Final Report

Comprehensive Plan Initial Studies

Component 3: Fiscal Impact of Alternative Growth Scenarios

The Economics of Land Use

Prepared for:

City of San Antonio
Department of Planning & Community Development

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March 5, 2015

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Table of Contents

1. SUMMARY OF FINDINGS 1

Component 3 Understanding 1
Component 3 Summary of Findings 3

2. FISCAL IMPACT ANALYSIS 5

Fiscal Impact Analysis Overview 5
San Antonio Budget Framework 8
Revenues and Expenditures Used in the Fiscal Model 9
Development Scenarios 13
Fiscal Impact of Development Scenarios 16

3. SA2020 IMPACT OF DEVELOPMENT PATTERNS 19

Housing Related Goals 19
Employment Related Goals 20
Vehicle Miles Traveled (VMT) Goal 22

4. ACTIVITY CENTER INVESTMENT OPPORTUNITIES 26

Activity Center Catalyst Sites 26
Infrastructure Barriers 27
Activity Center Investments and Next Steps 39

List of Tables

Table 1 Component 2 Development Typologies 13
Table 2 Fiscal Impact Analysis Development Scenarios 15
Table 3 Ongoing Revenues 16
Table 4 Ongoing Expenditures 17
Table 5 Net Fiscal Impact 18
Table 6 Catalyst Site Development Programs 26

List of Figures

Figure 1 Timeline of Development Type Infrastructure Cost Literature Review 5
Figure 2 San Antonio General Fund Revenues and Expenditures, 2015 8
Figure 3 Average Annual Household VMT and Gross Household Density 24
Figure 4 Average Annual Household VMT and Employment Access Index 25
Figure 5 Brooks Activity Center 42
Figure 6 Brooks Catalyst Sites 43
Figure 7 Greater Airport Area Activity Center 44
Figure 8 Greater Airport Catalyst Sites 45
Figure 9 Medical Center Activity Center 46
Figure 10 Greater Airport Catalyst Sites 47
Figure 11 Midtown Activity Center 48
Figure 12 Midtown Catalyst Sites 49

1. SUMMARY OF FINDINGS

The City of San Antonio is updating its Comprehensive Plan. As a precursor to this effort, the City is seeking to understand the capacity and opportunities for future growth, and the fiscal impact of new development on the City. Economic & Planning Systems (EPS) has been retained by the City of San Antonio (COSA) to perform three studies to be incorporated into the plan. The three studies are referred to in this report as Components 1, 2 and 3 and will address:

- Component 1 - Land and development capacity study
- Component 2 - Future jobs, economic opportunity and housing study
- Component 3 - Fiscal impact of alternative growth scenarios study

The goal of the three studies is to help determine how the City can accommodate the anticipated employment and population growth, which could reach 1.1 million new residents, 500,000 jobs, and another 500,000 dwelling units by 2040. The contents of this report are the findings of Component 3, the Fiscal Impact of Alternative Growth Scenarios Study.

Component 3 Understanding

The original intent of Component 3 was to assess the fiscal impact on the City of San Antonio of the three potential growth scenarios developed by the Alamo Area Metropolitan Planning Organization (AAMPO). The scenario development process and ultimate decision on the preferred scenario by the AAMPO preceded the fiscal impact analysis. As a result, there was the opportunity to modify the approach to Component 3 to provide more useful and relevant analysis. The approach to Component 3 is provided below. The original scope tasks in the contract are essentially the same. What differ are the output and how the new approach is tailored around specific issues.

There are three parts to the Component 3 revised approach. The three parts were developed in response to staff comments and issues/opportunities identified during the first two components, as well as incorporating the original intent of the third component. The three parts are:

1. ***Fiscal Impact Analysis of Development Patterns***

   An analysis of the fiscal impact of five development patterns to illustrate the impact of historic patterns versus alternative approaches. The intent is to differentiate the fiscal impacts of alternative approaches developed in the comprehensive plan and backed by the analysis in Component 2. The conceptual typologies are:

   - Conventional Residential Neighborhood Development
   - Walkable Residential Neighborhood Development
   - Mixed Housing Walkable Residential Neighborhood Development
   - Conventional Suburban Employment Center Development
   - Urban Employment Activity Center Development

   The conceptual development typologies are based on existing development patterns and the potential development patterns not present in San Antonio that were identified within Component 2.

2. Sustainability/SA2020 Impact of Development Patterns

EPS evaluated the impact and potential to achieve related SA2020 goals using both the findings of the Component 2 growth forecasts and data used in EPS's *Sustainable Urban Economics Impact Model and Study* completed for COSA in 2010. The impact of the development patterns on a set of eight SA2020 goals was completed to determine how the forecast growth and recommended development patterns would impact the goals of the City.

