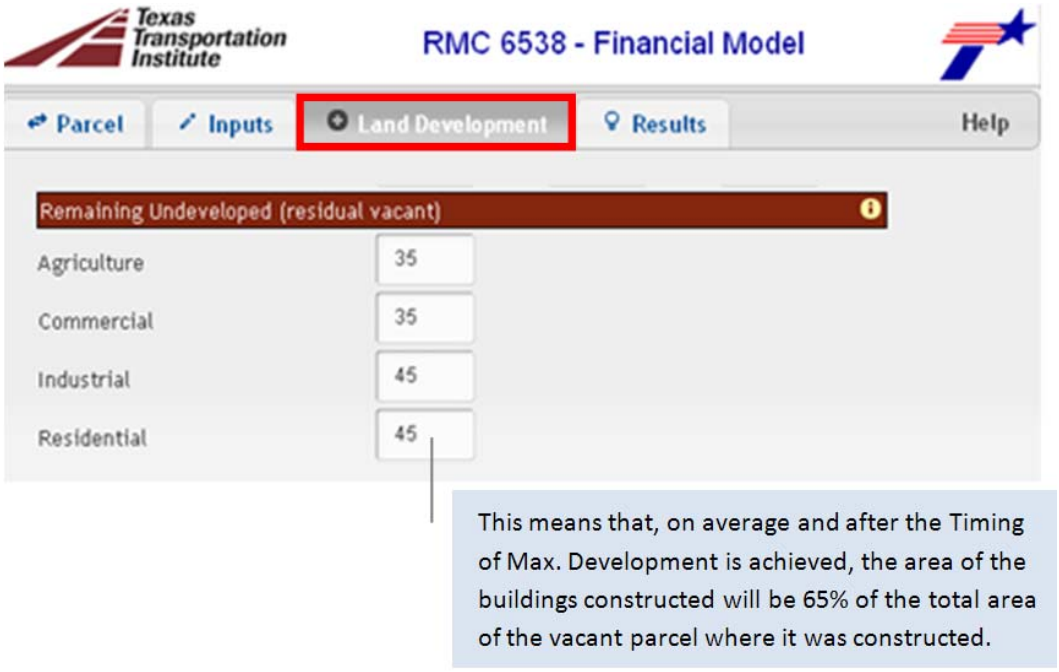


Figure 6.8. The Remaining Undeveloped (Residual Vacant) Inputs Section.

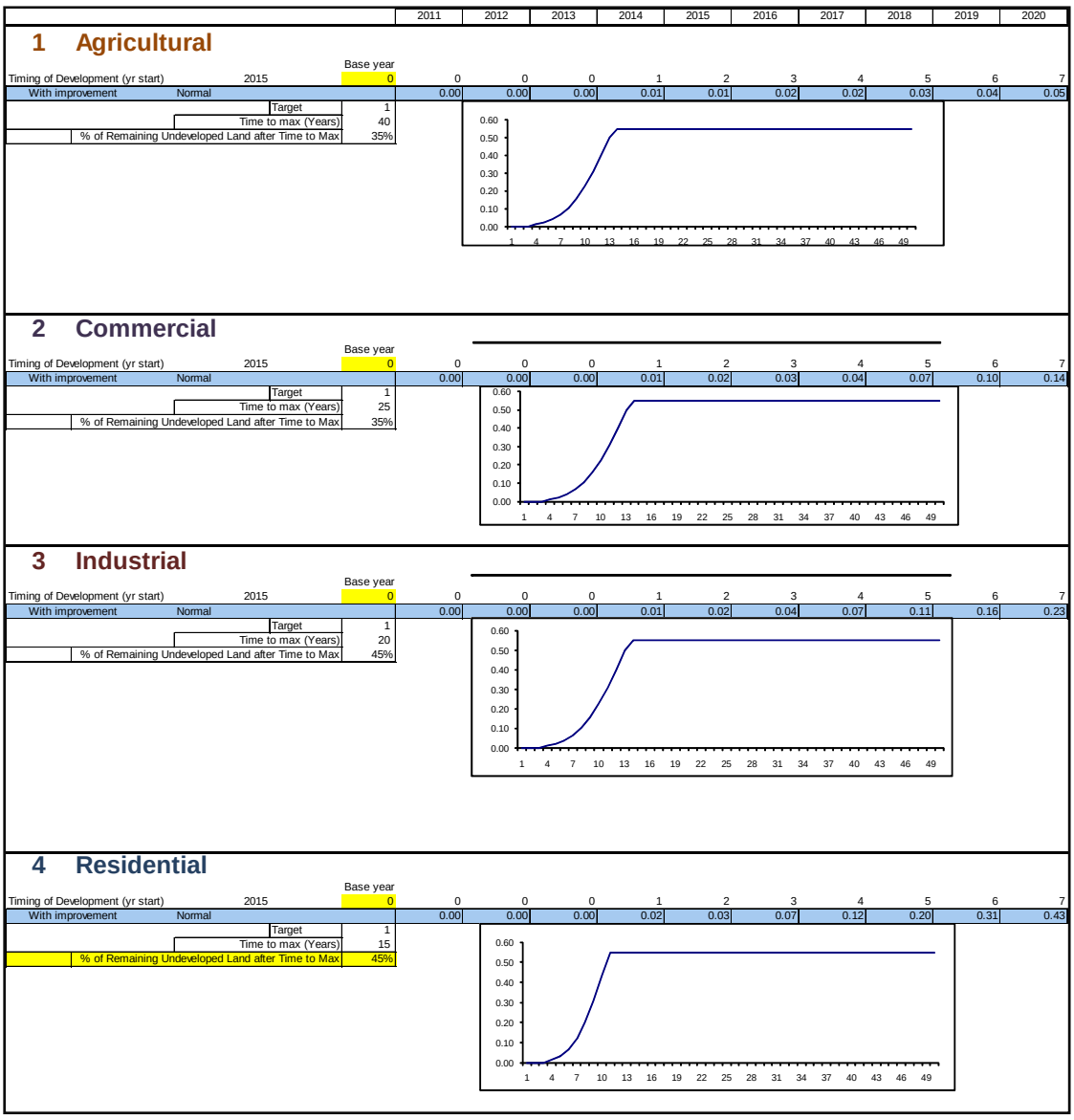


Figure 6.9. Illustration of Functions Used to Model Land Development.

GUIDANCE FOR THE GENERAL USE

This section provides guidance for the application of the TRZ Revenue Feasibility tool to a particular region, and for estimating some of the necessary variables to be used as inputs in the tool (i.e., property value growth rates, the pace of development, and distributional aspects within a TRZ); moreover, it provides an overview of demographic trends and economic other conditions necessary to analyze any real estate market.

Even though the TRZ Revenue Feasibility tool is designed for its general application to any region, determining some inputs for the tool can be very specific for any particular region and microeconomic conditions, particularly for the following parameters:

- The geographic extent where capacity improvements produce economic impacts on property values and development trends to determine the TRZ boundary.
- The real estate inventory within the TRZ and their assessed property values.
- The type of land uses for vacant and non-vacant parcels: commercial, industrial, residential, agricultural, etc. and their development trends.
- The property values attained upon development estimate the pace or speed of vacant land development—the pace of absorption.
- The timing of development from opening an infrastructure project.

As per the objective of the TRZ Revenue Feasibility tool, it can only provide a preliminary revenue estimate to facilitate stakeholder dialogue so that a satisfactory course of action may be adopted. It does not provide a final revenue estimate. The tool can help a stakeholder build scenarios and plan for optimum, likely, and pessimistic conditions. The same tool can provide more final estimates only if aided by local calibration. In the following section, guidelines for determining the geographic extent of your TRZ and performing the parcel inventory for the base year is provided—the first step of the TRZ analysis.

Determining the TRZ Boundaries and Baseline Inventory

After identifying the geographic location of the transportation projects to be implemented, the first step is to identify the characteristics of the parcels surrounding the capacity improvement. In this step, cadastral information should be used, such as parcel information used for the annual certified appraisal roll, performed by Central Appraisal Districts, in most municipalities around Texas; nowadays most of it available in GIS electronic format (*2*).

The following recommendations are made to set up the TRZ boundaries for large capacity projects:

- One mile from project centerline to each side of the project is a good rule of thumb to start the first scenario.

- Set up a TRZ with a size adequate to support an obligation with a proposed life-span (i.e., a 30-year, $70 million municipal bond); however, benefits might extend well beyond the TRZ boundary.
- Obtain all the required attributes for each parcel: unique parcel identification numbers (PIDN), legal ownership (government vs. private), city net taxable value (includes exemptions), and acreage (these fields should already be part of the CSV file uploaded to the tool).
- Ensure the preservation and legality of contiguity (i.e., do not select parcels outside the jurisdictional limits of the implementing entity). In other words, the final file of parcels may not contains any parcels which break contigutity like tax incentive parcels, parcels in military bases or other such classifiers.
- Investigate if other tax incentive /restrictive agreements that might be already in place, or where there is potential for conflict with existing TRZ. It is also equally important to investigate if the parcels are already part of a tax increment program like TIRZ or TIF. These latter considerations would serve to reduce the increment available to a TRZ.
- Consider that property values and land developments, might also benefit from integrated transportation/land use solutions and/or opportunities like development of mass transit options or mixed use development near the proposed corridor.
- Include only parcels that are completely within the predetermined TRZ boundary to avoid issues with parcel subdivision that follows TRZ development. Parcel subdivision is a very likely scenario in growth areas.

Once the TRZ boundary for the assessment of the first scenario has been determined, the next step is to create a parcel inventory, for its use in the TRZ Revenue Feasibility tool. As illustrated in Figure 6.10, in the tool the inventory requires the following mandatory attributes as the main input to the tool (as a CSV file). This is provided by the ARCGIS Toolbar – TRZ Development Tool developed in Chapter 5 or may be developed externally by stakeholders assuming they have access to layers:

- Unique ID (or PIDN).
- Land use typology (to be identified by the user in the tool).
- Vacancy status.

- Acreage.
- Net taxable value (that includes exemptions preferably).

	A	B	C	D	E
1	Parcel Identification Number (or Unique ID)	Vacancy Status (Vacant or Developed)	State Code	Acreage	Value
2	S99099900100100	DEVELOPED	Agricultural	0.71	$ 604,848
3	W13899900500300	DEVELOPED	Comercial	2.33	$ 4,292,695
4	S98799900100900	VACANT	Industrial	1.60	$ 387,115
5	X210999000A0300	VACANT	Comercial	77.48	$ 1,349,948
6	W13899900400100	DEVELOPED	Residential	13.64	$ 8,328,864

Figure 6.10. Example of a Parcel Invetory and the Attributes Required by the Tool.

Figure 6.11 shows a hypothetical project and a TRZ zone around it identifying the parcels.

Figure 6.11. TRZ Boundary Example for an Initial Scenario.

Once the TRZ boundary has been determined and a parcel inventory has been created, the next step is to determine the taxable value growth rates.

Assessing Taxable Value Growth Rates

After determining the TRZ boundaries and baseline inventory, the proposed framework uses a combination of regional trends and case studies to incorporate the assumptions for taxable value growth rates and development trends. Historical databases containing taxable values, as reported by CADs to the State Comptroller's Office, can be easily obtained by any municipality by submitting a formal request. Alternatively, real estate professionals may also provide an estimate of reasonable growth.

Analyses of regional trends are important for understanding taxable value growth rates. As an example, the bars in Figure 6.12 illustrate the annual percentage change for the net taxable base for properties in our example study area in El Paso. The higher annual percentage changes for the net taxable base were 10.4 percent in 2004, 11.8 percent in 2006, peaking at 14.7 percent in 2007. This is consistent with the national real estate and economic cycles. Also consistent with the national cycles and trends, a significant drop occurred for 2008 even when there was an increase in the number of parcels. The growth rates dramatically dropped to 2.3 percent in 2009 reflecting the impacts of the current recession. The increment in the number of parcels for 2009 was minimal.

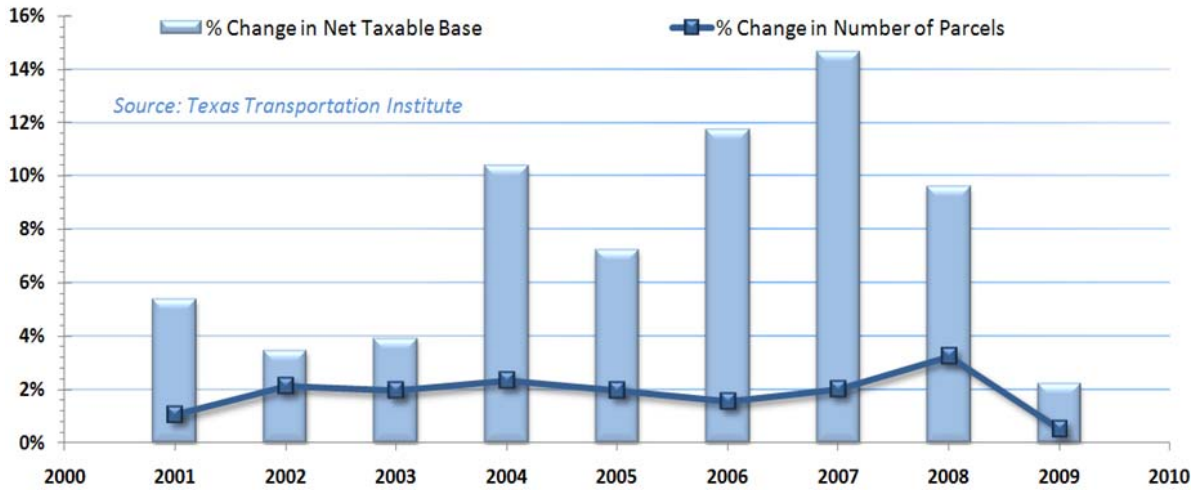
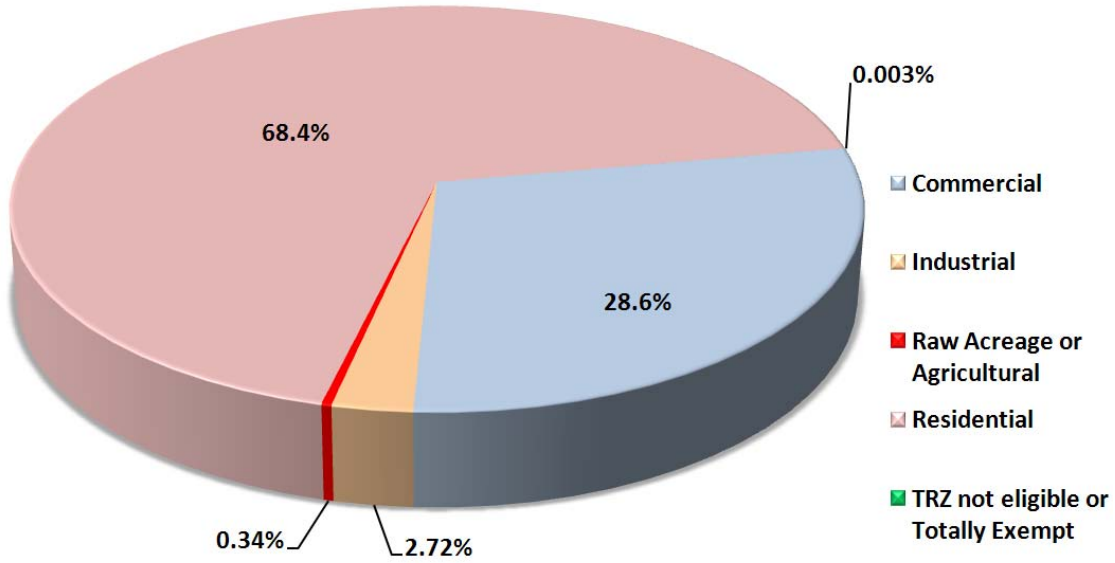


Figure 6.12. Annual Percentage Change in the Net Taxable Base and Number of Parcels.

Using the five real estate categories, the average annual participation in the city net taxable base for years 2000 to 2009 was also obtained, as illustrated in Figure 6.13. On an annual average, residential parcels contributed the most with 68.4 percent of the net taxable base in nominal terms over the 2000–2009 term. Industrial parcels for instance, contribute only 2.7 percent of the taxable base. Finally, the parcels that fall within the raw acreage or agricultural classification contribute on average less than 1.0 percent every year, as most of these parcels are located outside the city jurisdictional limits.



Source: Texas Transportation Institute

Figure 6.13. Average Annual Participation to the Net Taxable Base of the City (2000–2009).

These and other accompanying analyses may be used to developed compound annual growth rates (CAGR) to be used in a preliminary revenue assessment as input parameters and to define thresholds (minimum, maximum, most likely). Similarly, other CAGRs may also be determined accordingly.

- Defensible scenarios can be created starting with the most recent trends
- Residential and commercial parcels typically very sensitive variables and often register the highest CAGR.
- The CAGR of raw acreage or agricultural parcels is typically well below other land uses justifying the use of the land use typology.

Pace of Development

The next step is to estimate pace of vacant land development. The input for the variable "Timing of Maximum Development" is an estimate of the number of years required to achieve the complete saturation of the vacant land that was available during the base year. In order to simulate the demand for real estate developments, the tool automatically distributes the Timing of Maximum Development in three phases:

- Stage 1: slow initial development.
- Stage 2: rapid dissemination.
- Stage 3: slowly approaching market saturation (as explained previously in this report in the *Land Development* section).

A good rule of thumb (very specific to the location of the TRZ—prospective developers, land sales contracts, etc.) is that greater is the amount of vacant land in the base year, the larger is the Timing of Maximum Development. For the sake of illustration purposes, assume that in a hypothetical TRZ example, there are 598 acres of vacant land allocated as shown in Table 6.2, one vacant agricultural parcel with 49 acres, 56 commercial parcels with 513 acres, one industrial parcel with 30 acres, and 2 residential parcels with 5.5 acres. A user may use the use an initial rate of development (acres per year) and estimate the number of years it will take to achieve the complete saturation. These initial approximations may then be tempered by judgment based on local and regional market conditions and with input from local real estate experts when available.

Table 6.2. Vacant Parcel Inventory per Real Estate Category.

2010 Parcels	Vacant
Raw Land or Agricultural	
Parcel Count	1
Sum of Acreage	49
Commercial	
Parcel Count	56
Sum of Acreage	513
Industrial	
Parcel Count	1
Sum of Acreage	30
Residential	
Parcel Count	2
Sum of Acreage	5.5
Total Parcel Count	**60**
Total Sum of Acreage	**598**

Scenario Analysis

Once the inputs and parameters area loaded, the tool facilitates the creation of different scenarios by saving the inputs used the last time (if your browser has allowed cookies).

Scenario Analysis Example

Input parameters may be revised. Caution is to be exercised in this stage since the assumptions made must be reasonable for the region and the proposed TRZ (specific location). Conservative, mildly optimistic, and very optimistic scenarios may be conducted so as to provide a range (see Figure 6.14 for pace of development scenarios).