3. Activity Center Investment Opportunities

COSA staff has expressed a desire to understand infrastructure improvements the City can make or partner on that will facilitate redevelopment/development in the 13 Activity Centers identified in Component 2. The goal is to identify a set of civic actions, policy changes and tools that will expand development opportunities, speed up development timing, and catalyze specific centers. EPS focused on four centers to identify improvements that address land availability, redevelopment impediments and infrastructure capacity issues to catalyze development in the area. The four centers are Brooks City Base, Greater Airport Area, Medical Center, and Midtown. EPS led the effort to identify improvements and changes that will have the greatest market impact, and relied on Vickrey & Associates to identify capacity issues and provide high level cost estimates for proposed improvements.

Component 3 Summary of Findings

1. ***Infill development has a lower fiscal impact than greenfield development.***

   Greenfield development has the most significant impact on fire service in the City of San Antonio, especially if the development is part of a new annexation area. The cost for capital improvements needed for new development is lower for infill development with capital cost for roads and fire stations reduced due to existing infrastructure. New development outside of existing fire service areas creates the need for a new fire station, which costs $4 million to build.

   Based on literature reviewed for this study, water and sewer and roadways were identified as major costs associated with new development that make greenfield development more impactful on the fiscal health of cities nationally. Leveraging existing infrastructure to serve new growth in infill projects, instead of having to build new infrastructure to serve greenfield projects, was found to reduce costs by 20 to 50 percent for water and sewer service and 12 to 25 percent for roadways.

2. ***The density of a development has a major impact on the fiscal impact of new development.***

   Five development programs were tested to compare the fiscal impact of existing development patterns with alternative approaches to new development. The five programs are a conventional neighborhood, walkable neighborhood, mixed housing walkable neighborhood, suburban activity center, and urban activity center. The three denser programs—both walkable neighborhood programs and urban activity center—had the greatest net fiscal impact of all five scenarios. The analysis illustrated the fiscal benefit of a denser development pattern that was found in Component 2 to be both in demand and also needed to accommodate future growth.

3. ***The City of San Antonio is likely to achieve many of its economic and housing related goals within SA2020 based on the development demand forecasts generated within Component 2.***

   The future growth forecast developed as part of Component 2 was analyzed to measure how well the City will do in terms of achieving some of its SA2020 goals. The analysis indicated that the City was likely to achieve its goals of increased housing downtown and improving the ratio of urban core housing to suburban housing. As well, the City is likely to achieve its economic goals, which include increasing downtown employment, maintaining steady growth in its traditional economic sectors, and 10 percent employment growth within its target industries. The forecast generated by EPS presumes that the City continues to encourage, incent, and require the type of the development need to achieve the stated goals and puts in place the plans and infrastructure needed to support development and growth.

4. ***The density of new development and redevelopment within the City needs to be higher than existing development patterns to achieve some of the SA2020 goals and to leverage housing and economic development opportunities.***

   The Component 2 analysis identified a demand for more walkable residential neighborhoods as well as the need to build more dense employment centers to be able to accommodate future demand. This finding was reinforced by the analysis of the SA2020 goals. The City desires to increase the number of walkable residential neighborhoods and the City's overall

Walk Score. New land use regulations and plans are needed to build new walkable residential neighborhoods and help transition existing neighborhoods into more mixed use, walkable areas. The City also has the ambitious goal of reducing vehicle miles traveled (VMT) per capita by 10 percent. To achieve this goal major changes are need to the built environment. Addressing VMT and how to encourage use of alternative modes can have a major impact on other SA2020 goals including reducing obesity and diabetes rates, reducing pollution and greenhouse gas emissions, and reducing automobile accidents.

5. ***Investments and planning efforts should be focused on catalyzing development within Activity Centers in order to transition the centers into more urban, compact areas.***

   No major infrastructure improvements or barriers were identified in the analysis of the four Activity Centers analyzed for this study. Improvements are needed to provide infrastructure and address flood plain issues in the Brooks Activity Center, but these improvements are well within industry standards for greenfield development. The City should instead focus investments and efforts on catalyzing new development and transitioning the built environment to support more mixed use, walkable environments in the Activity Centers. Recommended next steps for each Activity Center include:

   - **Brooks City Base Activity Center** – The City needs to work with the Brooks Development Authority and VIA Metropolitan Transit to encourage a more dense development pattern at the Brooks City Base redevelopment.

   - **Greater Airport Area Activity Center** – A subarea plan is needed for the Greater Airport Area to identify catalytic nodes that can spur redevelopment. As well, the City needs to work with VIA to identify transit solutions for connecting to and within the Greater Airport Area. The area lacks available land to accommodate the potential employment growth in the area. A more dense development pattern is needed to accommodate future growth.

   - **Medical Center Activity Center** – The City should partner with Medical Center institutions, businesses and stakeholders to create a plan to turn the area into an Innovation District. The Medical Center is expected to grow in employment and has the necessary land to accommodate this growth and introduce a mixture of uses. The City has the opportunity to make the area function as a cohesive center that can integrate innovation opportunities that will spur economic activity within the existing uses and buildings.

   - **Midtown Activity Center** – The City should identify approaches and plans to help reconnect the Midtown area to the Central Business Districts by providing enhanced multimodal connections across the Interstate 35 loop along the arterial roads including Broadway, McCullough Avenue, North Street, Mary's Street, and San Pedro Avenue.

2. *FISCAL IMPACT ANALYSIS*

This chapter provides a summary of the fiscal analysis of four development scenarios. The purpose of the analysis is to illustrate the impact of current, prevailing development patterns within San Antonio and compare them to the suggested potential development patterns identified as being in demand within Component 2. This chapter begins with a literature review of recent studies aimed at identifying the fiscal benefits of infill development. The remainder of the chapter is a summary of the methodology used for the fiscal analysis and results of the modeling work.

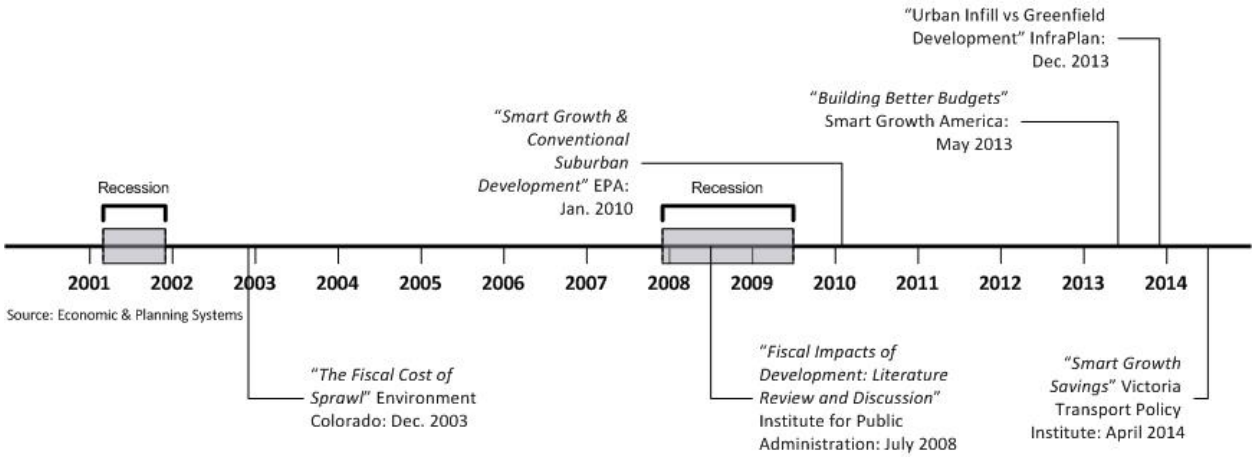
Fiscal Impact Analysis Overview

The following discussion is offered as a brief review of relevant existing and recent literature regarding the costs and impacts associated with different types of development (i.e. infill versus greenfield). Although these considerations reflect a more limited definition of "infill", the findings will be useful to the City of San Antonio's planning efforts and understanding of the general fiscal implications.

Literature Reviewed

This is not intended to be an extensive review of literature that addresses the advantages and disadvantages to infill or greenfield development, but it is intended to pull from some of the more prominent contributions of recent literature regarding the impacts associated with these types of development. As illustrated in **Figure 1**, six significant contributions to the literature from the past decade are reviewed. The oldest study, completed by the Environment Colorado Research and Policy Center in late 2003, offers remarkably consistent findings as those of newer studies, e.g. a study completed by the Victoria Policy Institute in April 2014.

Figure 1
Timeline of Development Type Infrastructure Cost Literature Review



Definitions

The definitions of infill and green-field have been used with broad applications. For this study, definitions have been provided to clarify the analysis.

Infill

Infill can generally be defined as development or redevelopment of vacant, abandoned, or underutilized sites located within an existing and/or developed municipal context. A primary characteristic of such a site is the presence of water, sewer, communications, or road infrastructure internal to the site that are relatively (though not always or completely) sufficient to meet the needs of the proposed development. Other characteristics may be more contextual, such as proximity to other residential areas, services, civic amenities and attractions, and employment centers.

Greenfield

Greenfield development, by contrast, is characteristically the development of open land, or existing agricultural land on the urban periphery that does not contain water, sewer, communications, or road infrastructure internal to the site. As well, regional infrastructure is relatively insufficient to meet the demands of the proposed development. Under these conditions, utility connections, such as mainline water and sewer lines need to be extended into the site, roads and rights-of-way need to be provided, and other infrastructure needs to be developed.