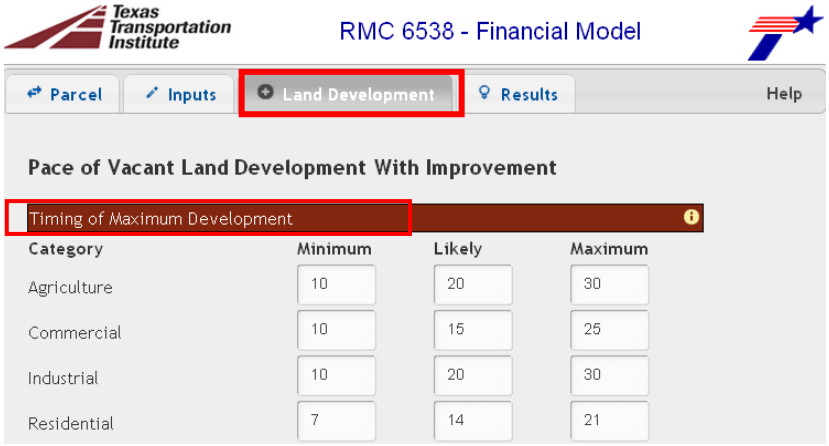


Figure 6.14. Quick Example of Scenario Development and Analysis.

Similarly, a second scenario may be developed for the Total funds available from Bonds or Net Capital Available. Figure 6.15 showcases this.

Figure 6.15. Results of the TRZ Revenue Feasibility Tool.

With these two scenarios, a stakeholder may have a lower bound and an upper bound to establish the limits. Other scenarios with TRZs of different sizes are also possible.

Drawing Conclusions from the Financial Model

As stated earlier the objective of the tool is not to provide a single final value, but rather a range of estimates for optimistic, most-likely, and pessimistic conditions. For example, if most of the scenarios show poor results, it is not recommended to pursue a TRZ implementation; on the other hand, if even your pessimistic scenarios show positive results, implementation of a

TRZ should certainly be further explored. If that is the case, the TRZ may be formulated, and more advanced revenue assessments may be developed to meet. Once the CSV file from the TRZ Zone development tool is developed and the inputs are loaded into the revenue tool, the entire process takes only a few minutes.

CHAPTER 7: INCREMENT BASED TRANSIT VALUE CAPTURE IN TEXAS

This chapter assesses the implications of current value capture legislation for transit in Texas, provides planning and implementation guidelines when applicable, and discusses the larger role for transit in mobility improvements and congestion reduction in future via transit capital infrastructure supported through value capture initiatives like transit TRZs or similar concepts. This chapter documents existing value capture legislation from a transit perspective; documents impact effects much like highways; and makes recommendations for specific suggestions for facilitating transit value capture for cost recovery. This chapter is divided into many sub sections to facilitate the discussion of primary objectives, including:

- Specific issues in legislative provisions for increment based finance in Texas for transit like TRIZ code and SB1266 mentioned in Chapter 1.
- A typological list of transit on TxDOT systems currently existing in Texas specifically distinguishing between those that are on the state highway system (on-system) and those that are not.
- A meta-analysis of published findings on transit impacts on property values.
- Review of the state-of-practice of transit-based value capture techniques in Texas.
- Develop planning and implementation guidance for TRZ for on- and off-system transit.
- Recommendations for further legislation in Texas that might help value capture increment finance for financing transit systems in a better way than currently practiced.

ISSUES IN THE EXISTING LEGAL FRAMEWORK FOR VALUE CAPTURE FOR TRANSIT

TIRZ Code

The TIRZ mechanism in Texas has most often been used to promote local goals and to finance or facilitate primarily transit- oriented- development (TOD) within the zones created rather than being used to defray the capital costs of the infrastructure improvement itself.

Senate Bill 1266

SB1266, permits joint governing body cooperation but currently permits financing for highway projects on the state highway system (on-system) only, and on-system transit facilities may only receive surplus funds after the primary highway project(s) have been financed.

TRZ AND TRANSIT

SB1266 amended Chapter 222 of the Transportation Code (*4*) concerning Title 6 labeled "Roadways" in the Transportation Code while "Railroads" are included in Title 5. Another important aspect is that current transit statute such as Chapter 451 Metropolitan Rapid Transit Authorities, Chapter 453 Municipal Transit, Chapter 456 State Financing of Public Transportation, Chapter 457 County Mass Transit, and Chapter 461 Statewide Coordination of Public Transportation are also located under Title 6 for Roadways. Chapter 222 mentions transit in relation to the Highway Trust Fund and that transit receives funding from a separate account derived from the Trust Fund. The funds from the State Infrastructure Bank are allowed to "finance a purchase or lease agreement in connection with a transit project" under Section 222.074(a-6). In summary, the language in SB1266 primarily amended highway financing but does not contain any transit supportive language because of constitutional provisions that do not allow it.

Transit and TRZ Surplus Funds

The current TRZ law supports transit systems on the state highway system in the same region as the TRZ through surplus provisions after the debt issued to pay for the initial highway project has been paid off. These on-system transit systems typically include bus systems and BRT systems. Only two examples are currently found in Texas (i.e., BRT lines in El Paso and San Antonio). In other words, as of now, El Paso and San Antonio BRT systems may only indirectly benefit if a) there are TRZ's established in their regions and b) if those uses are approved by the local entity. In the future, however, more BRT systems and/or new forms of transit operations may emerge and interact with TxDOT on-system projects. Some of these new forms of transit are discussed in the following sections. Hence the question may be asked: is there a financing mechanism that can directly benefit or expedite such systems or should the

presence of surplus funds in the region be the only potential source of local funds for these systems?

TYPOLOGICAL LIST OF TRANSIT ON TXDOT SYSTEM

A loose definition of TxDOT On-System Transit refers to all transit systems having their service routes partially or entirely on TxDOT state highways. In contrast, a strict definition of On-System Transit refers to those with transit facilities, for example, station/stop structures and guideways, built within the right-of-way of the TxDOT on-system highways. Table 7.1 presents an inventory of TxDOT on-system highways.

TxDOT follows the restricted version of on-system transit definition. By this definition, there are currently only two on-system transit systems in Texas: the BRT lines in El Paso and San Antonio.

Table 7.1. TxDOT On-System Highways by Road Type.*3*

Road Type	Abbreviation	Centerline Length (Miles)
Business FM	BF	4.13
Business Interstate	BI	195.66
Business State Highway	BS	189.00
Business US Highway	BU	527.59
Farm to Market	FM	37,952.48
Farm to Market Spur	FS	43.16
Interstate Highway	IH	3,234.19
Principal Arterial	PA	14.85
Park Road	PR	248.59
Recreational Road	RE	80.50
Ranch to Market	RM	2,968.27
Ranch Road	RR	6.60
Ranch Spur	RS	1.67
State Highway	SH	14,027.75
State Loop	SL	1,044.15
State Spur	SS	366.75
US Highway Alternate	UA	220.79
US Highway Spur	UP	8.23
US Highway	US	11,872.41
Toll Road	(183A)	10.68
TOTAL		**73,017.43**

The State of Texas is home to approximately 75 transit agencies according to the Texas Transit Association. Eight out of the total are metropolitan-level transit agencies; 29 urban district agencies; and 39 rural districts. The metropolitan and urban district transit agencies are depicted in Figure 7.1 below. The geographical coverage of each agency varies with some encompassing metropolitan areas to municipal-level. Table 7.2 categorizes the transit agencies.

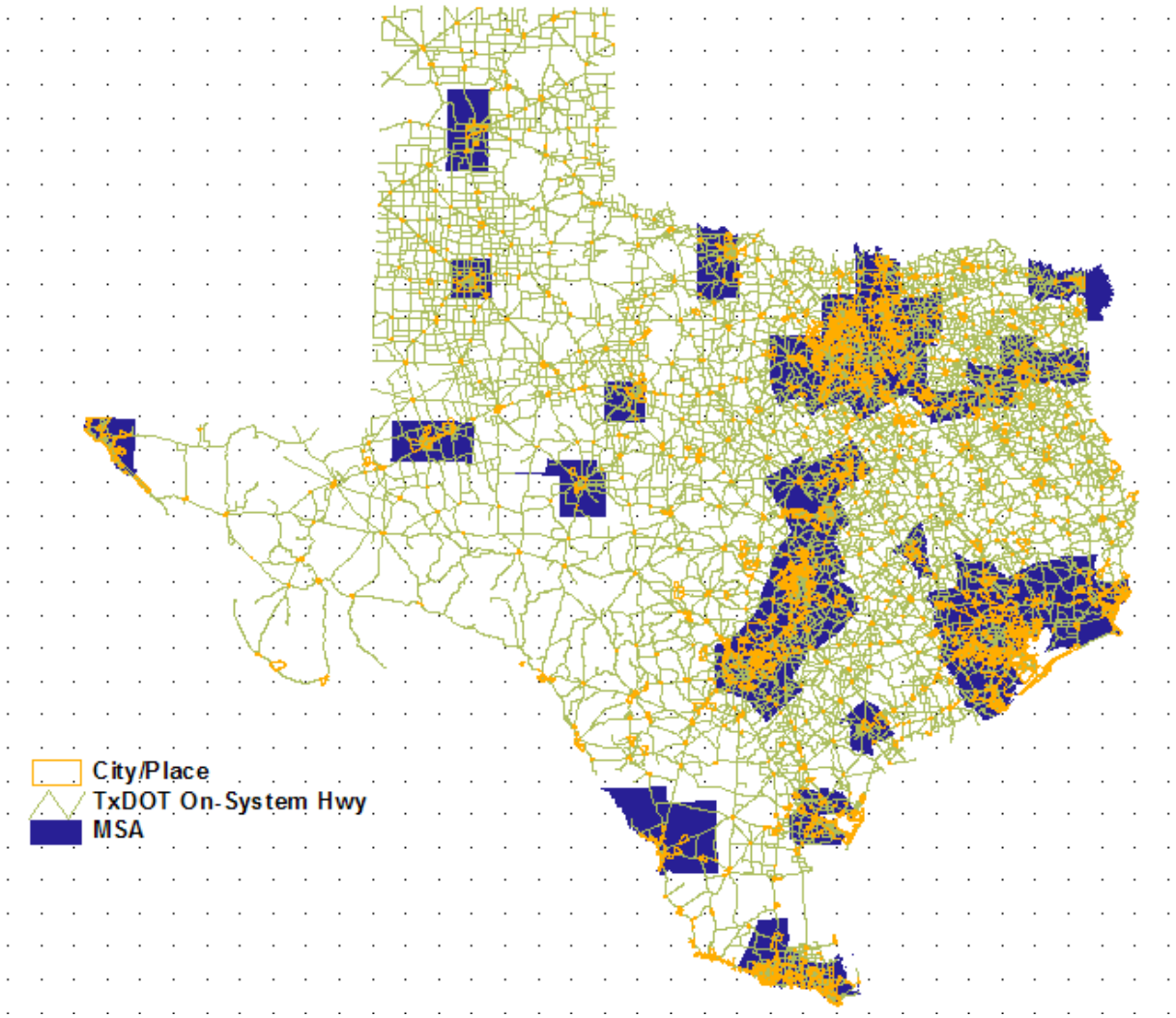


Figure 7.1. Metropolitan and Urban District Transit Agencies.*4*

Table 7.2. Categorical Listing of Texas Transit Agencies. *5*

Type	Area	Transit Agency
Metropolitan	Austin MSA	Capital Metropolitan Transportation Authority
Metropolitan	Corpus Christi MSA	Regional Transportation Authority
Metropolitan	Dallas Area	Dallas Area Rapid Transit
Metropolitan	Denton County	Denton County Transportation Authority
Metropolitan	El Paso MSA	City of El Paso Mass Transit Department
Metropolitan	Fort Worth area	Fort Worth Transportation Authority
Metropolitan	Houston area	Metropolitan Transit Authority of Harris County
Metropolitan	San Antonio area	Via Metropolitan Transit
Urban Transit Districts	Abilene	City of Abilene, CityLink Transit
Urban Transit Districts	Amarillo	Amarillo City Transit
Urban Transit Districts	Arlington	City of Arlington Handitran
Urban Transit Districts	Beaumont	Beaumont Municipal Transit System
Urban Transit Districts	Brownsville	Brownsville Urban System
Urban Transit Districts	Bryan	Bryan-College Station
Urban Transit Districts	Galveston	Island Transit
Urban Transit Districts	Grand Prairie	The Grand Connection
Urban Transit Districts	McAllen	Rio Valley Transit
Urban Transit Districts	Houston	Harris County Office of Transit Services
Urban Transit Districts	Killeen	City of Killeen, The HOP
Urban Transit Districts	Laredo	Laredo Transit Management, Inc.
Urban Transit Districts	Longview	Longview Transit
Urban Transit Districts	Lubbock	City Transit Management Company, Inc.
Urban Transit Districts	McAllen	McAllen Express Transit
Urban Transit Districts	McKinney	McKinney Collin County Area Regional Transit
Urban Transit Districts	Mesquite	Mesquite Transportation for the Elderly and Disabled
Urban Transit Districts	Midland-Odessa	Midland-Odessa Urban Transit District
Urban Transit Districts		North East Transportation Services
Urban Transit Districts	Port Author	Port Author Transit
Urban Transit Districts	San Angelo	City of San Angelo
Urban Transit Districts	Sherman	Texoma Council of Governments/Sherman Denison
Urban Transit Districts	Temple	City of Temple The HOP
Urban Transit Districts	Texarkana	Texarkana Urban Transit District
Urban Transit Districts	Texas City	Texas City/La Marque/ Lake Jackson/Angleton Connect Transit
Urban Transit Districts	Tyler	Tyler Transit System
Urban Transit Districts	Victoria	Victoria Transit
Urban Transit Districts	Waco	Waco Transit System, Inc.

Table 7.2. Categorical Listing of Texas Transit Agencies (Cont.).

Urban Transit Districts	Wichita Falls	Wichita Falls Transit System
Urban Transit Districts	Woodlands	The Woodlands
Rural Transit District	San Antonio area	Alamo Area Council of Governments, Alamo Regional Transit
Rural Transit District	Texarkana	Ark-Tex Council of Governments
Rural Transit District	Aspermont	Aspermont Small Business Development Center, Inc.
Rural Transit District	Beeville	Beeville Community Action Agency
Rural Transit District	Brazos	Brazos Transit District
Rural Transit District	Austin MSA	Capital Area Rural Transportation System
Rural Transit District	Crosbyton	Caprock Community Action Association, Inc.
Rural Transit District	Coleman	Central Texas Rural Transit District
Rural Transit District	Cleburne	City/County Transportation
Rural Transit District	Collin County	Collin County Committee on Aging-Collin County Area Regional Transit
Rural Transit District	Columbus	Colorado Valley Transit District
Rural Transit District	Rio Grande	Community Action Council of South Texas
Rural Transit District	Southwest Texas	Community Council of Southwest Texas, Inc
Rural Transit District	Corsicana	Community Services, Inc dba Community Transit Service
Rural Transit District	San Angelo	Concho Valley Transit District
Rural Transit District	Del Rio	City of Del Rio Transportation
Rural Transit District	Kilgore	East Texas Council of Governments-East Texas Rural Transit
Rural Transit District	El Paso MSA	El Paso County Rural Transit
Rural Transit District	Sugar Land	Fort Bend Transit
Rural Transit District	Victoria	Golden Crescent Regional Planning Commission
Rural Transit District	Texas City	Gulf Coast Center
Rural Transit District	Waco	Heart of Texas Council of Governments/Heart of Texas Rural Transit District
Rural Transit District	San Saba	Hill Country Transit District
Rural Transit District	Kaufman area	Kaufman Area Rural Transportation
Rural Transit District	Kleburg County	Kleberg County Human Services
Rural Transit District	Lower Rio Grande	Lower Rio Grande Valley Development Council
Rural Transit District	Panhandle	Panhandle Community Services-Panhandle Transit
Rural Transit District	Mineral Wells	Public Transit Services
Rural Transit District	Rolling Plains	Rolling Plains Management Corporation-SHARP Lines Rural Public Transportation
Rural Transit District	Alice	Rural Economic Assistance League, Inc
Rural Transit District	Greenville	Senior Center Resources and Public Transit

Table 7.2. Categorical Listing of Texas Transit Agencies (Cont.).

Rural Transit District	Beaumont	South East Texas Regional Planning Commission-South East Texas Transit
Rural Transit District	South Padre Island	South Padre Island, The Town of The Wave
Rural Transit District		South Plains Community Action Association-SPARTAN
Rural Transit District	Denton County	SPAN, Inc.
Rural Transit District	Sherman	Texoma Area Paratransit Systems, Inc.-TAPS Public Transit
Rural Transit District	Glen Rose	The Transit System
Rural Transit District	Laredo	Webb County Community Action Agency-El Aguila Rural Transportation
Rural Transit District	Lamesa	West Texas Opportunities, Inc. - Permian Basin Rural Transit District

PUBLISHED FINDINGS ON TRANSIT IMPACTS ON PROPERTY VALUES

An essential step toward establishing increment based finance for transit is to document the empirical findings of property value impacts of transportation investments. This section focuses on the literature pertaining to transit capitalization effects. Findings on the spatial extent of transit impacts (measured by the distance to the station/stop) are also reported to provide empirical knowledge needed for delineating TRZ boundaries.

Table 7.3 shows selected studies of property value premiums for single-family homes located near transit stations. Light rail transit is the most common transit technology that has been studied in the literature but metro (also called heavy- or rapid-rail transit) and commuter rapid transit technologies are also represented. The premium values vary widely, attributable to a host of factors such as transit technology, economic environment, integration of the transit route into the urban area, metropolitan area, etc.

Table 7.3. Single-Family Transit Access Premium.

Transit Access Premium for Single-Family Homes(in 2000 US$/ typical home for every meter closer to the station		
Study	**Rail System**	**Premium**
Hess and Almeida (2007) (*46*)	LRT Buffalo, NY	$7.25
Ko, Goetz, Hagar (2009) (*47*)	LRT Minneapolis	$6.22
Lewis - Workman and Brod (1997) (*48*)	LRT MAX, Eastside line	$2.70
Landis et al (1995) (*49*)	LRT San Jose Light Rail	($2.60)
Garrett (2004) (*50*)	LRT St. Louis, MO	$36.45
Landis et al (1995) (*49*)	LRT San Diego Trolley	$3.58
Al-Mosaind et al. (1995) (*51*)	LRT MAX, Eastside line	$31.64
Chen et al. (1998) (*52*)	LRT MAX, Eastside line	$39.51
Dueker and Bianco (1999) (*53*)	LRT MAX, Eastside line	$49.68
Lewis - Workman and Brod (1997) (*48*)	MRT BART	$56.79
Lewis - Workman and Brod (1997) (*48*)	MRT New York City MTA	$82.78
Landis et al (1995) (*49*)	MRT BART	$1.50
Voith (1991) (*54*)	CRT Philadelphia	$14.56
Cervero and Duncan (20020 (*55*)	CRT San Diego	$83.58
Armstrong and Rodriguez (2006) (*56*)	CRT Eastern Mass	$7.05

Table 7.4 represents the transit access premium for apartment and multi-family property types. Few studies, however, have analyzed the property value premium for bus rapid transit. The findings from one bus rapid transit system are included in the list and may help San Antonio and El Paso understand the potential impact on property values as a result of future transit service.