Impacts

As noted in much of the literature reviewed, the impacts of infill and greenfield developments can vary widely depending on their location and proximity to services, existing infrastructure, transportation networks, and employment centers. Generally, however, there are consistencies among the findings of these studies pointing to the reality of increased costs and impacts to the public sector in both capital and ongoing costs attributed to greenfield development that exceed those of infill development.

The following findings are summarized from the studies collected and generally have itemized costs associated with the following horizontal infrastructure costs to the public sector in terms of either dispersed or compact development, density levels, general infill and greenfield development case studies. The costs identified are also fairly high level in terms of roads, water and wastewater, fire, police, schools. Some studies also delve deeper to include electricity, telecommunications, gas, and health costs. But for simplicity of understanding, the following discusses the cost impacts associated with water/sewer and roads.

Water and Sewer Impacts

The extension of mainline water and sewer infrastructure can be a costly component of horizontal development, regardless of location. But, for the most part, the findings of this literature reveal that water and sewer costs associated with greenfield development are 20 to 50 percent higher than water and sewer costs associated with infill development. Using case studies, the authors of this literature calculate that:

- Victoria Transport Policy Institute (2014): Annual municipal utility costs are 36 to 48 percent higher for rural cluster development types than for infill within higher or medium density development types.

- Environment Colorado (2003): The capital costs of constructing water and sewer lines can increase costs by 20 to 40 percent.
- Infraplan (2013): Citing a study completed by Roman Trubka in 2012, which used 22 case studies from the U.S., Canada, and Australia, upfront water and sewer infrastructure costs were 52 percent higher in outer-fringe or greenfield developments than infill developments.
- Institute for Public Administration (2008): In this literature review, a study of developments in Texas identified that water infrastructure in greenfield development cost approximately 27 percent more than in infill developments. Other studies cited cost savings for infill of 17 to 29 percent over greenfield.
- EPA (2010): This study estimated that general infrastructure cost savings for infill development ranged from 32 to 47 percent over greenfield development.
- Smart Growth America (2013): This study uses a handful of case studies from around the country and estimates that infill or smart growth development saves an average of 38 percent on general infrastructure costs over greenfield or conventional suburban development.

Road Impacts

The findings of some of the literature show that road costs associated with infill come with a cost savings ranging from 12 to 25 percent lower than greenfield development, whereas other sources put the magnitude of difference between costs in multiples of 3 to 5. Estimates by study are:

- Victoria Transport Policy Institute (2014): This study cited a 1999 work that estimated the cost of roads at different densities. Projects at 2.1 units per acre required nearly 3 times the cost of roads than developments of 5.5 units per acre.
- Environment Colorado (2003): This study estimated that the cost of building roads was approximately 25 percent lower in infill or compactly developed areas than in sprawling greenfield areas.
- Infraplan (2013): In this study of 22 case studies, average road costs of greenfield development were higher by multiplies of 5, and general infrastructure costs were higher in greenfield developments by a factor of 3 over infill development.
- Institute for Public Administration (2008): This study cited a national study of road infrastructure costs completed in 2000 that estimated a savings of nearly 12 percent if a more planned development pattern took place. It also cited another national report that average several fiscal impact studies conducted on the differences between road costs for infill and greenfield development types, which determined that roads in infill development cost 25 percent less than roads in greenfield developments.

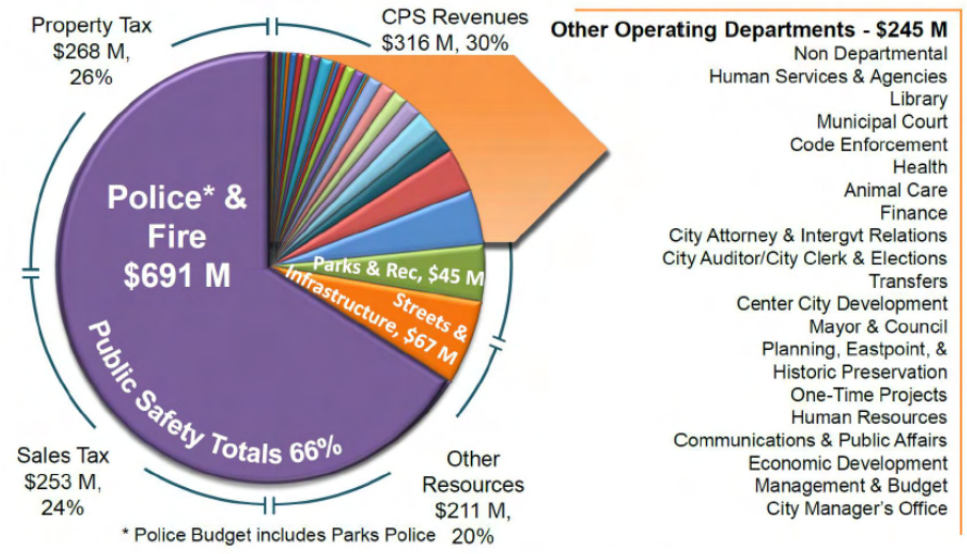
San Antonio Budget Framework

The City of San Antonio's annual budget is split into three types of funds: Governmental, Proprietary, and Fiduciary. Within these three fund types are specific funds types. The funds most impacted by new development are within the Governmental funds and the Proprietary funds. Within the Governmental funds is the primary fund the City has, the General fund. The General fund is the most directly impacted fund and is the focus of this fiscal impact analysis. A handful of other special revenue and enterprise funds are impacted by new development, including the advanced transportation district, storm water operating and capital funds, tax increment financing fund, debt service fund, capital project fund, and development services fund. In most cases these other special funds are cost recovery or revenue neutral funds, which means the revenue sources for these funds are designed to match the expected cost of the fund. These funds were not analyzed due to their structure or the indirect relationship of revenue and expenditures.

The General fund accounts for 43 percent of the total City expenditures based on the 2015 budget. The General fund has three main revenue sources: property tax, sales tax and an annual percent of revenue generated by CPS Energy. Property tax accounts for 26 percent of revenue to the General fund, sales tax accounts for 24 percent, CPS revenues account for 30 percent, and the remaining 20 percent comes from a variety of smaller sources, as shown in **Figure 2**.

The General fund has 25 operating departments that make up the expenditures of the budget for the fund. However, four of these departments constitute over 75 percent of the fund expenditures. Expenditures related to public safety (police and fire) account for 66 percent of total fund expenditures. Streets and infrastructure and parks and recreation are the other two major funds in terms of total expenditures.

Figure 2
San Antonio General Fund Revenues and Expenditures, 2015



Revenues and Expenditures Used in the Fiscal Model

The fiscal analysis completed for the project attempts to measure the relative fiscal impact of four development scenarios on the General fund. EPS used the City's 2014 Annexation 360 study as the framework for the analysis. The revenues and expenditures from the General fund were used in this analysis, but some adjustments to the approach to calculation impacts were made to address the varying impact the development scenarios. The approach to each revenue and expenditure is described below.

Revenues

Sales Tax

The City of San Antonio charges a 1 percent sales tax on retail sales. EPS estimated retail spending from new households and workers (within office and retail space) and calculated the estimated sales tax these groups will produce.

Using the citywide average household income of $61,000, EPS estimated that total potential income (avgerage income X households) of the households within the four scenarios. EPS estimates that households spend 35 percent of their income on retail purchases (based on U.S. Economic Census). This factor is applied to the total personal income and then factored down by 15 percent to account for retail sales made outside of the City.

For commercial and office space, estimates of weekly spending by office workers were used to estimate sales from new workers in the new office and retail space. The estimates are based on survey data collected by the International Council of Shopping Centers (ICSC) in 2013. ICSC estimates that an average office worker spends $130 weekly on retail purchases while at work or near work.

Both the estimate retail sales from households and workers were multiplied by 59 percent to account for non-taxable sales. This 59 percent factor was used within the City's Annexation 360 study. Lastly, the 1 percent sales tax rate is applied to the taxable sales to estimate sales tax revenue to the City.

EPS used a different approach to calculating sales tax than the City's approach. The City attributes retail sales to the stores that the goods are sold in. EPS typically attributes retail sales to the people who make the purchases, therefore households and workers are credited with the sales. Retail sales and stores are dependent on the population surrounding them to support them. Attributing retail sales tax to stores inflates the fiscal benefit of retail space and discounts the impact that housing has on the retail viability. For this scale of analysis, EPS chose to use an approach that attributes the sales to the people making the purchases. The factors and calculations used to calculate sales tax can found in **Appendix Table 2.1**.

Property Tax

The City of San Antonio assesses a 0.566 percent property tax on every $100 of assessed value of a property. The property tax revenue is split into two funds: maintenance and operations (0.354) that go into the General fund; and debt service (0.212) that is used to repay bond debt for capital improvement projects.

EPS used development values for the uses in each scenario to estimate the property tax generated. The development values used can be found in **Appendix Table 1.2** and the calculation of property tax can be found in **Appendix Table 2.2**.

CPS Energy

The City of San Antonio receives 14 percent of the gross revenue from monthly household bills for energy from CPS of incremental commercial and residential development. EPS used the average monthly bills for households and commercials space to estimate the revenue from CPS. The factors and calculations used to estimate CPS revenues can found in **Appendix Table 2.3**.