Table 7.4. Multi-Family Transit Access Premium.

Transit Access Premium for Apartment/Multi-Family Homes (in 2000 US$ per sq. meter for every meter closer to the station)		
Study	**Rail System**	**Premium**
Rodriguez & Targa (2004) (*57*)	BRT Bogota	$0.07
Cervero and Duncan (2002) (*58*)	LRT LA County	$0.00
Cervero and Duncan (2002) (*58*)	LRT Santa Clara County, CA	$0.24
Ko, Goetz, Hagar (2009) (*47*)	LRT Minneapolis	$0.10
Cervero and Duncan (2002) (*55*)	LRT San Diego	$0.27
Benjamin and Sirmans (1996) (*59*)	MRT Washington,D.C.	$0.40
Cervero and Duncan (2002) (*55*)	CRT San Diego	($0.11)

Table 7.5 depicts the premium for commercial and office property types. The negative values for one commuter and two light rail transit lines in San Diego may be attributable to the route choice and integration with the urban area. In other words, the three transit lines utilize abandoned railroad corridors through formerly industrial and depressed sections of the region. Transit lines in Los Angeles, Minneapolis, and St. Louis, also follow former railroad right-of-way through industrial and depressed sections of town but property value premiums are either zero or high values. For some cities the route choice may be influential and require more time to improve property values while for others the presence of transit and accessibility in unsaturated transportation markets presents an opportunity for furthering economic development. Researchers Debrezion et al. find that the effect on commercial property mainly takes place within a 1/4 mile or short distances (*60*). The authors highlight that heavy or metropolitan transit and commuter rail transit has the greatest effect on commercial property values. Commuter rail is found to have the greatest effect on commercial property values and presents the widest service coverage or catchment area. The main reason the authors highlight a 1/4 mile is due to walking distance between station and commercial property location for the typical traveler.

Table 7.5. Commercial or Office Transit Access Premium.

Transit Access Premium for Commercial / Office (in 2000 US$ per sq. meter for every meter closer to the station)		
Study	**Rail System**	**Premium**
FTA (2000) (*61*)	MRT Washington, D.C.	$0.08
Nelson (1998) (*62*)	MRT Atlanta MARTA	$84.75
Landis et al (1995) (*49*)	MRT BART	$0.00
Fejarang et al. (1994) (*63*)	MRT LA	$0.66
Weinberger: Commercial (2001) (*64*)	LRT Santa Clara	$1.54
Weinberger: Office (2001) (*65*)	LRT Santa Clara	$0.04
Cervero and Duncan (2002) (*55*)	CRT San Diego	($0.22)
	LRT San Diego South Line	($0.21)
	LRT San Diego East Line	($0.03)
	LRT San Diego Mission Valley	$1.63

Transit Access Premium: Evidence from Texas

The transit access premium studies for the Dallas and Houston areas are less clear (Table 7.6). The statistical methodology for the studies is different from other empirical studies and thus difficult to compare and make inferences. Studies for different property value types at the 1/4 mile spatial extent and have found various rates of percentage increase for each with retail being the highest.

Table 7.6. Property Value Premiums in Texas.

Dallas		
Weinstein and Clower	1/4 mile	Retail: 36.75%
(1999 and 2002) (*65,66*)	1/4 mile	Office: 13.85%
	1/4 mile	Residential: 5.9%
	1/4 mile	Industrial: 7.68%
	1/4 mile	Property value increased 32 percent near DART stations compared with 20 percent in control group areas not served by rail.
Houston		
Pan and Ma (2009) (*67*)	1/4 mile and up to 2 miles	The opening of light rail has significant positive effects on residential property values. Access to light rail stations has significant negative impacts on the values of residential properties located within a quarter mile of rail stops and the effects become insignificant between a quarter mile and two-mile distance from rail stops. They do not provide actual estimates.

Table 7.7 lists the transit technology, property type studied, and the associated spatial extents of property value impacts. A limited number of studies have been performed with light rail transit technology type and single-family home property type is the most common property type studied. Except for one study by Benjamin and Sirmans (*60*), all studies used a distance to the station in 1 mile or less. Two transit agencies in the State of Texas currently operate light rail transit: Dallas Rapid Transit and Houston Metropolitan. The Austin area transit authority Capital Metro and Via Transit in San Antonio are studying light rail transit. El Paso Transit and Via Transit are actively pursuing BRT with routes that could potentially utilize or alter the current roadway system.

Table 7.7. Spatial Extent of Transit Impacts on Property Values.

Study	Transit System	Sample Maximum Distance to Station		
			(Miles)	(KM)
Landis et al (1995) (*49*)	CRT CalTrain	Single-Family	0.19	0.3
Landis et al (1995) (*49*)	LRT Sacramento	Single-Family	0.19	0.3
Landis et al (1995) (*49*)	MRT BART	Commercial	0.19	0.3
Weinstein and Clower (2002) (*64*)	LRT DART	Residential	0.25	0.4
Al-Mosaind et al. (1995) (*51*)	LRT MAX, Eastside	Single-Family	0.25	0.4
Dueker and Bianco (1999) (*53*)	LRT MAX, Eastside	Single-Family	0.25	0.4
Weinberger (2001) (*64*)	LRT Santa Clara	Commercial	0.25	0.4
Garrett (2004) (*50*)	LRT St. Louis	Single-Family	0.44	0.7
Munoz-Raskin (2006) (*68*)	BRT Bogota	Residential	0.5	0.8
Armstrong and Rodriguez (2006) (*56*)	CRT Eastern Mass	Single-Family	0.5	0.8
Cervero and Duncan (2002) (*55*)	CRT San Diego	Single-Family	0.5	0.8
Hess and Almeida (2007) (*46*)	LRT Buffalo, NY	Single-Family	0.5	0.8
Ko, Goetz, Hagar (2009) (*47*)	LRT Minneapolis	Single-Family	0.5	0.8
Cervero and Duncan (2002) (*58*)	LRT Santa Clara	Apartment	0.5	0.8
Knaap et al. (1994) (*69*)	LRT MAX, Westside	Single-Family	0.5	0.8
Fejarang et al. (1994) (*62*)	MRT LA	Commercial	0.5	0.8
Cervero and Duncan (2002) (*58*)	Trolley, San Diego	Commercial	0.5	0.8
Chen et al. (1998) (*52*)	LRT MAX, Eastside	Single-Family	0.62	1
Rodriguez & Targa (2004) (*57*)	BRT Bogota	Apartment	0.93	1.5
Lewis - Workman and Brod (1997) (*48*)	LRT MAX, Eastside	Single-Family	1	1.61
Benjamin and Sirmans (1996) (*59*)	MRT D.C.	Apartment Rents	6	9.65

TRANSIT-TIRZ BASED VALUE-CAPTURE PRACTICE IN TEXAS

Research into the state of practice of value capture techniques in the State of Texas was compiled from the *Biennial Report of Reinvestment Zone for Tax Increment Financing Zone Registry* issued by the Texas Comptroller's Office (*70*). The purpose of this research was specifically to understand what expenditures these financial incentives have typically permitted since the use of tax increment financing through TIRZs is the primary value capture technique applied in Texas.

TIRZ in Texas and Their Effectiveness

The total number of TIRZs currently or formerly in operation is 182 with four complete and one terminated. The zones range in size from a few acres to 13,800 acres (Temple #1), but

52 TIRZs do not report acreage in the report or through online sources. The Comptroller's list of the TIRZs provides details on municipality and TIRZ number, year designated, acreage, base value, latest assessed value, and percentage increase. Table 7.8 summarizes the basic information about TIRZs.

Urban counties (Bexar, Dallas, Harris, Tarrant, Travis) represent the vast majority of established TIRZs at more than 60 percent followed by rural counties at 22 percent and suburban counties, 16 percent. A second breakdown separates municipality type from county type, major urban cities (Austin, Dallas, Ft. Worth, Houston, San Antonio, Corpus Christi, and El Paso) represent 46 percent of total TIRZs; suburban cities with 30 percent, rural county municipalities with greater than 50,000 people at 12 percent; and rural county municipalities with fewer than 50,000 people at 10 percent. Both breakdowns of county type and municipality type indicate the establishment of TIRZs is an innovative financing mechanism more commonly applied in urbanized regions.

Table 7.8. Analysis of TIRZ in Texas.

Variable	*Number*	
Total TIRZs	182	
Complete	4	
Terminated	1	
County Type		
Urban Counties	110	60%
Suburban Counties	29	16%
Rural Counties	40	22%
Rural Urbanized area	21	12%
Municipality Type		
Urban Cities	84	46%
Suburban Cities	55	30%
Rural (Less than 50,000)	19	10%
Rural (Greater than 50,000)	21	12%

TIRZs have been established in the State of Texas since 1982, but few were established until a dramatic spike in 1996 as represented in Figure 7.2. In the time period between 1995 and 1999 the highest number of TIRZs was created at 63 or 35 percent of all zones. The two subsequent time periods, 2000 to 2004 and 2005 to 2008, each experienced high numbers of zones being created at 26 percent each. All three time periods, 1995 to 2008, represent

87 percent of zones created supporting the claim that tax increment financing is a mechanism that is a recent phenomenon in Texas (TIFs were first authorized for use in the State of California in the 1950s). Urban created TIRZs mirror the overall trend, peak in second half of the 1990s and maintained high rates in the 2000s, whereas TIRZs created in the suburbs peaked between 1995 and 199, and rural created zones peaked after the year 2000.

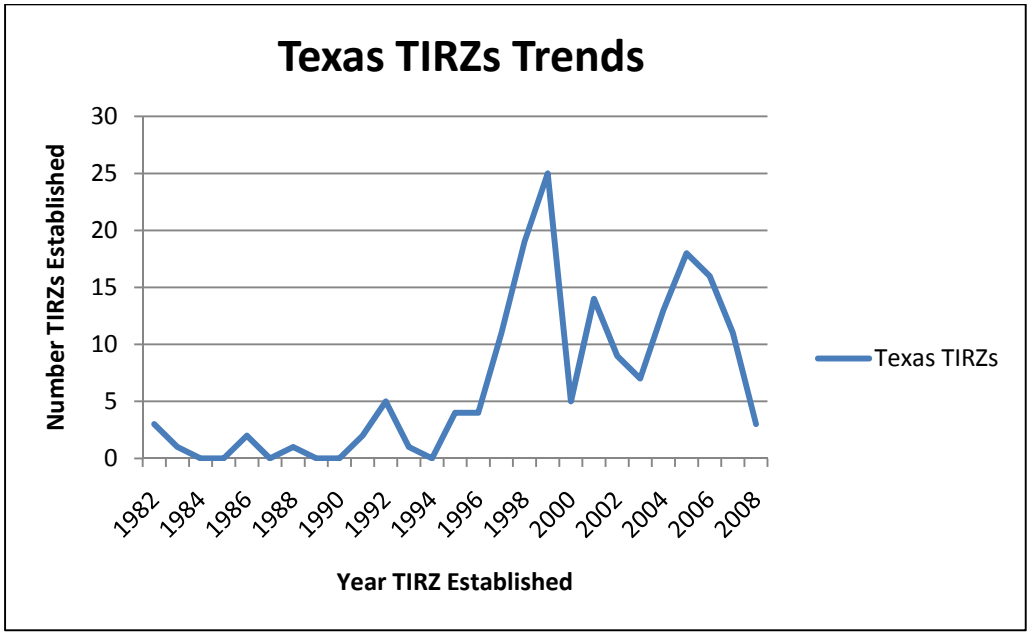


Figure 7.2. TIRZ Growth Trends.

Table 7.9 depicts the percentages of TIRZs created for each time period. Two percent of the total 182 TIRZs were established in 1980–1984 and another two percent from 1985–1989. All of the TIRZs established during either time periods or 100 percent were created in rural counties such as small communities whereas in the following time period urban counties joined the trend in establishing TIRZs and out of the total created from 1990–1994, 88 percent were established in urban counties and 13 percent in rural ones.

Table 7.9. TIRZ Establishment by Time Period.

Year Established	Total	Urban	Suburban	Rural
1980–1984	2%	0%	0%	100%
1985–1989	2%	0%	0%	100%
1990–1994	4%	88%	0%	13%
1995–1999	35%	48%	44%	8%
2000–2004	26%	48%	23%	29%
2005–2008	26%	50%	19%	31%
Other	4%	38%	13%	25%

After conducting a basic analysis of TIRZs in the State of Texas, the question of effectiveness is raised: have land values increased to a level to justify the creation of TIRZs? Values are missing for 49 zones or 27 percent. The second highest number of cases reports land values did not increase greater than the 100 percent threshold but the majority of these cases reflect both new zones and zones where the use of tax increment financing has not been highly effective. Further analysis must be conducted to weight land value increase in combination with number of years of operation. Several factors contribute to less than ideal land value increases including regional economic environment, national economic environment, land use in the zone, amount of available or undeveloped land, and other micro-level characteristics. Zones with a land value percentage increase of greater than 1,000 percent represent 16 percent of cases or second highest after zones performing at less than 100 percent increase in land value. Further analysis could explore if high rates are related to low acreage or occur for large zones as well. Table 7.10 represents the numerical categorization of TIRZs per land value increase, and Table 7.11 represents the percentage increase in values by urban/suburban/rural type.

Table 7.10. Numerical Increase in TIRZ Land Values.

Percentage Increased	*Total*	*Urban*	*Suburban*	*Rural*
Greater than 1000%	29	20	7	2
750%–999%	8	4	1	3
500%–749%	13	5	4	4
250%–499%	12	9	1	2
100%–249%	18	13	2	3
Less than 100%	32	13	11	8
Reporting 0%	19	7	6	6
Reporting Negative	2	2	0	0
Missing Values	49	10	21	16

Table 7.11. Percentage Increase in TIRZ Land Values.

Percentage Increased	*Total*	*Urban*	*Suburban*	*Rural*
Greater than 1000%	16%	69%	24%	7%
750%–999%	4%	50%	13%	38%
500%–749%	7%	38%	31%	31%
250%–499%	7%	75%	8%	17%
100%–249%	10%	72%	11%	17%
Less than 100%	18%	41%	34%	25%
Reporting 0%	10%	37%	32%	32%
Reporting Negative	1%	100%	0%	0%
Missing Values	27%	20%	43%	33%

TIRZ and Transportation Expenditures

As Table 7.12 shows, TIF and TIRZs have typically been adopted as a financial strategy to support transit oriented development primarily and not to support transportation infrastructure directly. The research team analyzed transportation expenditure distributions of several TIRZs in Texas as part of this project. Table 7.12 lists transportation expenditures for the TIRZs in the State of Texas as well as the associated total amount and percentage of the total transportation expenditure. More than 42 percent of transportation funds are expended on the construction of streets, and the second highest category for expenditure is for infrastructure to support development. This broad category was eluded to or listed in many municipal documents and is listed with transportation since many TIRZs expend funds for transportation or transportation-related projects. Public infrastructure is the broad category for which funds are spent, but other items include community facilities, parks, affordable housing programs, business facade improvements, environmental remediation, and others.

Table 7.12. Texas TIRZ Transportation Expenditures.

Transportation Expenditure Category	Aggregated Amount ($)	Percentage of Total Transportation Expenditure
Bridge	2,585,909	0.21%
DART: McKinney Avenue Trolley	3,500,000	0.28%
Infrastructure to support development	289,813,961	23.45%
Parking lots and structures	86,650,154	7.01%
Public transportation projects	41,080,000	3.32%
Railroad	21,100,000	1.71%
Sidewalks, crosswalks, lighting	134,255,376	10.86%
Streets	521,816,686	42.23%
Streetscapes	132,455,163	10.72%
Traffic Signals	2,540,000	0.21%

The category “Infrastructure to support development” includes the following:

- Street and Utility Improvements: This category includes TIF eligible expenditures for street paving and related items, infrastructure upgrades/relocation (including water, wastewater, storm sewer, gas lines, and Internet connectivity), and burial of overhead utilities.
- Streetscape Improvements: The category includes lighting, pedestrian lighting, sidewalk and infrastructure improvements; expanding and enhancing pedestrian and vehicle continuity in the corridor; and other streetscape improvements related to specific projects.
- Land Acquisition: The city may consider acquiring property, using eminent domain as necessary and to the extent permitted by law, to implement the TIF Plan. Potential land acquisitions may include, but are not limited to, properties needed for pedestrian safety and accessibility.
- Transit Improvements: This category includes enhanced bus service, light rail, and modern streetcar or trolley systems.

According to Chapter 311 of the Tax Code, a TIRZ may be allowed legally to expend on these specific categories:

> (1) *Project costs* meaning the expenditures made or estimated to be made and monetary obligations incurred or estimated to be incurred by the municipality or county establishing a reinvestment zone that are listed in the project plan as costs of public works or public improvements in the zone, plus other costs incidental to those expenditures and obligations. "Project costs" include:

(A) *capital costs*, including the actual costs of the acquisition and construction of public works, public improvements, new buildings, structures, and fixtures; the actual costs of the acquisition, demolition, alteration, remodeling, repair, or reconstruction of existing buildings, structures, and fixtures; and the actual costs of the acquisition of land and equipment and the clearing and grading of land;

(B) *financing costs*, including all interest paid to holders of evidences of indebtedness or other obligations issued to pay for project costs and any premium paid over the principal
amount of the obligations because of the redemption of the obligations before maturity;

(C) *real property assembly costs*;

(D) *professional service costs*, including those incurred for architectural, planning, engineering, and legal advice and services;

(E) *imputed administrative costs*, including reasonable charges for the time spent by employees of the municipality or county in connection with the implementation of a
project plan;

(F) *relocation costs*;

(G) *organizational costs*, including the costs of conducting environmental impact studies or other studies, the cost of publicizing the creation of the zone, and the cost of implementing the project plan for the zone;

(H) *interest* before and during construction and for one year after completion of construction, whether or not capitalized;

(I) *the cost of operating the reinvestment zone* and project facilities;

(J) *the amount of any contributions made by the municipality or county from general revenue for the implementation of the project plan*; and

(K) *payments made at the discretion of the governing body* of the municipality or county that the governing body finds necessary or convenient to the creation of the zone or to
the implementation of the project plans for the zone.

Clearly, capital costs for transit infrastructure are not specific line items in TIRZ or TIF finance for transit as seen from past expenditures. This suggests that value capture legislations for transit must specifically aim to address both development around stations and to support

infrastructure costs of all types of transit investments both for those that are on-system and off-system.

Increment Finance outside Texas

Tax increment financing has been widely applied in other states to support transit or infrastructure in transit-service areas:

- California – TIF for housing in transit station areas.
- Georgia – TIF used for transit infrastructure (stations) and TOD infrastructure.
- Illinois – TIF used for transit infrastructure (stations).
- Maryland – TIF used for TOD infrastructure supporting transit (stations, parking garages, streets, sidewalks).
- Massachusetts – TIF used for housing and TOD infra in transit station areas.
- Minnesota – TIF under development for transit.
- Oregon – TIF for rail infrastructure (streetcar).
- Pennsylvania – Transit Revitalization Investment District (TRID) (TIF mechanism) for TOD and transit infrastructure (TRID is new and currently been used for conducting studies but presents the best legislation to replicate).

The state legislation best suited for replication in Texas is the Transit Revitalization Investment District Act 238 of 2004. The Pennsylvania General Assembly authorized the creation of TRIDs for the purpose of spurring transit-oriented development, community revitalization, and enhanced community character around public transit facilities. Additionally, the law also allows for the establishment of value capture areas as a means to reserve and use future, designated incremental tax revenues for:

- Public transportation capital improvements.
- Related site development improvements and maintenance.
- Promoting the involvement of and partnerships with the private sector in TRID development and implementation.
- Encouraging public involvement during TRID planning and implementation.
- Providing for duties of the Department of Community and Economic Development.

The Pennsylvania law allows municipalities or counties to partner with public transportation agencies including the National Railroad Passenger Corporation whereas the TIRZ

in Texas does not specifically state public transportation agencies. The TIRZ legislation does allow the board of directors for a TIRZ to establish partnerships according to their needs that can include public transit agencies. Thus, the Pennsylvania law is more limiting, but it also sends a clear signal to transit agencies that their area of active involvement has been increased. Transit agencies and local governments are allowed to share in the tax revenues (*71*). Texas TIRZ law does not specifically state that municipalities must partner with transit agencies but the potential for partnership is implied, whereas in the Pennsylvania TRID is explicit.

A TRID may be established by a local government for a geographic area or neighborhood located within 1/8 mile or up to 1/2 mile from a commuter rail, light rail, busway, or similar transit stop or station, including planned new station or stop. This radius from stations or stops is very explicit and restricts the extent of the TRID more than the TIRZ in Texas. Exceptions to this rule in Pennsylvania: an existing neighborhood improvement district, existing tax increment district, or existing urban renewal district may be used as the alternate basis for the boundaries of the TRID.

Transit authorities are given land development powers to acquire and improve property. The State of Pennsylvania like other transit-oriented development states may sell state-owned property or property purchased by the state with federal or state funds to transit agencies. The Pennsylvania TRID Act specifically authorizes state public transportation agencies to work cooperatively with counties, local governments, transportation authorities, the private sector, and Amtrak to create and designate Transit Revitalization Investment Districts. The partnership creates a management entity to work with the private sector developer and create development agreements. The specific planning steps are laid out in Table 7.13.

Pennsylvania also has a separate tax increment financing law for municipalities and counties. The TRID states in clear language that funds can be spent on capital projects for inter-city and intra-city public transportation, whereas in Texas the municipality and TIRZ Board of Directors may or may not spend funds on public transportation, inter-city, or intra-city.

Table 7. 13 TRID Planning Phase Steps *6*

1. Municipality and Transit Agency agree to work cooperatively to create TRID
2. Municipality undertakes TRID Planning Study to determine location, boundaries and rationale
3. Municipality and Transit Agency conduct community public meeting(s) on planning study
4. Planning Study is revised and completed
5. Municipality and Transit Agency accept Planning Study's findings and recommendations
6. Municipality forms Management Entity (e.g., an Authority) to administer TRID implementation
7. Municipality and Transit Agency prepare project lists of Public Sector Infrastructure Improvements, including costs, phasing and maintenance
8. Municipality and Transit Agency coordinate with School District and County on Value Capture shares, schedule and TRID Financial Plan
9. Municipality and Transit Agency hold public meeting on TRID Implementation Program improvements
10. Municipality and Transit Agency execute Agreement on roles, responsibilities, financial commitments, management entity and defined improvements
11. TRID Management Entity solicits Developer interest
12. Development proposal accepted by TRID Management Entity and municipality
13. TRID Management Entity executes
14. Development Agreement with successful Developer, including Public Sector Improvements and Private Sector
15. Financial or Project Commitments
16. Project construction and completion
17. TRID Management Entity administers Value Capture revenues and expenditures in accordance with approved Implementation Program
18. Amendments to Agreement or TRID Plan, as required

TRZ VALUE CAPTURE PLANNING AND IMPLEMENTATION GUIDANCE FOR INTRACITY AND INTERCITY TRANSIT IN TEXAS

As reported earlier only two examples of on-system transit are currently found in Texas (i.e., BRT lines in El Paso and San Antonio). In the future, more BRT systems and/or new forms of transit operations may emerge and interact with TxDOT on-systems. Table 7.14 presents main forms of transit and the likely forms of interfaces with TxDOT on-system highways.

Table 7.14. Transit Technologies and Potential Interface with TxDOT On-System Highways.

System Technology & Description	Service Geography	Average Speed (km/hr)	Station Spacing (km)	Typical Headway (min.)	Guideway	Typical Power Source	Interface with TxDOT On-System Hwy
Regular Bus: A road vehicle designed to carry multiple passengers. Buses vary in capacity from a dozen to several hundred passengers.	Urban	15–30	0.2–1.0	8–20	On street	Gasoline	User
Trolley Bus A passenger bus operating on tires and having an electric motor that draws power from overhead wires.	Urban	15–30	0.2–1.0	8–15	On street	Electric	User
Bus Rapid Transit A relatively new umbrella term for urban mass transportation services utilizing buses to perform premium services on existing roadways or dedicated rights-of-way.	Urban, Regional	25–50	0.4–1.5	10–20	Shared or exclusive ROW	Gasoline	ROW User/Partner
Streetcar: Bus on rails typically operating on city streets.	Urban	15–25	0.4	8–15	On street	Electric	ROW User/Partner
Light Rail Electrically propelled rail vehicles operate singly or in trains with an overhead power supply. Utilize predominantly reserved but not necessarily grade-separated rights-of-way.	Urban, Regional	30–60	1–1.5	5–30	Exclusive or shared ROW	Electric	ROW User/Partner
Heavy Rail An electric railway with the multi-car train capacity to handle a heavy volume of traffic. Heavy rail runs on its own dedicated track (often underground) and obtains power from the third rail track. Subways are considered heavy rail.	Urban, Regional	80–130	1–3	3–10	Grade-separated, Exclusive ROW	Electric	Station Access
Commuter Rail Refers to passenger trains operated on main line railroad track to carry riders to and from work in city centers. The trains are normally made up of a locomotive and a number of passenger coaches.	Regional	50–120	3–10	15–30	Exclusive ROW	Diesel or Hybrid	Station/ Intersection Access

TRZ FOR TRANSIT CAPITAL COSTS

Federal funding has historically financed capital transit projects, and TIRZs provide limited to no funds for transit system costs beyond supporting transit-oriented development. Local jurisdictions typically have other goals in mind for TIRZ revenues. Financing transit improvements in TIRZ competes with other public goals and desired projects such as affordable housing, environmental remediation, drainage, historic rehabilitation, and more. Current TRZ statute language does not imply expenditure of funds or revenue for public transportation except through final surplus provisions for municipal or county TRZs. This suggests that municipalities and counties may judiciously use their surplus revenues to pursue transit options for their regions. However, this does not provide an explicit mechanism for financing mass transit options directly, especially for on- or off-system options for which capital costs may be high such as light-rail transit (LRT) and commuter rail (inter- and intra-city options) and federal grants may be inadequate to fully meet capital costs. Proposed legislation SB898 attempted to tackle this issue by amending TRZs to also be used for the acquisition, construction, improvement, and operation of a freight rail, passenger rail, commuter rail, intercity rail, or high-speed rail facilities or systems. Chapter 311 of the Tax code expressly allows funding for transit. The amended code from SB898 allows municipalities to work with TxDOT but only concerning rail infrastructure, which does not encompass all available transit modes such as paratransit, bus, or bus-rapid transit. This bill did not pass in the last legislative session.

SB 898, like the Pennsylvania TRID, should have also made the distinction of fund expenditure for inter-city and intra-city transit clear and succinct. SB898 could have also provided clear language to support the interest of transit agencies toward alternative funding sources. The Federal Transit Administration (FTA) rarely funds projects at the 80 percent level and sometimes funds transit only at the 60 percent level. FTA expenditures are more likely to favor transit agencies that can show dedicated local sources of funding such as a TIRZ and/or a TRID. The future passage of a bill such as SB898 and/or TRID may be viewed by federal authorities as supportive state policy for transit. Legislation like SB 898 and TRID for Texas may serve as a clear funding signal and give encouragement to the federal agency to favor Texas capital transit expansion over other competing states.

The completion is fiercer in the case of recent discretionary grant programs by the United States Department of Transportation (USDOT). The expenditures due to America Recovery and

Reinvestment Act gave FTA flexible funds and the agency did not follow traditional New Starts or Small Starts funding priorities for every dollar. The result was that streetcar and bus-rapid transit projects that did not exhibit a high enough rating through traditional means were awarded grants in the $25 million to $50 million range. The Dallas Streetcar project that won the discretionary stimulus grant in 2010 from USDOT with a local match is simply a case in the point (*72*). Future programs, such as the Livability initiative, which aim to create a coalition between the USDOT, Environmental Protection Agency, and Department of Housing and Urban Development, or the climate change bill may also provide discretionary funds for moving capital transit projects and transit-oriented development in the State of Texas forward.

SUMMARY

In summary, SB1266 makes provisions for on-system transit systems through surplus provisions only after the original highway project is completely paid off. Hence, the SB 1266 TRZ mechanism for financing transit is applicable only to on-system transit, is indirect and meaningful only in regions where TRZ's for highways can be set up and finally, even the surplus use is subject to local government approval. Clearly, there is a need to look beyond SB1266 to legislations that can support similar concepts for transit finance. In that regard, both TIRZ and TIF have been practiced in Texas for financing transit. However, neither TIRZ nor TIFs in Texas have allowed capital costs of transit infrastructure as specific line items in the budget, since they are specifically used for the purpose of supporting development around stations. TIRZs in Texas also do not explicitly define partnerships with transit agencies. In this connection, the Pennsylvania TRID Act may serve as effective model for Texas to consider.

SB898 for rail infrastructure was presented in the 81st Legislative Session and attempted to address capital costs for rail infrastructure (excluding options like Bus Rapid Transit, Bus Transit). It is suggested that this bill explicitly consider the distinctions between intra-city and inter-city transit clearly if it has to be presented again with roles for transit agencies clearly delineated. Reconsidering SB 898 would require reverting to TIRZ mechanisms to spur development in the region. A possibly better and more useful alternative would be to consider a Texas version of the TRID model in Pennsylvania, which allows funding for both development and capital costs and explicit partnerships and may be applicable to all forms of transit. Regions in areas where TRZ will be developed in future may continue to benefit indirectly.

These legislation changes, aimed at direct application of financial resources for transit are needed to address limitations in the current transit value-capture legislation in Texas and to stimulate transit investments (both on-system and off-system). This step is of importance in this current climate characterized by declining federal funds, new national initiatives, stiff competition for federal dollars, and enhanced need to demonstrate local matching funds. In addition, such legislation might provide the clear economic signal needed to make Texas transit investments more attractive in federal reviews under the assumption of a core latent demand.

CHAPTER 8: TRZ IMPLEMENTATION WORKSHOP

As part of the goal of goal to enhance awareness of SB1266, a TRZ implementation Workshop was designed for a variety of stakeholders.

TRZ WORKSHOP: STAKEHOLDERS

The workshop was designed as a 2 1/2 hour presentation to be conducted using video-conferencing or web-conferencing capabilities in order to meet travel constraints of participants. The workshop was conducted on June 25, 2010, and included 35 participants. Table 8.1 lists the participants. This list includes stakeholders from cities, counties, TxDOT, RMAs, project panel, research team, and invited speakers.

Table 8.1. TRZ Workshop-Project Team and Stakeholder Webinar Attendees.

Name	Agency	Attended?
Terry Brechtel/ 3 representatives (Milo Nitschke; Lisa Adelman)	Alamo RMA	Yes
Pete Sepulveda, Jr.	Cameron County RMA	Yes
Raymond Telles	Camino Real RMA	Yes
Mario Espinoza	Central Texas RMA	Yes
Dennis Burleson	Hidalgo County RMA	Yes
David Magness	Rockwall County	Yes
Jerome J. Dittman, P.E.	City of Mesquite	Yes
Alan Schubert	City of El Paso	Yes
Terry Quezada	City of El Paso	Yes
Brian Books, City Manager	Forney, TX	Yes
Larissa Philpot	City of Nacogdoches	Yes (in lieu of Jim Jeffers)
Total: 14		
Other Attendees/Consulting Companies/Unknown		
Scott Young	Pate Engineers	Yes
Jimmy Berry; Van Short; Brad Peel	HNTB Consultants /4 Attendees or maybe more	Yes, working on Cameron County's TRZ.
Allan Butcher	Raba Kistner Consultants Inc.(RKCI-San Antonio)	Yes
Paula Gruber	Prime Strategies	Yes
Total: 6 or more		
Total including Research Team and TxDOT: 35		

WORKSHOP CONTENT

The workshop included a detailed discussion of the following aspects:

- Introduction to SB1266 and Pass-Through provisions.
- Types of TRZs (municipal and county).
- Understanding of TRZs and comparison with TIF and TIRZ.
- Case examples of implementation in regions with and without an RMA.
- TRZ implementation lessons (partnership models, TRZ project finance, and TRZ economic viability).
- Demonstration of tools and how they can be used in various stages of the TRZ implementation process.

WORKSHOP EVALUATION

After the workshop all the non-TxDOT and research team attendees were requested to submit their views on the workshop using a web-survey instrument and to indicate whether the workshop met their objectives. Only four returned responses and indicated that the workshop met their expectations.

CHAPTER 9: CONCLUSIONS

This research examines the SB1266 Act and presents extensive data from three implementation examples in the State of Texas. One of the key finding from the implementation examples was a lack of standardized procedures and/or guidance for TRZ development. In order to address these limitations, the research team explored data quality and standards across the state, and developed procedures and tools for TRZ stakeholder who might be interested in TRZ development. Three cost effective tools were developed to assist in various stages of TRZ development and to provide guidance on pursuing a TRZ—an initial simple screening tool for determining TRZ worthiness, a preliminary revenue assessment tool, and a GIS Toolkit to aid in TRZ zone development by either the CAD or other stakeholders in the process. These tools are compliant with TxDOT standards. The revenue toolkit as currently developed allows only for preliminary revenue assessments, but is also suitable for more advanced studies only when combined with additional local inputs and regional study. One important finding from data gathering efforts was that approximately 46% of regions in Texas may be data ready for TRZ development. Various other support factors in the region and general regional visions are more important in getting planning tools like TRZ's underway since they do require a significant amount of interagency coordination, political will and support for facilitating various aspects of TRZ planning.

A second critical finding of this research was a general lack of awareness of TRZ and provisions of SB1266. In order to meet these objectives, the research team undertook an extensive outreach effort across various organizations in Texas though web-based surveys followed by actual telephone calls. The interested individuals were invited to attend a TRZ Implementation Workshop, which included a variety of stakeholders ranging from city officials, to county stakeholders, TXDOT, RMAs, and consultants who had had TRZ implementation projects underway. A total of 35 participants partook in the workshop held in June 2010.

A third finding of this research includes an identification of various areas where existing legislation may be modified. Several recommendations are suggested to amend SB1266 so as to make it less onerous and confusing for implementing agencies. These specific recommendations were driven by implementer experiences and driven from discussions presented in Chapter 2 and include specific topics that need to be addressed in SB1266 including but not limited to:

- TRZ boundary changes and contiguity requirements.

- 100 percent set aside in increment accounts.
- Need to consider other prior increment agreements and other incentive agreements.
- Specific role for TxDOT.
- Amending the RUD provision for county TRZs.

One provision that must be investigated more thoroughly is the decoupling with pass-through. This provision generated a lot of discussion among respondents. While it may seem onerous, as long as TxDOT does not change requirements frequently causing confusion, dropping the PT requirement may have additional cost consequences for TxDOT.

In regard to transit projects, SB1266 is noted to have very limited indirect application to transit since it is primarily intended to benefit transit (but not explicitly) only through surplus provisions once the primary highway project is paid off. It is only of value to regions that already have a TRZ in place or propose to have a TRZ. It is also only applicable to on-system transit like the BRT systems in San Antonio and El Paso. SB 1266 leaves out a large category of transit systems and regions that cannot benefit. These include several off-system transit systems and new types of transit technologies that could be applicable in future.

On the other hand, Texas and other states have employed value capture finance in the past and even currently through TIRZ and TIF. The vast majority of TIRZ operators use the increment revenue sources for local capital improvements, not transit system development. Successful stories from other states, documented positive evidence of transit impacts on property values, and growing interest in transit in Texas call for further innovative legislation for transit and highway financing, include TRZ for transit either on- or off-TxDOT systems as well as perhaps TRID for transit, which allows both development and capital costs to be financed from increments.

The current environment is one fraught with fiscal uncertainty and proactive legislation to provide for local matching funds may serve to provide positive signals for enhancing transit investments and in federal screening and reviews such as those conducted for discretionary grants. In this connection, the SB898 with appropriate modifications or better still, the Pennsylvania (TRID Act) may serve as the needed framework for transit finance.

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APPENDIX A: STAKEHOLDER OUTREACH

Interview Guide for Implementing Agency Stakeholders

Project 0-6535 Transportation Re-Investment Zones Interview Guide

Introduction

The Texas Transportation Institute, along with Texas A&M University-Corpus Christi and the University of Texas-Austin are conducting a research project entitled, "Planning Tools to Asses the Real Estate Leveraging Potential for Roadways and Transit. Part of that research involves speaking to people such as yourself to assess your direct experience with Transportation Reinvestment Zones (TRZ) in Forney, Hidalgo, and El Paso Regions of Texas.

For note-taking purposes only, this interview will be audio-recorded. To begin with can you please tell me your name, agency and official title?