Other Revenue

Other revenue sources calculated are from a percent of monthly San Antonio Water Systems (SAWS) user fees on new development and EMS and alarm permit revenue. The factors used are from the Annexation 360 study. The factors and calculations used can be found in **Appendix Table 2.4**.

Expenditures

Police Department Expenditures

Police expenditures are based on the volume of calls for service. A 0.65 calls per capita factor used in the Annexation 360 study is used to estimate additional call volume and the associated cost to address the calls. Generally, different levels of density do not impact police service. Geographic location also plays a limited role on costs. Sub stations are placed within the City to provide a dispersed presence of officers, but generally officers are out of the station patrolling and/or responding to calls.

EPS estimated the total population generated by each scenario to forecast police expenditures. The total population includes resident populations from the households (using an average person per household factor for each housing type) and from workers within the office and retail space. The estimated worker population was reduced by half because they are assumed to be at work for half of the day. Please refer to **Appendix Table 3.1** for the cost calculations and factors.

Fire Department Expenditures

The provision of fire service is the most costly expenditure impacted by new development. Fire department costs account for over half of the annual operating costs measured in the model. The costs associated with fire service are also the most complicated to model and difficult to develop cost factors for.

Budgeting Approach

Fire department expenditures are paid for through two main approaches. For large capital costs, like new stations, requests from the department are included within revenue bond requests that are issued every five years. The bonds are repaid through property tax revenue that is dedicated to debt service. New stations have an average capital cost of approximately $4 million.

Annual operating costs are paid for through the City's General fund. The average annual operating cost for a new station is approximately $2 million to $2.5 million, but this estimate is for a station with only an engine company. Fire stations can have multiple engine companies, can include ladder companies that serve a wider geography, and typically include an emergency medical services (EMS) company as well. A station with all three companies (engine, ladder and EMS) has an annual operating cost of approximately $6.5 million.

Future Development Impact on Department

The fire department bases its station locations and the number of companies at each station based on two main factors: geography and call volume.

The geography that a station serves is based on the department's goal of a four minute, fifteen second travel distance from the station. The department has used a five-minute travel shed for annexation planning. The number of households and businesses served within an average travel shed can vary greatly based on the density of development and roadway network. Generally, stations located in lower density areas with a disconnected or constrained roadway network will serve fewer residents and businesses and therefore have a higher cost per capita. The need to provide service within a reasonable response time, as the City does currently, means that development and annexations in areas that are sparsely population or with disconnected roadway cost will increase cost to the City. Newly annexed areas, regardless of the population density or associated road pattern, will likely require a new station. Annexation was cited by the fire department as the biggest impact on budgeting and future planning. The department generally would prefer growth to occur within existing station areas and that new annexation areas be defined to limit impacts on fire service.

The call volume is the major determinant of the number and type of companies within a station. There is not average number of calls per station that the department uses to assess the need to increase staffing or shift service areas. The call volume is measured against response times to determine changes. Generally, if response times increase due to high call volume then changes are made by the department, which could include service areas changes, increases in staffing and companies, and/or new stations.

There are 51 fire stations within the City of San Antonio. The major cost impact of new development on the fire department occurs when new stations are added, which is most often triggered by annexation. Major infill development may trigger station renovations or additional companies but are far less than a new station capital cost. A new station generally has at least one engine company and one EMS company, and may have a ladder company depending on the location of other ladder companies.

The average engine company has a 5,845-acre coverage area and its main focus is response time and travel distance. Therefore additional households and businesses within a coverage area do not have a major impact on the demand for additional stations. It does however reduce cost on a per capita basis.

Ladder companies are not located at every fire station. There are currently 20 ladder companies. An average ladder company serves 14,906 acres. The impact of new development is similar to engine companies in that more development within a coverage area can be assumed to reduce costs on a per capita basis.

EMS companies are impacted differently by new development. The vast majority of calls and associated responses from a fire station are for EMS. Call volume is the main determinate of demand for EMS service. EMS companies often are responding to calls from within a service area and are not at the station when calls come in. Therefore, a higher density of uses within their coverage area will only generate more calls. The EMS company's costs are derived using the total population (residents and workers) generated by new development.

Fiscal Model Methodology

The City does area specific analysis to determine fire department costs when doing fiscal impact analysis, which are typically done for annexation areas. EPS used average cost estimates for a new station, based on the City's recent Annexation 360 study, to estimate the cost for fire service.

For this model, EPS used the average annual operating cost for each company (engine, ladder, EMS) within a new station. For an engine company, the per unit or per square foot cost for service is based on the proposed density of development compared to the citywide average density. Using a citywide average density of households (4.5 per acre) and commercial space (5,570 building square feet per land acre), an average cost per housing unit or commercial square foot can be derived. The average cost factor is increased or decreased based on the proportional difference in density of each scenario. For example, the average housing density for the conventional neighborhood scenario (described later in this section) is 3.5 units per acre. This density is 22 percent lower than the citywide average of 4.5 units per acre; therefore the cost per housing units is 22 percent higher for this scenario than the citywide average.