- Please indicate which TRZs you were involved with specifically and your specific role in the TRZ development.
- **Need**: Please explain the need and motivation for deciding to go with a TRZ for these projects and share any relevant background information that is pertinent for the project finance of these specific projects. If there are more than one projects please discuss them individually (Project A, B, C)
- **Boundaries**: What criteria did you use for deciding project boundaries for TRZ?
- **Entities/TRZ Champions**: Who were the key parties that were involved in the realization of TRZ for your region?
- **Stakeholder Support**: What were the specific processes you used to get all the parties on board before the TRZ was established?
- **Allocation/Revenue Sharing**: What percentage of City or County revenues were set aside for TRZ and were these deposits established in a fund (100% or only a portion x%)?
- **Surplus Delineation**: Was there a set of rules/guidelines that were decided upon for dealing with revenue surpluses from TRZ?
- **Key Entities/Organizations**: Who were entities/parties that were involved in this surplus delineation and revenue sharing allocation?
- **Processes**: What were the specific processes and protocols that were used to ensure the TRZ was in place (include those mandated by the TRZ legislation as well).
- **TRZ Establishment and Negotiations.**
  - Were there any issues in developing and getting gaining acceptance/approval to establish the TRZ to acceptance?
  - Did the negotiations among all parties involved in the establishment of the TRZ

proceed on schedule or were there any stumbling blocks that caused delays?

- **Revenue Generation Analysis: Who, if at all, handled the revenue generation aspects of TRZs?**
- **Bill Issues:**
  - Now that the TRZ is underway, can you identify any issues or areas of improvement in the Bill as it currently stands?
  - Was the guidance contained in the Bill, the Texas Administrative Code, and the Texas Transportation Code sufficiently clear to establish roles and responsibilities for each party in the TRZ? If not, where did you seek/find additional guidance and how easy was it to find it? What were the issues that required the most clarification?
- **Financing and Fiscal Responsibility:**
  - Who is assumed to have fiscal responsibility in the event of a projected shortfall in revenue?
  - What kind of debt instrument is your locality planning to acquire through the expected TRZ cash flows (a SIB loan, revenue bonds, others)?
  - Can you describe the foreseen flow of funds in your TRZ from the moment property taxes are collected, through their ultimate use to repay debt?
  - Who is assumed to have fiscal responsibility in the event of a projected shortfall in revenue? Did this assumption play any role in your decision to pursue a TRZ as a financing mechanism? Does your locality have any risk management mechanisms in place to deal with a potential shortfall in revenue? In the hypothetical case that a "TRZ revenue insurance" policy was available for purchase, would it make TRZ financing more or less attractive?
- Please provide contact information of other key parties we should speak to for the TRZs that we have discussed.

List of Implementing Agency Interviewees

TRZ Stakeholder	Name	Position/Department	email
City of El Paso TRZ No.1			
City of El Paso	• Jane Shang • Alan Shubert • Terry Quezada	• Deputy City Manager for Mobility • City Engineer, Engineering Services • Capital Improvement Program, Engineering Services	ShangJ1@elpasotexas.gov
El Paso MPO	• Rep. Joe Pickett	• Chair, Texas State House Transportation Committee and former Chair, El Paso MPO Transportation Policy Board	joe.pickett@house.state.tx.us
Camino Real RMA	• Raymond Telles	• Executive Director	TellesRL@crrma.org
TxDOT El Paso District	• Chuck Berry • Eduardo Calvo	• District Engineer • Advance Transportation Planning	CBERRY@dot.state.tx.us ecalvo@dot.state.tx.us
Hidalgo County TRZ			
Hidalgo County RMA	• Dennis Burleson	• Chairman	dennis.burleson@wellsfargoadvisors.com
Locke, Lord, Bissell, & Lidell, LLP	• C. Brian Cassidy	• Partner and legal counsel for Hidalgo County RMA	info@hcmpo.org
City of Forney TRZ			
City of Forney	• Brian Brooks	• City Manager	bbrooks@cityofforney.org

Stakeholder Outreach- Texas Association of Counties and Texas Municipal League

TRANSPORTATION REINVESTMENT ZONES SURVEY
(www.TRZSurvey.org**)**

A statute passed in 2007 (Senate Bill 1266) provides Texas cities the authority to create zones for transportation infrastructure investment. Specifically addressed in the bill, Transportation Reinvestment Zones are a relatively new method of funding transportation projects by capturing a part of the property tax revenue from increased property values resulting from the creation of a new road. To date, only the City of El Paso and Hidalgo County have created transportation projects using this funding method, and the City of Forney is currently in the process of doing so. (S.B. 1266 is codified in Subchapter E, Chapter 222 of the Texas Transportation Code.)

The Texas Transportation Institute is currently conducting a research project to enhance the implementation of the provisions of S.B. 1266. Goals of this research are to enhance cities' knowledge of the law, make recommendations for changes, and recommend procedures for the effective execution of this statute. To begin this research process, the department is surveying Texas cities in an effort to gain general information about cities' knowledge of S.B. 1266 and the nature of cities' Transportation Reinvestment Zones. To participate in this survey, please go to www.TRZSurvey.org and complete the short questionnaire.

The Texas Transportation Institute, along with Texas A&M University - Corpus Christi and the University of Texas at Austin – Center for Transportation Research are conducting a research project entitled "Planning Tools to Assess the Real Estate Leveraging Potential for Roadways and Transit." Part of that research involves speaking to people such as yourself to assess your familiarity with various innovative financing methods for transportation projects, Transportation Reinvestment Zones (TRZ) in particular.

There are 27 questions in this survey

TRZ Questions

1. Please tell us about what you know about Senate Bill 1266, passed in the 80th Texas Legislature.

Please write your answer here:

2. Have you or are you considering developing a TRZ? *

Please choose only one of the following:

Yes, we have developed a TRZ

We are considering developing a TRZ

No, we are not considering developing a TRZ

3. For what purpose?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

Please write your answer here:

4. What is the geographic boundary?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

5. Are there overlapping jurisdictions such as cities and school districts?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

6. Are there other TIFs, SADs, etc within the project limits?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

7. Are you working with another jurisdiction, e.g. county and city together, adjacent county or city, etc.?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

8. Are you working with a Regional Mobility Authority on this development?

Only answer this question if the following conditions are met: ° Answer was 'We are considering developing a TRZ' or 'Yes, we have developed a TRZ' at question '2 [2]' (Have you or are you considering developing a TRZ?)

Please choose only one of the following:
Yes
No

9. Why did you decide to take that approach (working with an RMA)?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question 8 (Are you working with a Regional Mobility Authority on this development?)

10. What is the role of the RMA?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question 8 (Are you working with a Regional Mobility Authority on this development?)

11. What were the most significant challenges that you have faced in the process of developing the TRZ and how did you overcome them?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

12. What significant challenges do you still need to overcome?

Only answer this question if the following conditions are met: ° Answer was 'Yes, we have developed a TRZ' or 'We are considering developing a TRZ' at question 2 (Have you or are you considering developing a TRZ?)

13. Why did you decide not to pursue a TRZ?

Only answer this question if the following conditions are met: ° Answer was 'No, we are not considering developing a TRZ ' at question 2 (Have you or are you considering developing a TRZ?)

14. What difficulties did you encounter?

Only answer this question if the following conditions are met: ° Answer was 'No, we are not considering developing a TRZ ' at question 2 (Have you or are you considering developing a TRZ?)

15. Are there specific provisions in the bill (SB 1266) that influenced your decision?

Only answer this question if the following conditions are met: ° Answer was 'No, we are not considering developing a TRZ ' at question 2 (Have you or are you considering developing a TRZ?)

16. Have you been approached by another entity to form a TRZ?

Please choose only one of the following:
Yes
No

17. Which entity?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question '16' (Have you been approached by another entity to form a TRZ?)

18. Can you provide any details about the discussions?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question '16 [3m]' (Have you been approached by another entity to form a TRZ?)

19. Please review the information on TRZs presented below and answer the question that follows:

Senate Bill 1266 (SB1266) is landmark legislation passed in 2007 as part of the 80th Legislature to provide the legal backdrop for the creation of an institutional arrangement called the "Transportation Reinvestment Zone" (TRZ). This makes Texas one of the first states in the nation to provide the legal background for the capture of the tax increment resulting from the increase in property values related to a transportation infrastructure investment. Under the current language of the legislation, local governmental entities (cities, counties, and Regional Mobility Authorities) can create a TRZ to capture the property tax increment revenues resulting from a transportation project in order to finance pass-through transportation investments. SB1266 allows local governments to raise project funding through the issuance of bonds backed by a revenue mix consisting of property tax increment revenues and TxDOT pass-through payments. Here are examples of how it has already been used in Texas Cities and Counties:

- The City of El Paso has established a TRZ to finance three of Comprehensive Mobility Plan projects with revenues from a TRZ set up in 2008. The TRZ revenues constitute local matching funds for these projects.
- The City of Forney, TX has established a TRZ in 2009 to finance an interchange project with TRZ revenues.
- Hidalgo County has established a County TRZ to finance the Hidalgo Loop project.

Do you think your agency might be interested in forming a TRZ?

Only answer this question if the following conditions are met: ° Answer was 'No, we are not considering developing a TRZ ' at question 2 (Have you or are you considering developing a TRZ?)

Please choose only one of the following:
Yes
No

20. What would it look like? (Single project, multiple projects, on-system transit, roadway, etc...)

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question '19

21. What other information would make the process easier?

Only answer this question if the following conditions are met:° Answer was 'Yes' at question 19

22. Would you partner with another agency, such as an RMA or local toll authority?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question 19

23. Which agency would you partner with?

Only answer this question if the following conditions are met: ° Answer was 'Yes' at question 22 (Would you partner with another agency, such as an RMA or local toll authority?)

24. Please provide your name
25 Please provide your address.

26 Please provide your phone number.

27 Please provide your e-mail address.

APPENDIX B: CAD SURVEY

County Appraisal Districts 2010 TRZ Survey for TRZ GIS Tool and Standards

Survey Invitations

Invitations Sent:	0
Invitations Accepted:	0
Untracked Responses:	99
Total Responses Received:	99

Results Filtering

Question 1

Does your organization have a GIS?

Table B 1.1. GIS Status of Parcel Layers.

Yes	82	- 83%
No	17	- 17%
No Answer	0	0%

ID	Additional Information:
1249182	we are working on this now. Pritchard and Abbott is the company creating this for us.
1160437	ESRI ArcInfo
1254290	Using Microstation V8
1254559	Smith County Appraisal District maintains a fully functioning GIS, incorporating ESRI ArcGIS software. Aerial Photography.
1254745	14 new static gps monuments were added for 1/2010 / work completed by CDS MUERY SA TX There is approx 90 permanent gps monuments that are calibrated every time we fly Medina County /Also have established a network RTK station running 24/7 . Hired programmer from ERSI a few years ago . Currently sharing project cost with 911
1185549	Mapping system contracted to private company.
1264839	ARCVIE
1265415	We have had a GIS system for several years, but are having work done on it to bring it up to date. We expect that data in April 2010.
1305330	Our mapping system is in a .dgn format, rubber sheeted, we draw in on metes and bounds from survey notes.
1165978	THROUGH TRUE AUTOMATION

Question 2

What percentage of the parcel dataset has been entered into the GIS?

(90-100%)	56	- 59%
(75-90%)	16	- 17%
(50-75%)	8	- 8%
(25-50%)	3	- 3%
(0-25%)	12	- 13%

Question 3

Do you distribute the GIS yourself? (If no see below)

Yes	57	- 58%
No	42	- 42%
No Answer	0	0%

ID	If outside vendor then who?
1185784	AIMS
1185934	Pritchard and Abbott
1254515	True Automation - 2600 avenue K, Suite 200 - Plano, TX 75074
1254559	We distribute using several methods including, Web Access, Data Downloads, CD/DVD, Maps, etc.
1256586	Mimms
1262792	True Automation
1185549	CAD-MAP Inc.
1276604	True Automation
1303217	True Automation
1165978	TRUE AUTOMATION

Question 4

Do you provide public access to the GIS?

Yes	63	- 64%
No	36	- 36%
No Answer	0	0%

ID	If yes then what format? (Ex.: CD, DVD, Web Client)
1254658	shapefiles and personal geodatabase are available on the download page of our website
1254745	911 has contracts with ATT and Mr. Robert Rothe EX Dir(attorney also) decides what is available.
1262792	True Automation provides access
1185549	CD
1264839	CD
1265415	CD
1265914	cd
1304435	.zip files on web and later this year we will be hosting online maps
1305330	CD, public access computer stations in our lobby
1165978	PUBLIC ACCESS VIA PC IN CAD OFFICE

Question 5

Does your organization own the rights to distribute the GIS?

Yes	67	- 68%
No	27	- 27%
No Answer	5	- 5%

ID	If no then who does?
1197563	Yes, Nueces County excluding Corpus Christi city limits.
1212081	The District has copyrighted and licensed the GIS parcel database.
1177668	Not sure
1249624	Arc File
1254236	NA
1254290	We own the rights to our data, but we do contract with an outside firm to do line work and updates.
1254745	combined effort between 911 / mcad
1256586	Paul Bent
1305330	we are licensed thru Pritchard and Abbott, and utilize MicroStation GeoGraphics
1165978	TRUE AUTOMATION

Question 6

What format do you provide your GIS in?

Image	16	- 15%
Shapefile	62	- 57%
Geodatabase	21	- 19%
Web Service	10	- 9%

ID	Others
1206453	Files have a .dgn extension.
1212081	We use ESRI software.
1217872	KML
1248880	not sure yet haven't got to use it yet
1185934	Microstation
1249471	An appraisal data file is also provided with the GIS files
1160437	pdf
1254290	Microstation .dgn format
1254559	Data Downloads, Website Access, and Tax Map System.
1305330	.dgn, read only version

Question 7

What information exists in the GIS?

Ownership	58	- 17%
Parcel IDs(PIDN or GIDN)	79	- 23%
Zoning	18	- 5%
SPTB	17	- 5%
Land-use	23	- 7%
Vacancy Status	6	- 2%
Assessed Parcel Value	32	- 9%
Taxable Parcel Value	29	- 8%
Acreage (taxing acreage)	50	- 15%
Taxable Values	32	- 9%

ID	Any others?
1234526	Abstract, Subdivision, Voting Boxes, School Zone, Commissioner

	Precincts, City Limits
1236193	Prop ID, Legal desc., legal acres, tract or lot number, block, Abstract or Subdivision code, Taxing Entities, Owner's name, Living area of first improvement, situs number, situs street, deed volume, deed page, and deed date
1249071	The mapping system and appraisal data base are separate. We have maps that have the survey # and tract # on one computer system. The mapping information is matched to the appraisal roll by the go number which includes the survey & tract number. We use this for identifying the location of the particular account. Unfortunately is not in one data base.
1249255	ALL DATA FROM CAMA SYSTEM
1249471	Flood Zone, Topography, Cell towers, ESD boundaries
1254559	Parcels, Improvements, Structures, Streets, Abstracts, Citylimits, ETJ, ISD, Hydrology, Contour Data, Addresses, Aerial Images, and many more.
1254658	legal description, exemptions, & type, year of construction, size, & value for structures
1254745	water, elevation and contours 2' intervals (cities) telephone poles manholes, all bldg footprints / gps values provided on 4 corners of county provided contractor CDS MUERY / currently flying county this week with full plannimetrics
1264839	DEED INFO
1304435	roads, boundaries, lakes, cities, isd, flood, abstracts, parcels

Question 8

If the data above exists in other database forms then can they be linked to the GIS dataset? (By way of some unique identifier or through GIS analysis? Please state method if known.)

Yes	50	- 51%
No	28	- 28%
No Answer	21	- 21%

ID	Additional Information or thoughts on this.
1204239	True Automation - PACs software
1249471	Data text files are linked with the GIS files by the property id.
1249485	they are linked in the attribute table of the parcel boundary.
1160437	XRef #
1254072	SQL Server
1254290	All of our Real property parcel data is available in Microsoft Access, Excel, or text file formats.

1254559	GIS data layers are linked using several methods, the more common being the Unique Tax Account Number.
1254658	Account data is exported as .dbf with gis pin# for linking to gis. Structure data, also .dbf, can be linked to account data with ECAD account number.
1265415	The GIS system has parcel shapes with the Tax Prop ID number. That allows the shape to be linked to the tax account with all other info there associated.
1165978	IM NOT SURE I UNDERSTAND THE QUESTION!

Question 9*

Which CAD do you represent?

Anderson	0	0%
Andrews	1	1%
Angelina	1	1%
Aransas	1	1%
Archer	0	0%
Armstrong	1	1%
Atascosa	1	1%
Austin	1	1%
Bailey	0	0%
Bandera	0	0%
Bastrop	1	1%
Baylor	1	1%
Bee	0	0%
Bell	1	1%
Bexar	1	1%
Blanco	0	0%
Borden	0	0%
Bosque	0	0%
Bowie	1	1%

Brazoria	1	-1%
Brazos	2	-2%
Brewster	0	0%
Briscoe	1	-1%
Brooks	0	0%
Brown	1	-1%
Burleson	0	0%
Burnet	1	-1%
Caldwell	1	-1%
Calhoun	0	0%
Callahan	1	-1%
Cameron	1	-1%
Camp	0	0%
Carson	1	-1%
Cass	0	0%
Castro	2	-2%
Chambers	1	-1%
Cherokee	0	0%
Childress	0	0%
Clay	1	-1%
Cochran	1	-1%
Coke	1	-1%
Coleman	0	0%
Collin	0	0%
Collingsworth	0	0%
Colorado	0	0%
Comal	1	-1%
Comanche	1	-1%

Concho	0	0%
Cooke	0	0%
Coryell	1	-1%
Cottle	0	0%
Crane	0	0%
Crockett	0	0%
Crosby	0	0%
Culberson	0	0%
Dallam	0	0%
Dallas	1	-1%
Dawson	0	0%
Deaf Smith	0	0%
Delta	1	-1%
Denton	0	0%
Dewitt	1	-1%
Dickens	1	-1%
Dimmit	0	0%
Donley	1	-1%
Duval	0	0%
Eastland	0	0%
Ector	1	-1%
Edwards	1	-1%
Ellis	0	0%
El Paso	0	0%
Erath	0	0%
Falls	0	0%
Fannin	0	0%

Fayette	0	0%
Fisher	0	0%
Floyd	0	0%
Foard	0	0%
Fort Bend	1	-1%
Franklin	0	0%
Freestone	1	-1%
Frio	0	0%
Gaines	1	-1%
Galveston	1	-1%
Garza	0	0%
Gillespie	0	0%
Glasscock	0	0%
Goliad	1	-1%
Gonzales	0	0%
Gray	0	0%
Grayson	1	-1%
Gregg	0	0%
Grimes	0	0%
Guadalupe	0	0%
Hale	0	0%
Hall	0	0%
Hamilton	0	0%
Hansford	0	0%
Hardeman	0	0%
Hardin	0	0%
Harris	1	-1%

Harrison	1	-1%
Hartley	0	0%
Haskell	0	0%
Hays	0	0%
Hemphill	0	0%
Henderson	0	0%
Hidalgo	0	0%
Hill	0	0%
Hockley	0	0%
Hood	0	0%
Hopkins	0	0%
Houston	0	0%
Howard	1	-1%
Hudspeth	0	0%
Hunt	1	-1%
Hutchinson	1	-1%
Irion	0	0%
Jack	0	0%
Jackson	1	-1%
Jasper	0	0%
Jeff Davis	0	0%
Jefferson	1	-1%
Jim Hogg	0	0%
Jim Wells	0	0%
Johnson	1	-1%
Jones	0	0%
Karnes	1	-1%