The assumption is that a denser development will allow an engine company to serve more houses and businesses and therefore results in a lower incremental cost. The same methodology is used for ladder companies but with different coverage area averages. EMS service costs are derived using a per capita factor that is uniform for all four scenarios. Refer to **Fiscal Model Appendix Table 3.2** for the cost factors used.

Infrastructure Expenditures

Street maintenance, signals, signs and markings are the major cost elements for the transportation and capital improvements department within the General fund. The costs for this department are equated to per centerline mile cost factors. To estimate the costs created by development, the number of centerline miles is calculated based on a citywide factor for the number of households or commercial square feet per centerline mile. The number of centerline miles per household or square foot is factored up or down by the difference in density of the development relative to the citywide average of 4.5 units per acre or 5,570 square feet of building per land acre. Once the number of centerline miles is estimated, the centerline miles required are multiplied by a cost per centerline mile factor for streets and for signals, signs and markings. Please refer to **Appendix Table 3.3** for the cost calculations and factors.

Other Expenditures

Other expenditures estimated were code enforcement and animal care expenditures, which are calculated on a per capita basis. The administrative cost to collect sales and property tax is also estimated. These factors are from the Annexation 360 study. Please refer to **Appendix Table 3.4** for the cost calculations and factors.

Development Scenarios

Five development scenarios were developed to test their fiscal impact. The scenarios are development programs for either a residential development, 130 acres in size or a mixed use development site, 65 acre site in size. The development programs reflect the existing conditions in San Antonio or the recommended approaches to new development that was found to be in demand within Component 2. The growth forecast and future development demand estimates created in Component 2 are based on a set of development typologies, shown below in **Table 1.** A mixture of the development typologies is used for each scenario.

Table 1
Component 2 Development Typologies

Typologies	Description	Density/Intensity
Housing		
Single Family		
Rural Residential	Single family homes with limited roadway access and minimum lot size of one acre	1 Units per Acre
Conventional Suburban	Single family detached home on larger lots with large yards, large setbacks	5 Units per Acre
Walkable	Single family detached on small lot with small yard, limited setbacks	8 Units per Acre
Single Family Attached	Attached single family duplex or townhomes, with small yard	12 Units per Acre
Multifamily		
Low Rise Multifamily	Garden style apartment or condo, 2 to 3 story with parking on surface lots or detached garages	30 Units per Acre
Mid Rise Multifamily	Apartment and condo units within 4 to 6 stories with limited parking or parking structure	60 Units per Acre
High-rise Multifamily	Apartment and condo units within buildings with 7 plus stories, structured parking, ground floor retail and service office space	100 Units per Acre
Retail		
Auto-oriented Service/Retail	Mixture of stand alone, medium to large format retail spaces, strip retail and commercial spaces oriented around major arterial roads with off-street surface parking lots	0.20
Urban Service/Retail	Retail space within street and pedestrian oriented buildings, stand alone or multitenant/use, with limited or no off-street parking and or structured parking	0.50
Office		
Low-Rise Office	Stand alone single and multitenant office buildings with mostly or all off-street surface parking lots, one to 3 stories	0.35
Mid-rise Office	Stand alone single and multiteant office buildings with mostly on-street and structured parking, 4 to 10 plus stories, potential for ground floor retail	2.00
High-rise office	Multitenat office space in large, city block size buildings with structured parking and 10 plus stories	10

Source: Economic & Planning Systems

The five development scenarios are described below and the assumptions used for each scenario are shown in **Table 2.**

- **Conventional Neighborhood** – This development program is meant to reflect current residential development conditions in the City with low-density single-family housing. This represents the impact of continuing current residential development patterns. The conventional neighborhood program has 410 housing units on the 130-acre site. The average housing unit density is 3.5 units per acre. The average density and the site size are based on the averages found for residential master planned developments in the City and Bexar County since 2000.

- **Walkable Neighborhood** – The Component 2 analysis identified a lack of walkable residential neighborhoods within San Antonio. This development program is meant to represent the density for single family detached housing that would be found in a compact, walkable neighborhood. The walkable neighborhood has 936 units on the same 130-acre site, with an average housing unit density of 8.0 units per acre.

- **Mixed Housing Walkable Neighborhood** – A walkable neighborhood likely needs a mixture of housing types and commercial uses to allow for the neighborhood have the necessary density and walkable destinations. This development program is meant to represent the density for a residential development that would represent a compact, walkable neighborhood. The walkable neighborhood has 1,626 units on the same 130-acre site, with an average housing unit density of 13.9 units per acre. The neighborhood has a mixture of single family detached housing, attached units (townhomes), and multifamily apartments and/or condominiums.