Kaufman	0	0%
Kendall	0	0%
Kenedy	1	-1%
Kent	0	0%
Kerr	1	-1%
Kimble	1	-1%
King	0	0%
Kinney	0	0%
Kleberg	0	0%
Knox	0	0%
Lamar	1	-1%
Lamb	0	0%
Lampasas	1	-1%
LaSalle	0	0%
Lavaca	0	0%
Lee	1	-1%
Leon	0	0%
Liberty	0	0%
Limestone	1	-1%
Lipscomb	0	0%
Live Oak	1	-1%
Llano	1	-1%
Loving	1	-1%
Lubbock	1	-1%
Lynn	0	0%
McCulloch	1	-1%
McLennan	1	-1%
McMullen	0	0%

Madison	0	0%
Marion	0	0%
Martin	1	-1%
Mason	0	0%
Matagorda	0	0%
Maverick	0	0%
Medina	1	-1%
Menard	1	-1%
Midland	0	0%
Milam	0	0%
Mills	1	-1%
Mitchell	0	0%
Montague	1	-1%
Montgomery	0	0%
Moore	2	-2%
Morris	1	-1%
Motley	0	0%
Nacogdoches	0	0%
Navarro	0	0%
Newton	0	0%
Nolan	0	0%
Nueces	1	-1%
Ochiltree	0	0%
Oldham	1	-1%
Orange	1	-1%
Palo Pinto	0	0%
Panola	0	0%
Parker	0	0%

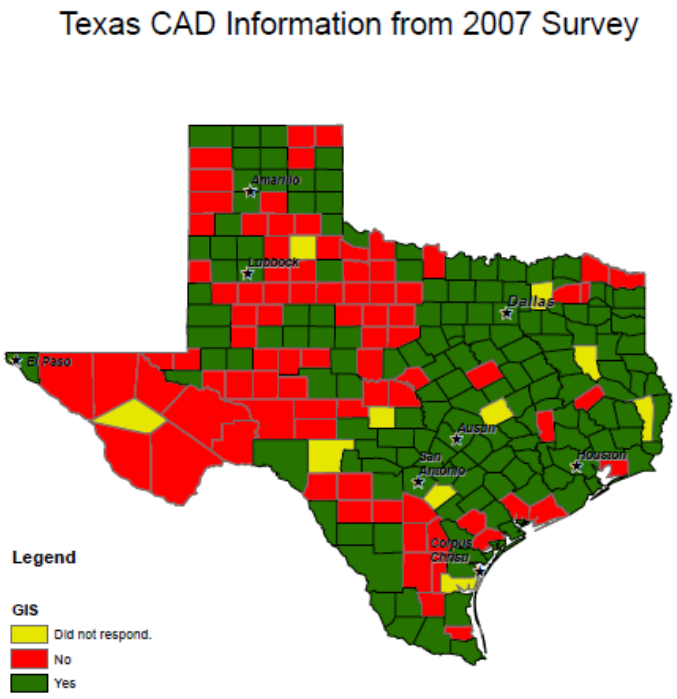
Parmer	0	0%
Pecos	0	0%
Polk	0	0%
Potter-Randall	1	-1%
Presidio	0	0%
Rains	2	-2%
Potter-Randall	1	-1%
Reagan	1	-1%
Real	1	-1%
Red River	0	0%
Reeves	0	0%
Refugio	0	0%
Roberts	0	0%
Robertson	0	0%
Rockwall	0	0%
Runnels	0	0%
Rusk	0	0%
Sabine	1	-1%
San Augustine	0	0%
San Jacinto	0	0%
San Patricio	0	0%
San Saba	0	0%
Schleicher	0	0%
Scurry	0	0%
Shackleford	1	-1%
Shelby	0	0%
Sherman	1	-1%

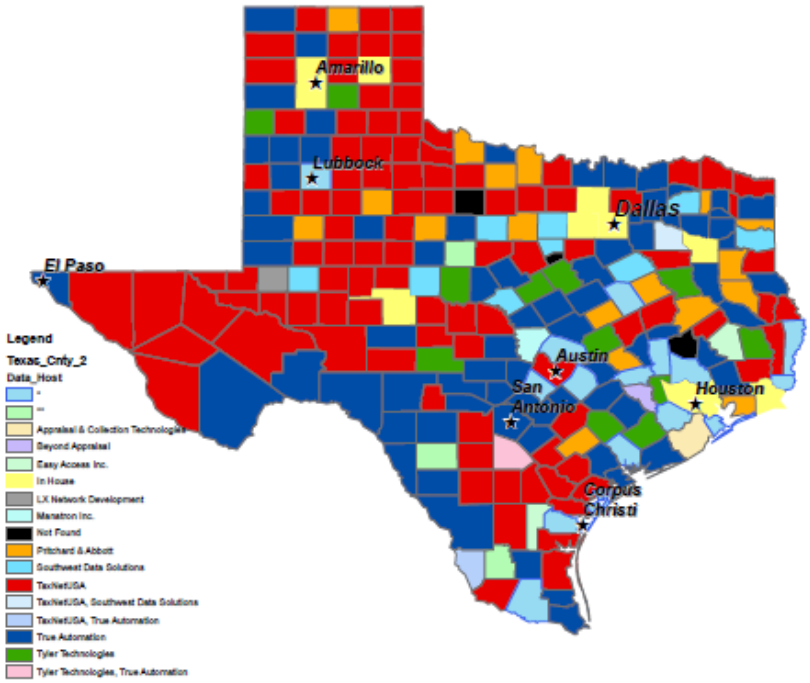
Smith	2	-2%
Somervell	0	0%
Starr	0	0%
Stephens	0	0%
Sterling	0	0%
Stonewall	0	0%
Sutton	0	0%
Swisher	0	0%
Tarrant	0	0%
Taylor	0	0%
Terrell	0	0%
Terry	0	0%
Throckmorton	0	0%
Titus	1	-1%
Tom Green	1	-1%
Travis	0	0%
Trinity	0	0%
Tyler	1	-1%
Upshur	1	-1%
Upton	0	0%
Uvalde	0	0%
Val Verde	0	0%
Van Zandt	0	0%
Victoria	1	-1%
Walker	0	0%
Waller	1	-1%
Ward	0	0%

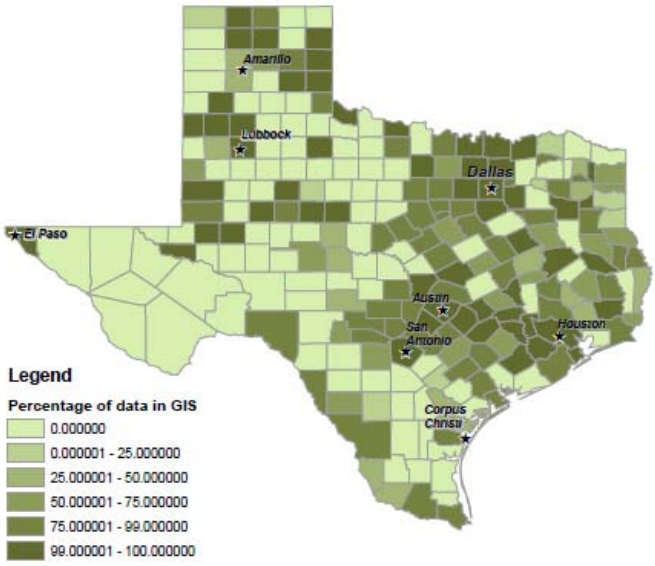
Washington	1	-1%
Webb	0	0%
Wharton	1	-1%
Wheeler	0	0%
Wichita	1	-1%
Wilbarger	1	-1%
Willacy	1	-1%
Williamson	0	0%
Wilson	0	0%
Winkler	0	0%
Wise	0	0%
Wood	0	0%
Yoakum	0	0%
Young	0	0%
Zapata	1	-1%
Zavala	0	0%

APPENDIX C: SURVEY RESULTS

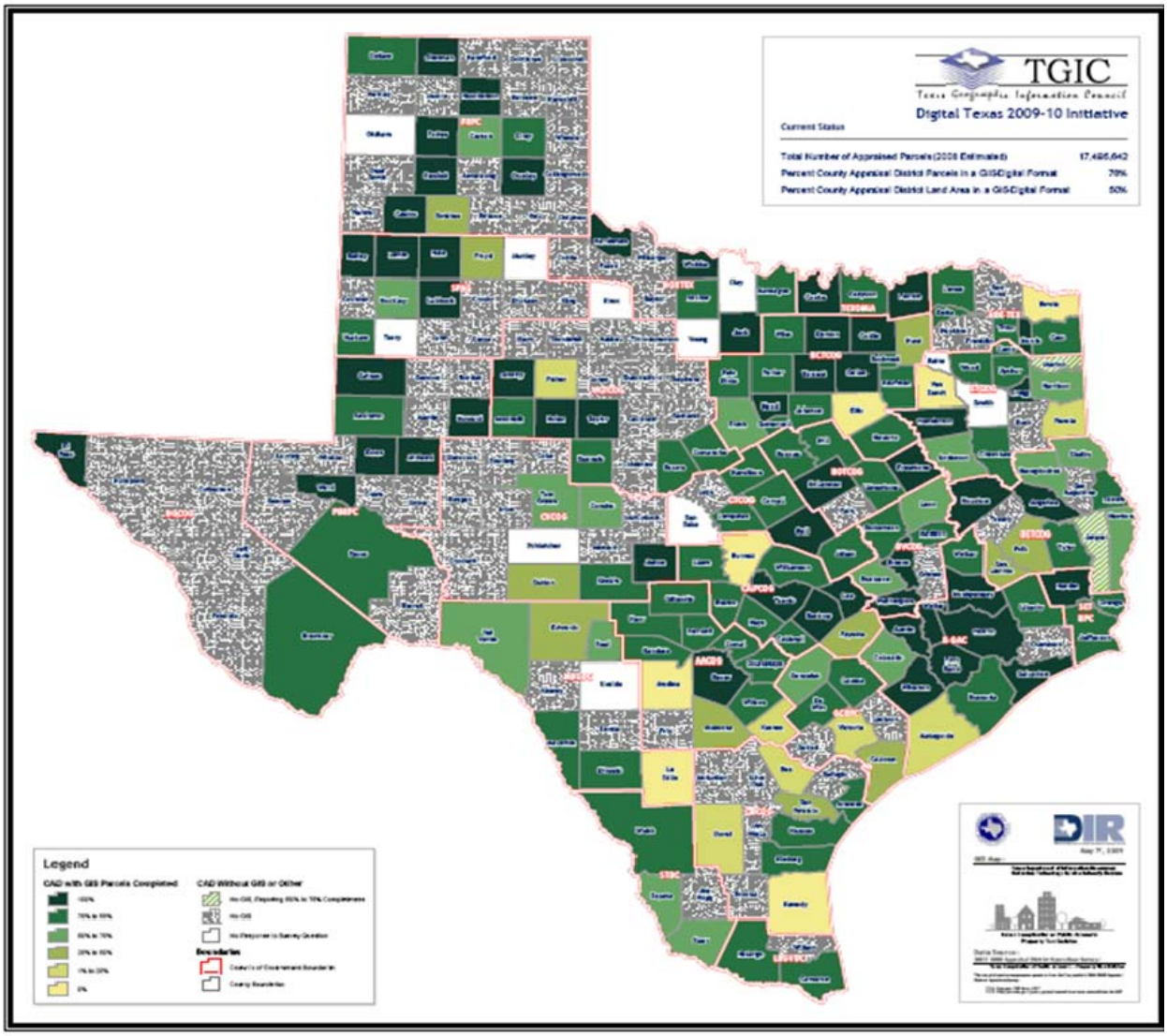
County Appraisal Districts, Parcel Data Digitization Status (2006–2007) and Ownership Parcel Layers.







Three maps showing digitization status of CAD Parcel Data (2007).



Digitization Status of CAD Parcel Data (2009–2010)
(*Source: Texas Geographic Information Council*).

Table C 1.1. County Level GIS Cadastral Data and Ownership.

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
ANDERSON	Yes	55	55%	Tyler Technologies
ANDREWS	Yes	92	92%	True Automation
ANGELINA	Yes	100	100%	True Automation
ARANSAS	Yes	50	50%	*
ARCHER	Yes	80	80%	Pritchard & Abbott
ARMSTRONG	No	0	0%	Tyler Technologies
ATASCOSA	No	0	0%	Tyler Technologies, True Automation
AUSTIN	Yes	100	100%	Beyond Appraisal
BAILEY	Yes	100	100%	True Automation
BANDERA	Yes	95	95%	True Automation
BASTROP	Yes	100	100%	*
BAYLOR	No	0	0%	TaxNetUSA
BEE	Yes	50	50%	TaxNetUSA
BELL	Yes	100	100%	True Automation
BEXAR	Yes	100	100%	True Automation
BLANCO	Yes	95	95%	True Automation
BORDEN	No	0	0%	TaxNetUSA
BOSQUE	Yes	75	75%	Tyler Technologies
BOWIE	No	0	0%	TaxNetUSA
BRAZORIA	Yes	95	95%	Appraisal & Collection Technologies
BRAZOS	Yes	100	100%	True Automation
BREWSTER	No	0	0%	True Automation
BRISCOE	No	0	0%	TaxNetUSA
BROOKS	No	0	0%	True Automation
BROWN	Yes	86	86%	True Automation
BURLESON	Yes	65	65%	Pritchard & Abbott
BURNET	Yes	100	100%	Manatron Inc.

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
CALDWELL	Yes	90	90%	True Automation
CALHOUN	Yes	87	87%	True Automation
CALLAHAN	No	0	0%	**
CAMERON	Yes	97	97%	True Automation
CAMP	Yes	97	97%	True Automation
CARSON	Yes	65	65%	TaxNetUSA
CASS	Yes	75	75%	True Automation
CASTRO	Yes	100	100%	TaxNetUSA
CHAMBERS	No	0	0%	Pritchard & Abbott
CHEROKEE	Did not respond.			True Automation
CHILDRESS	Yes	82	82%	TaxNetUSA
CLAY	No	0	0%	Pritchard & Abbott
COCHRAN	No	0	0%	TaxNetUSA
COKE	No	0	0%	TaxNetUSA
COLEMAN	No	0	0%	Tyler Technologies
COLLIN	Yes	100	100%	TaxNetUSA
COLLINGSWORTH	Yes	100	100%	TaxNetUSA
COLORADO	Yes	55	55%	True Automation
COMAL	Yes	90	90%	True Automation
COMANCHE	Yes	97	97%	True Automation
CONCHO	Yes	45	45%	TaxNetUSA
COOKE	Yes	100	100%	True Automation
CORYELL	Yes	79	79%	True Automation
COTTLE	No	0	0%	TaxNetUSA
CRANE	No	0	0%	TaxNetUSA
CROCKETT	No	0	0%	TaxNetUSA
CROSBY	No	0	0%	TaxNetUSA
CULBERSON	No	0	0%	TaxNetUSA
DALLAM	Yes	20	20%	True Automation
DALLAS	Yes	100	100%	In House
DAWSON	No	0	0%	Pritchard & Abbott
DEAF SMITH	No	0	0%	True Automation
DELTA	Yes	95	95%	True Automation
DENTON	Yes	100	100%	In House
DE WITT	Yes	80	80%	Pritchard & Abbott

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
DICKENS	No	0	0%	TaxNetUSA
DIMMIT	Yes	75	75%	True Automation
DONLEY	Yes	100	100%	TaxNetUSA
DUVAL	No	0	0%	TaxNetUSA
EASTLAND	No	0	0%	TaxNetUSA
ECTOR	Yes	100	100%	LX Network Development
EDWARDS	Did not respond.			True Automation
ELLIS	Yes	100	100%	True Automation
EL PASO	Yes	100	100%	True Automation
ERATH	Yes	85	85%	TaxNetUSA
FALLS	Yes	70	70%	Pritchard & Abbott
FANNIN	Yes	100	100%	True Automation
FAYETTE	Yes	100	100%	True Automation
FISHER	Yes	25	25%	TaxNetUSA
FLOYD	No	0	0%	TaxNetUSA
FOARD	No	0	0%	TaxNetUSA
FORT BEND	Yes	100	100%	*
FRANKLIN	No	0	0%	Pritchard & Abbott
FREESTONE	Yes	100	100%	Pritchard & Abbott
FRIO	No	0	0%	TaxNetUSA
GAINES	Yes	100	100%	True Automation
GALVESTON	Yes	100	100%	*
GARZA	No	0	0%	TaxNetUSA
GILLESPIE	Yes	95	95%	True Automation
GLASSCOCK	No	0	0%	TaxNetUSA
GOLIAD	No	0	0%	TaxNetUSA
GONZALES	Yes	75	75%	TaxNetUSA
GRAY	Yes	90	90%	In House
GRAYSON	Yes	100	100%	True Automation
GREGG	Yes	100	100%	True Automation
GRIMES	No	0	0%	*
GUADALUPE	Yes	93	93%	True Automation
HALE	Yes	100	100%	True Automation
HALL	No	0	0%	TaxNetUSA
HAMILTON	Yes	90	90%	Tyler Technologies

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
HANSFORD	Yes	95	95%	Pritchard & Abbott
HARDEMAN	Yes	100	100%	TaxNetUSA
HARDIN	Yes	100	100%	TaxNetUSA
HARRIS	Yes	100	100%	In House
HARRISON	Yes	25	25%	Southwest Data Solutions
HARTLEY	No	0	0%	TaxNetUSA
HASKELL	No	0	0%	TaxNetUSA
HAYS	Yes	100	100%	*
HEMPHILL	Yes	100	100%	TaxNetUSA
HENDERSON	Yes	95	95%	TaxNetUSA
HIDALGO	Yes	84	84%	*
HILL	Yes	85	85%	True Automation
HOCKLEY	Yes	40	40%	True Automation
HOOD	Yes	90	90%	Southwest Data Solutions
HOPKINS	No	0	0%	Southwest Data Solutions
HOUSTON	Yes	100	100%	Pritchard & Abbott
HOWARD	Yes	100	100%	TaxNetUSA
HUDSPETH	No	0	0%	TaxNetUSA
HUNT	Did not respond.			True Automation
HUTCHINSON	Yes	100	100%	TaxNetUSA
IRION	No	0	0%	TaxNetUSA
JACK	Yes	100	100%	TaxNetUSA
JACKSON	No	0	0%	*
JASPER	Did not respond.			TaxNetUSA
JEFFERSON	Did not respond.			TaxNetUSA
JEFF DAVIS	Yes	95	95%	In House
JIM HOGG	Yes	0	0%	
JIM WELLS	No	0	0%	Easy Access Inc.
JOHNSON	Yes	99	99%	TaxNetUSA
JONES	No	0	0%	Pritchard & Abbott
KARNES	Yes	5	5%	TaxNetUSA
KAUFMAN	Yes	100	100%	True Automation
KENDALL	Yes	90	90%	True Automation
KENEDY	Yes	0	0%	TaxNetUSA
KENT	No	0	0%	Pritchard & Abbott

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
KERR	Yes	99	99%	True Automation
KIMBLE	Yes	50	50%	Tyler Technologies
KING	Yes	100	100%	TaxNetUSA
KINNEY	No	0	0%	True Automation
KLEBERG	Did not respond.			TaxNetUSA
KNOX	No	0	0%	TaxNetUSA
LAMAR	Yes	25	25%	TaxNetUSA
LAMB	Yes	100	100%	True Automation
LAMPASAS	Yes	0	0%	True Automation
LA SALLE	Yes	0	0%	TaxNetUSA
LAVACA	Yes	95	95%	Tyler Technologies
LEE	Yes	100	100%	True Automation
LEON	Yes	50	50%	TaxNetUSA
LIBERTY	Yes	50	50%	True Automation
LIMESTONE	Yes	95	95%	*
LIPSCOMB	No	0	0%	TaxNetUSA
LIVE OAK	No	0	0%	TaxNetUSA
LLANO	Yes	90	90%	True Automation
LOVING	No	0	0%	TaxNetUSA
LUBBOCK	Yes	100	100%	*
LYNN	No	0	0%	TaxNetUSA
MCCULLOCH	No	0	0%	TaxNetUSA
MCLENNAN	No	0	0%	True Automation
MCMULLEN	No	0	0%	TaxNetUSA
MADISON	Yes	70	70%	True Automation
MARION	Yes	65	65%	Pritchard & Abbott
MARTIN	No	0	0%	TaxNetUSA
MASON	Did not respond.			TaxNetUSA
MATAGORDA	No	0	0%	True Automation
MAVERICK	Yes	95	95%	True Automation
MEDINA	Yes	60	60%	TaxNetUSA
MENARD	No	0	0%	TaxNetUSA
MIDLAND	Yes	100	100%	Southwest Data Solutions
MILAM	Did not respond.			Tyler Technologies
MILLS	No	0	0%	Southwest Data Solutions

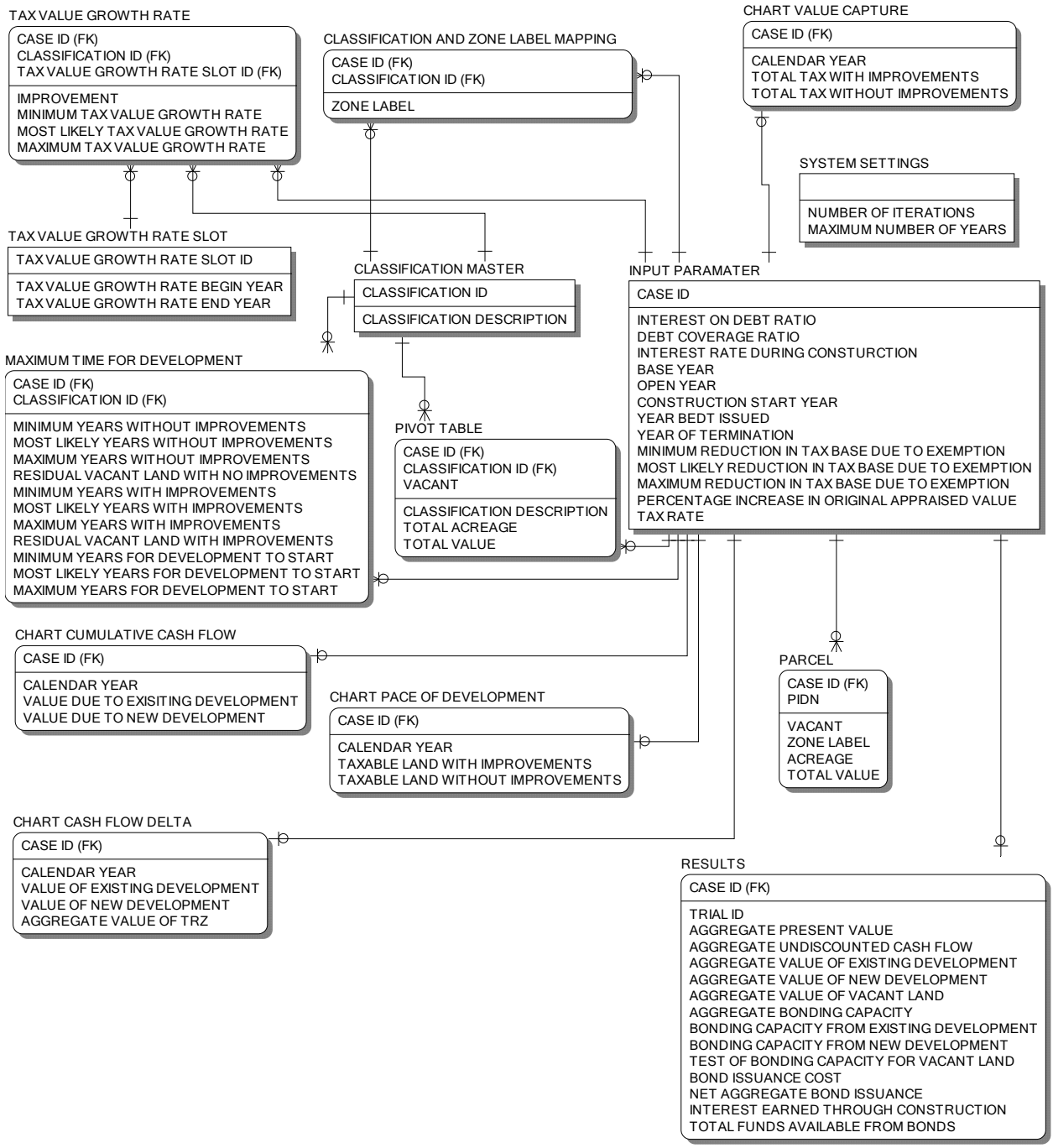
COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
MITCHELL	Yes	88	88%	TaxNetUSA
MONTAGUE	Yes	78	78%	TaxNetUSA
MONTGOMERY	Yes	85	85%	*
MOORE	Yes	100	100%	True Automation
MORRIS	Yes	100	100%	TaxNetUSA
MOTLEY	Did not respond.			TaxNetUSA
NACOGDOCHES	Yes	75	75%	Pritchard & Abbott
NAVARRO	Yes	0	0%	Southwest Data Solutions
NEWTON	Yes	30	30%	*
NOLAN	Yes	100	100%	TaxNetUSA
NUECES	Yes	80	80%	*
OCHILTREE	No	0	0%	TaxNetUSA
OLDHAM	No	0	0%	TaxNetUSA
ORANGE	Yes	75	75%	*
PALO PINTO	Yes	85	85%	Pritchard & Abbott
PANOLA	Yes	15	15%	TaxNetUSA
PARKER	Yes	90	90%	Southwest Data Solutions
PARMER	No	0	0%	Tyler Technologies
PECOS	No	0	0%	TaxNetUSA
POLK	Yes	75	75%	Easy Access Inc.
POTTER	Yes	40	40%	In House
PRESIDIO	No	0	0%	TaxNetUSA
RAINS	Yes	10	10%	True Automation
RANDALL	Yes	40	40%	In House
REAGAN	No	0	0%	TaxNetUSA
REAL	Yes	65	65%	TaxNetUSA
RED RIVER	No	0	0%	TaxNetUSA
REEVES	No	0	0%	TaxNetUSA
REFUGIO	No	0	0%	TaxNetUSA
ROBERTS	No	0	0%	TaxNetUSA
ROBERTSON	Yes	95	95%	TaxNetUSA
ROCKWALL	Yes	95	95%	True Automation
RUNNELS	Yes	50	50%	Southwest Data Solutions
RUSK	Yes	90	90%	Pritchard & Abbott
SABINE	Yes	85	85%	TaxNetUSA

COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
SAN AUGUSTINE	Yes	90	90%	TaxNetUSA
SAN JACINTO	Yes	30	30%	True Automation
SAN PATRICIO	Yes	40	40%	TaxNetUSA
SAN SABA	No	0	0%	TaxNetUSA
SCHLEICHER	No	0	0%	True Automation
SCURRY	Yes	100	100%	True Automation
SHACKELFORD	No	0	0%	True Automation
SHELBY	Yes	64	64%	True Automation
SHERMAN	Yes	100	100%	TaxNetUSA
SMITH	Yes	100	100%	In House
SOMERVELL	Yes	80	80%	Not Found
STARR	Yes	30	30%	TaxNetUSA
STEPHENS	No	0	0%	Southwest Data Solutions
STERLING	No	0	0%	TaxNetUSA
STONEWALL	No	0	0%	TaxNetUSA
SUTTON	No	0	0%	TaxNetUSA
SWISHER	No	0	0%	True Automation
TARRANT	Yes	100	100%	In House
TAYLOR	Yes	100	100%	True Automation
TERRELL	No	0	0%	True Automation
TERRY	No	0	0%	TaxNetUSA
THROCKMORTON	No	0	0%	Not Found
TITUS	Yes	50	50%	True Automation
TOM GREEN	Yes	51	51%	In House
TRAVIS	Yes	100	100%	TaxNetUSA
TRINITY	No	0	0%	TaxNetUSA
TYLER	Yes	95	95%	Tyler Technologies
UPSHUR	Yes	50	50%	True Automation
UPTON	No	0	0%	TaxNetUSA
UVALDE	No	0	0%	True Automation
VAL VERDE	Yes	95	95%	True Automation
VAN ZANDT	Yes	0	0%	TaxNetUSA, Southwest Data Solutions
VICTORIA	Yes	95	95%	True Automation
WALKER	Yes	90	90%	Not Found
WALLER	Yes	100	100%	Tyler Technologies

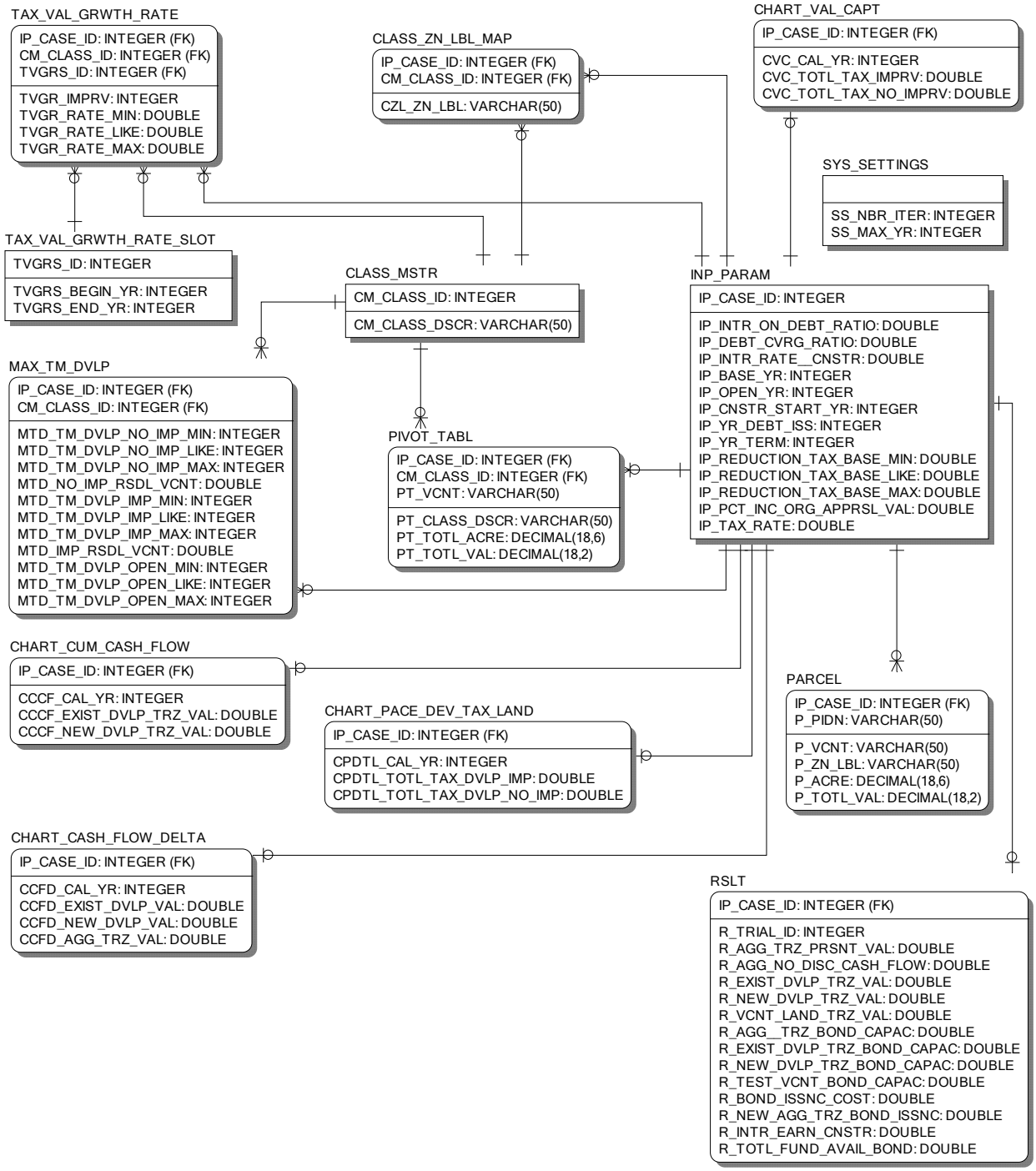
COUNTY	CAD has GIS 2006–2007	Percentage of appraisal records entered into GIS	Percentage of appraisal records entered into GIS 2006–2007	Data Hosting
WARD	Yes	100	100%	TaxNetUSA
WASHINGTON	Yes	100	100%	*
WEBB	Yes	90	90%	True Automation
WHARTON	Yes	100	100%	Tyler Technologies
WHEELER	Yes	100	100%	TaxNetUSA
WICHITA	Yes	100	100%	True Automation
WILBARGER	No	0	0%	Pritchard & Abbott
WILLACY	No	0	0%	True Automation
WILLIAMSON	Yes	95	95%	*
WILSON	Did not respond.			True Automation
WINKLER	No	0	0%	TaxNetUSA
WISE	Yes	65	65%	TaxNetUSA
WOOD	Yes	93	93%	True Automation
YOAKUM	Yes	70	70%	True Automation
YOUNG	No	0	0%	TaxNetUSA
ZAPATA	Yes	50	50%	TaxNetUSA, True Automation
ZAVALA	No	0	0%	**

APPENDIX D: PHYSICAL AND LOGICAL DATA MODELS AND DATA DICTIONARY FOR THE REVENUE FEASIBILITY TOOL

LOGICAL MODEL



PHYSICAL MODEL



DATA DICTIONARY- REVENUE FEASIBILITY TOOL

Table	Description
INP_PARAM	**Definition: INPUT PARAMETER** are various parameters input by the user for the current TRZ scenario.

Column	Description
IP_CASE_ID	**Definition:** A **CASE ID** is a unique identifier for each input scenario. **Purpose:** The CASE ID is used to uniquely identify each input scenario. Users can run multiple scenarios by changing various parameters that are considered while evaluating the TRZ feasibility. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_INTR_ON_DEBT_RATIO	**Definition:** An **INTEREST ON DEBT/DISCOUNT RATE** is the interest on the debt to be issued or the Discount Rate for the current scenario. **Purpose:** To calculate the Present Value of expected Cash flow. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_DEBT_CVRG_RATIO	**Definition:** A **DEBT COVERAGE RATIO** is the debt coverage ratio for the current scenario. Measurement of the extra solvency needed to cover an obligation. **Purpose:** This will provide the extra solvency needed to cover an obligation—1.5 is typically required in a pass-through agreement with TxDOT. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_INTR_RATE _CNSTR	**Definition:** The **INTEREST RATE EARNED DURING CONSTRUCTION** is the interest rate expected during the construction period for the current scenario. **Purpose:** To estimate the capitalized interest earned during the construction period. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_BASE_YR	**Definition: BASE YEAR** is the baseline that includes the parcel inventory with the acres and appraisal values for vacant and non-vacant land. **Purpose:** Year set up as the baseline for assessing

	increments over the duration of the TRZ. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_OPEN_YR	**Definition: OPEN YEAR** is the year in which the capacity improvement is expected to be open to the general public. **Purpose:** Year that marks the beginning of vacant land development according to distribution functions. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_CNSTR_START_YR	**Definition: CONSTRUCTION START YEAR** is the year in which improvement building is expected to start. **Purpose:** Marks the beginning of capitalized impacts to adjacent parcels. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_YR_DEBT_ISS	**Definition: YEAR DEBT IS ISSUED** Year the implementing agency issue the obligation. **Purpose:** Marks the time period for discounting cash flows and cover the obligation. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_YR_TERM	**Definition: YEAR OF TERMINATION** is the year in which the TRZ expires. **Purpose:** Marks the time period or number of years to forecast TRZ revenues for a given scenario (TRZ can expire if the debt is repaid sooner). **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_REDUCTION_TAX_BASE_MIN	**Definition: MINIMUM REDUCTION IN TAX BASE DUE TO EXEMPTION** is the minimum value of expected reduction in tax base due to exemptions. **Purpose:** Considers the minimum value in a triangular distribution for the reduction in the baseline parcels for tax exempt parcels**.** **Examples**: N/A **Valid Values:** N/A **Format:** Number

IP_REDUCTION_TAX_BASE_LIKE	**Definition: MOST LIKELY REDUCTION IN TAX BASE DUE TO EXEMPTION** is the most likely value of expected reduction in tax base due to exemptions. **Purpose:** Considers the mode value in a triangular distribution for the reduction in the baseline parcels for Tax exempt parcels. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_REDUCTION_TAX_BASE_MAX	**Definition: MAXIMUM REDUCTION IN TAX BASE DUE TO EXEMPTION** is the maximum value of expected reduction in tax base due to exemptions. **Purpose:** Considers the maximum value in a triangular distribution for the reduction in the baseline parcels for Tax exempt parcels. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_PCT_INC_ORG_APPRSL_VAL	**Definition: PERCENTAGE INCREASE IN THE ORIGINAL APPRAISED VALUE** is percentage increase in the original appraised value from the base year to the construction start year. **Purpose:** Percentage increase in the original appraised value from the base year to the construction start year. **Examples**: N/A **Valid Values:** N/A **Format:** Number
IP_TAX_RATE	**Definition: TAX RATE** is tax rate of the TRZ taxing entity. **Purpose:** Tax rate of the TRZ taxing entity. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	**Description**
PARCEL	**Definition: PARCEL** is a list of all records from input file with the parcels within a given TRZ uploaded by the users in the Comma Separated Values file.

Column	Description
P_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** To identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
P_PIDN	**Definition: PIDN** is the Parcel Identification Number; this number uniquely identifies each parcel for the current scenario. **Purpose:** Identifies each parcel for the current scenario. **Examples**: N/A **Valid Values:** N/A **Format:** String
P_VCNT	**Definition: VACANT** identifies the vacancy status of each parcel. **Purpose:** To assign vacant parcels to the land development distribution functions. **Examples**: N/A **Valid Values:** VACANT DEVELOPED **Format:** String
P_ZN_LBL	**Definition: ZONE LABEL** is the zoning label for the current parcel. **Purpose:** Zoning label for the current parcel is used to assign a specific land use identifier to each parcel to further classify them in the 5 real estate categories. **Examples**: N/A **Valid Values:** N/A **Format:** String
P_ACRE	**Definition: ACREAGE** is the area of the current parcel in acres. **Purpose:** To estimate the price per acre for each real estate category (after they have been classified) and used in the vacant land development. **Examples**: N/A **Valid Values:** N/A **Format:** Number
P_TOTL_VAL	**Definition: TOTAL VALUE** is the monetary value of the current parcel. **Purpose:** To estimate the price per acre for each real estate category and used in the TRZ revenue estimation. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
CLASS_MSTR	**Definition: CLASSIFICATION MASTER** is the list of all land types that are allowed in the current model.

Column	Description
CM_CLASS_ID	**Definition: CLASSIFICATION ID** is a unique identifier that identifies each classification. **Purpose:** To classify ZONE LABEL for each parcel into the 5 real estate categories. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CM_CLASS_DSCR	**Definition: CLASSIFICATION DESCRIPTION** is the user friendly name for each classification. **Purpose:** Friendly name for each classification. **Examples**: N/A **Valid Values:** Agricultural Commercial Industrial Residential **Format:** String

Table	Description
CLASS_ZN_LBL_MAP	**Definition: CLASSIFICATION AND ZONE LABEL MAPPING** stores a mapping between each zone label entered for the current scenario and the pre-defined classifications.

Column	Description
CZL_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CZL_CLASS_ID	**Definition: CLASSIFICATION ID** Unique identifier that identifies each classification. **Purpose:** Uniquely identifies each classification. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CZL_ZN_LBL	**Definition: ZONE LABEL** is the list of all unique zone labels for the current scenario. **Purpose:** To establish a mapping between a zone label and the predefined classifications. **Examples**: N/A **Valid Values:** N/A

	Format: String

Table	Description
TAX_VAL_GRWTH_RATE_SLOT	**Definition: TAX VALUE GROWTH RATE SLOT** stores all the Tax Value Growth Rate Increments being considered by the model.

Column	Description
TVGRS_ID	**Definition: TAX VALUE GROWTH RATE SLOT ID** is the unique identifier for each tax growth rate increment. **Purpose:** To uniquely identify each property value growth rate increment. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGRS_BEGIN_YR	**Definition: TAX VALUE GROWTH RATE BEGIN YEAR** is the offset in years from the TRZ open year at which the current interval begins. **Purpose:** To identify the beginning of interval. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGRS_END_YR	**Definition: TAX VALUE GROWTH RATE END YEAR** is the offset in years from the TRZ open year at which the current interval ends. **Purpose:** To identify the end of interval. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
TAX_VAL_GRWTH_RATE	**Definition: TAX VALUE GROWTH RATE** stores the actual tax value growth rates with and without improvements for all the predefined tax value growth rate intervals.

Column	Description
TVGR_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGR_CLASS_ID	**Definition: CLASSIFICATION ID** is a unique identifier that identifies each classification. **Purpose:** To identify which classification the current record belongs to.

	Examples: N/A **Valid Values:** N/A **Format:** Number
TVGR_TVGRS_ID	**Definition: TAX VALUE GROWTH RATE SLOT ID** is the unique identifier for each tax growth rate increment. **Purpose:** To identify which slot the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGR_IMPRV	**Definition: IMPROVEMENT** is a flag to identify if the growth rates in the current record are with improvements or without improvements. **Purpose:** To specify if improvements are considered in the growth rates. **Examples**: N/A **Valid Values:** 0 1 **Format:** Number
TVGR_RATE_MIN	**Definition: MINIMUM TAX VALUE GROWTH RATE** is the minimum tax growth rate for the current scenario, current classification and current property value growth slot either with or without improvements. **Purpose:** Minimum property value growth rate for the current record. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGR_RATE_LIKE	**Definition: MOST LIKELY TAX VALUE GROWTH RATE** is the most likely property value growth rate for the current scenario, current classification and current tax growth slot either with or without improvements. **Purpose:** Most likely property value growth for the current record. **Examples**: N/A **Valid Values:** N/A **Format:** Number
TVGR_RATE_MAX	**Definition: MAXIMUM TAX VALUE GROWTH RATE** is the minimum tax growth rate for the current scenario, current classification and current property value growth slot either with or without improvements. **Purpose:** Maximum property value growth for the current record. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
MAX_TM_DVLP	**Definition: MAXIMUM TIME FOR DEVELOPMENT** is the time required to achieve complete saturation of undeveloped land for each classification and each property value growth rate slot.

Column	Description
MTD_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_CLASS_ID	**Definition: CLASSIFICATION ID** is a unique identifier that identifies each classification. **Purpose:** To identify which classification the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_NO_IMP_MIN	**Definition: MINIMUM NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM DEVELOPMENT WITHOUT IMPROVEMENTS** is the minimum number of years estimated for the maximum development of land if no improvements are done. **Purpose:** To specify the minimum time in a triangular distribution for max development without of area without TRZ improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_NO_IMP_LIKE	**Definition: MOST LIKELY NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM DEVELOPMENT WITHOUT IMPROVEMENTS** is the most likely number of years estimated for the maximum development of land if no improvements are done. **Purpose:** To specify the mode in a triangular distribution for the number of years for max development without of area without TRZ improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_NO_IMP_MAX	**Definition: MAXIMUM NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM**

	DEVELOPMENT WITHOUT IMPROVEMENTS is the maximum number of years in a triangular distribution estimated for the maximum development of land if no improvements are done. **Purpose:** To specify the maximum number of years for max development without of area without TRZ improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_NO_IMP_RSDL_VCNT	**Definition: RESIDUAL VACANT LAND WITH NO IMPROVEMENTS** is the percentage of land remaining vacant at the end of TRZ period without improvements. **Purpose:** Percentage of land left vacant at the end of TRZ if no improvements are made. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_IMP_MIN	**Definition: MINIMUM NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM DEVELOPMENT WITH IMPROVEMENTS** is the minimum number of years estimated for the maximum development of land if improvements are done. **Purpose:** To specify the minimum time for max development without of area with TRZ improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_IMP_LIKE	**Definition: MOST LIKELY NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM DEVELOPMENT WITH IMPROVEMENTS** is the most likely number of years estimated for the maximum development of land if improvements are done. **Purpose:** To specify the most likely number of years for max development without of area with TRZ improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_IMP_MAX	**Definition: MAXIMUM NUMBER OF YEARS FROM OPENING OF TRZ FOR MAXIMUM DEVELOPMENT WITH IMPROVEMENTS** is the maximum number of years estimated for the maximum development of land if improvements are done. **Purpose:** To specify the maximum number of years for max development without of area with TRZ

	improvements. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_IMP_RSDL_VCNT	**Definition: RESIDUAL VACANT LAND WITH IMPROVEMENTS** is the percentage of land remaining vacant at the end of TRZ period with improvements. **Purpose:** Percentage of land left vacant at the end of TRZ if improvements are made. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_OPEN_MIN	**Definition: MINIMUM NUMBER OF YEARS ESTIMATED FOR DEVELOPMENT TO START FROM THE OPENING OF TRZ** is the minimum number of years estimated for development to start in the area from the opening of TRZ. **Purpose:** To specify the minimum number of years in a triangular distribution before or after the opening year when the land development starts. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_OPEN_LIKE	**Definition: MOST LIKELY NUMBER OF YEARS ESTIMATED FOR DEVELOPMENT TO START FROM THE OPENING OF TRZ** is the most likely number of years estimated for development to start in the area from the opening of TRZ. **Purpose:** To specify the mode number of years in a triangular distribution before or after the opening year when the land development starts. **Examples**: N/A **Valid Values:** N/A **Format:** Number
MTD_TM_DVLP_OPEN_MAX	**Definition: MAXIMUM NUMBER OF YEARS ESTIMATED FOR DEVELOPMENT TO START FROM THE OPENING OF TRZ** is the maximum number of years estimated for development to start in the area from the opening of TRZ. **Purpose:** To specify the maximum number of years in a triangular distribution before or after the opening year when the land development starts. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
PIVOT_TABL	**Definition: PIVOT TABLE** stores aggregate information about the parcels uploaded by the user for the current scenario.

Column	Description
PT_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
PT_CLASS_DSCR	**Definition: CLASSIFICATION DESCRIPTION** is the user friendly name for each classification. **Purpose:** Friendly name for each classification. **Examples**: N/A **Valid Values:** N/A **Format:** String
PT_CLASS_ID	**Definition: CLASSIFICATION ID** is a unique identifier that identifies each classification. **Purpose:** To identify which classification the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
PT_VCNT	**Definition: VACANT** identifies if the parcel is vacant or developed. **Purpose:** To identify a parcel is vacant or developed **Examples**: N/A **Valid Values:** VACANT DEVELOPED **Format:** String
PT_TOTL_ACRE	**Definition: TOTAL ACREAGE** is the total area of that classification type in acres for the current scenario. **Purpose:** Total area of that classification type in acres for the current scenario. **Examples**: N/A **Valid Values:** N/A **Format:** Number
PT_TOTL_VAL	**Definition: TOTAL VALUE** is the total monetary value of that classification type in USD for the current scenario. **Purpose:** Total monetary value of that classification type in USD for the current scenario. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
RSLT	**Definition: RESULTS** output of the model for the iteration that matches the 95 percentile results for the current scenario.

Column	Description
R_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_TRIAL_ID	**Definition: TRIAL ID** Number for iteration that matches the 95 percentile results the current scenario **Purpose:** To identify the iteration number that matches the 95 percentile for the current scenario. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_AGG_TRZ_PRSNT_VAL	**Definition: AGGREGATE PRESENT VALUE OF THE TRZ** is the aggregate value of the current scenario and current iteration number. **Purpose:** Aggregate value of the current scenario and current iteration number. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_AGG_NO_DISC_CASH_FLOW	**Definition: AGGREGATE UNDISCOUNTED CASH FLOW** is the aggregate undiscounted cash flow for the current scenario and current iteration. **Purpose:** Aggregate undiscounted cash flow for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_EXIST_DVLP_TRZ_VAL	**Definition: AGGREGATE VALUE OF EXISTING DEVELOPMENT** is the aggregate value of existing development for the current scenario and current iteration. **Purpose:** Aggregate value of existing development for the current scenario and current iteration**.** **Examples**: N/A **Valid Values:** N/A **Format:** Number

R_NEW_DVLP_TRZ_VAL	**Definition: AGGREGATE VALUE OF NEW DEVELOPMENT** is the aggregate value of new development for the current scenario and current iteration. **Purpose:** Aggregate value of new development for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_VCNT_LAND_TRZ_VAL	**Definition: AGGREGATE VALUE OF VACANT LAND** is the aggregate value of vacant land for the current scenario and current iteration. **Purpose:** Aggregate value of vacant land for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_AGG_ TRZ_BOND_CAPAC	**Definition: AGGREGATE TRANSPORTATION REINVESTMENT ZONE BONDING CAPACITY** is the aggregate bonding capacity of the TRZ for the current scenario and current iteration. **Purpose:** Aggregate bonding capacity of the TRZ for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_EXIST_DVLP_TRZ_BOND_CAPAC	**Definition: AGGREGATE TRANSPORTATION REINVESTMENT ZONE BONDING CAPACITY FROM EXISTING DEVELOPMENT** is the aggregate bonding capacity of the TRZ from existing development for the current scenario and current iteration. **Purpose:** Aggregate bonding capacity of the TRZ from existing development for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_NEW_DVLP_TRZ_BOND_CAPAC	**Definition: AGGREGATE TRANSPORTATION REINVESTMENT ZONE BONDING CAPACITY FROM NEW DEVELOPMENT** is the aggregate bonding capacity of the TRZ from new development for the current scenario and current iteration. **Purpose:** Aggregate bonding capacity of the TRZ

	from new development for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_TEST_VCNT_BOND_CAPAC	**Definition: TEST OF BONDING CAPACITY FOR VACANT LAND** is the test of bonding capacity of vacant land for the current scenario and current iteration. **Purpose:** To test of bonding capacity of vacant land for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_BOND_ISSNC_COST	**Definition: BOND ISSUANCE COST** is the cost of issuing bonds for the current scenario and current iteration. **Purpose:** Estimate the cost of issuing bonds for the current scenario and current iteration. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_NEW_AGG_TRZ_BOND_ISSNC	**Definition: NET AGGREGATE BOND ISSUANCE** is the net aggregate bond issuance for the TRZ for the current scenario and current iteration. **Purpose:** To estimate the net aggregate bond issuance for the TRZ. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_INTR_EARN_CNSTR	**Definition: INTEREST EARNED THROUGH CONSTRUCTION** is the interest earned through construction for the current scenario and current iteration. **Purpose:** Estimates the amount earned for the capitalized interest during the construction period. **Examples**: N/A **Valid Values:** N/A **Format:** Number
R_TOTL_FUND_AVAIL_BOND	**Definition: TOTAL FUNDS AVAILABLE FROM BONDS** is the total funds that are available through bonds for the current TRZ for the current scenario and current iteration. **Purpose:** Calculates the Present Value of future cash flows for a given iteration and applies the debt

	coverage ratio and financing costs. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
CHART_CASH_FLOW_DELTA	**Definition: CHART CASH FLOW DELTA** stores information required to generate the Cash Flow (Delta) chart.

Column	Description
CCFD_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCFD_CAL_YR	**Definition: CALENDAR YEAR** is the year for which the values are stored for the current scenario. **Purpose:** Year for which the values are stored. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCFD_EXIST_DVLP_VAL	**Definition: VALUE OF EXISTING DEVELOPMENT** is the value of existing development for the given calendar year **Purpose:** To calculate the value of existing development for the given calendar year. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCFD_NEW_DVLP_VAL	**Definition: VALUE OF NEW DEVELOPMENT** is the value of new development for the given calendar year **Purpose:** To estimate the value of new development for the given calendar year. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCFD_AGG_TRZ_VAL	**Definition: AGGREGATE VALUE OF TRZ** is the aggregate value of TRZ for the given calendar year **Purpose:** To calculate the annual cash flows for an entire TRZ (existing and developed parcels). **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
CHART_PACE_DEV_TAX_LAND	**Definition: CHART PACE OF DEVELOPMENT OF TAXABLE LAND** stores information required to generate the pace of development of taxable land chart.

Column	Description
CPDTL_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CPDTL_CAL_YR	**Definition: CALENDAR YEAR** is the year for which the values are stored for the current scenario. **Purpose:** Year for which the values are stored. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CPDTL_TOTL_TAX_DVLP_IMP	**Definition: TOTAL TAXABLE LAND DEVELOPED WITH IMPROVEMENTS** is the total taxable land developed for the given calendar year if TRZ improvements are made. **Purpose:** To calculate the total taxable land developed for the given calendar year if TRZ improvements are made. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CPDTL_TOTL_TAX_DVLP_NO_IMP	**Definition: TOTAL TAXABLE LAND DEVELOPED WITHOUT IMPROVEMENTS** is the total taxable land developed for the given calendar year if no improvements are made. **Purpose:** To calculate the total taxable land developed for the given calendar year if no improvements are made. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
CHART_CUM_CASH_FLOW	**Definition: CHART CUMULATIVE CASH FLOW** stores information required to generate the cumulative cash flow chart.

Column	Description
CCCF_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCCF_CAL_YR	**Definition: CALENDAR YEAR** is the year for which the values are stored for the current scenario. **Purpose:** Year for which the values are stored. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCCF_EXIST_DVLP_TRZ_VAL	**Definition: TRZ VALUE DUE TO EXISTING DEVELOPMENT** is the amount of the TRZ revenues generated by existing development for the current year. **Purpose:** Value of the TRZ due to existing development for the current year. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CCCF_NEW_DVLP_TRZ_VAL	**Definition: TRZ VALUE DUE TO NEW DEVELOPMENT** is the amount of the TRZ revenues generated due to new development for the current year. **Purpose:** Value of the TRZ due to new development for the current year. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
CHART_VAL_CAPT	**Definition: CHART VALUE CAPTURE** stores information required to generate the Value Capture chart.

Column	Description
CVC_CASE_ID	**Definition: CASE ID** is the unique identifier for each scenario. **Purpose:** Unique identifier to identify which scenario the current record belongs to. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CVC_CAL_YR	**Definition: CALENDAR YEAR** is the year for which the values are stored for the current scenario. **Purpose:** Year for which the values are stored.

	Examples: N/A **Valid Values:** N/A **Format:** Number
CVC_TOTL_TAX_IMPRV	**Definition: TOTAL TAX WITH IMPROVEMENTS** is the total TRZ revenue income with improvements with the TRZ for the current year. **Purpose:** Total tax income with improvements with the TRZ for the current year. **Examples**: N/A **Valid Values:** N/A **Format:** Number
CVC_TOTL_TAX_NO_IMPRV	**Definition: TOTAL TAX WITHOUT IMPROVEMENTS** is the total TRZ revenue without improvements with the TRZ for the current year. **Purpose:** Total tax income without improvements with the TRZ for the current year. **Examples**: N/A **Valid Values:** N/A **Format:** Number

Table	Description
SYS_SETTINGS	**Definition: SYSTEM SETTINGS** stores the parameters that are required for the model to function.

Column	Description
SS_NBR_ITER	**Definition: NUMBER OF ITERATIONS** is the number of iterations to run for Monte-Carlo simulation. **Purpose:** Number of iterations to run for Monte-Carlo simulation. **Examples**: N/A **Valid Values:** N/A **Format:** Number
SS_MAX_YR	**Definition: MAXIMUM NUMBER OF YEARS** is maximum number of years to consider while running the model. **Purpose:** Maximum number of years to consider while running the model. **Examples**: N/A **Valid Values:** N/A **Format:** Number

ENDNOTES

1. Source: Neighborhood Capital Budget Group. (http://www.ncbg.org/tifs/tifs.htm).
2. Source: Texas Geographic Information Council (TGIC) 2009-2010)

3. Source: Texas Department of Transportation.
4. Sources: Texas Department of Transportation, U.S. Census Bureau

5. Sources: Texas Department of Transportation, U.S. Census Bureau

6. Source: Delaware Valley Regional Planning Commission (2005), "Implementing Transit-Oriented-Development in Pennsylvania: A Summary of Act 238 of 2004".