- **Urban Activity Center** – The Component 2 analysis identified 13 Activity Centers within the City and forecast that at least 50 percent of new jobs and multifamily households could locate within these centers. To make these areas attractive to additional job and household growth and to accommodate the amount of jobs forecast for them, the centers need to be built in a more urban, dense environment that supports multi-modal transportation. This development program is meant to portray a development that represents the needed density to create urban activity centers.

  The Urban Activity Center program is based on the average size for commercial master planned developments in the City and Bexar County since 2000, which was 65 acres. The program has 25 percent of the acreage used for multifamily housing with an average density of 60 units per acre. The program has 878 multifamily units. The remaining acreage is split evenly between office and retail uses. The retail uses have an average floor area ratio (FAR) of 0.5 and the office uses have an average FAR of 1.0. The program has a total of 955,598 square feet of office space and 477,799 square feet retail floor area for a total 1,433,396 square feet. The average FAR for the commercial portion is 0.8. The Component 1 and Component 2 studies found that five of the Activity Centers lack land capacity to accommodate future demand if development continues at under historic development patterns. To accommodate future demand these centers need to develop in the future at an average density of 0.8, which is double the current average FAR for those centers of 0.4. This program reflects a development that would be built at the density needed to change the land use pattern in these centers to accommodate future growth.

- **Suburban Activity Center** – Many of the newer employment centers in San Antonio are on the fringe of the city and built in a suburban nature, with two to three story office buildings built in a campus style on large parcels along a major arterial or highway. This program is meant to reflect the density of these developments to illustrate how they compared to the urban activity center in terms of fiscal impact.

  The Suburban Activity Center program has the same split of acreage between multifamily, retail, and office as the Urban Activity Center program. The program has the same size of 65 acres as the Urban Activity Center. The average density of the residential units is 30 units per acre. The average FAR for retail space is 0.20 and 0.35 for office uses. These average densities match with the existing development patterns within the Suburban Activity Centers identified. The program has a total of 525,579 square feet of commercial space.

Table 2
Fiscal Impact Analysis Development Scenarios

Description	Units/Sq. Ft. Conventional Neighborhood	Walkable Neighborhood	Mixed Housing - Walkable	Suburban Activty Center	Urban Activity Center
SITE AREA	**130**	**130**	**130**	**65**	**65**
Non-Developable Acreage	13	13	13	6.5	6.5
Developable Area	**117**	**117**	**117**	**58.5**	**58.5**
Project Density					
Residential					
Apartment/Condo	**30**	**60**	**60**	**30**	**60**
Townhome	**10**	**15**	**15**	**10**	**15**
Singe-Family	**3.5**	**8**	**8**	**5**	**8**
Commercial (FAR)					
Retail	**0.20**	**0.50**	**0.50**	**0.20**	**0.50**
Office	**0.35**	**1.00**	**1.00**	**0.35**	**1.00**
Industrial	**0.15**	**0.30**	**0.30**	**0.15**	**0.30**
RESIDENTIAL					
Apartment/Condo	**0%**	**0%**	**10%**	**25%**	**25%**
Subtotal	**Units**	**Units**	**702 Units**	**439 Units**	**878 Units**
Townhome	**0%**	**0%**	**10%**	**0%**	**0%**
Subtotal	**Units**	**Units**	**176 Units**	**Units**	**Units**
Singe-Family	**100%**	**100%**	**80%**	**0%**	**0%**
Subtotal	**410 Units**	**936 Units**	**749 Units**	**Units**	**Units**
	100%	100%	100%	25%	25%
Total Residential	**410 Units**	**936 Units**	**1,626 Units**	**439 Units**	**878 Units**
Units per Acre	**3.5**	**8.0**	**13.9**	**30.0**	**60.0**
NON-RESIDENTIAL					
Commercial	**0%**	**0%**	**0%**	**75%**	**75%**
Retail	0	0	Sq. Ft.	191,120 Sq. Ft.	477,799 Sq. Ft.
Office	0	0	Sq. Ft.	334,459 Sq. Ft.	955,598 Sq. Ft.
Industrial	0	0	Sq. Ft.	0	0
Subtotal	**Sq. Ft.**	**Sq. Ft.**	**Sq. Ft.**	**525,579 Sq. Ft.**	**1,433,396 Sq. Ft.**
Total Non-Residential	**0**	**0**	**0**	**525,579 Sq. Ft.**	**1,433,396 Sq. Ft.**
Bldg SF per Acre	**0**	**0**	**0**	**11,979**	**32,670**
Floor Area Ratio				**0.3**	**0.8**

Source: Economic & Planning Systems

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Fiscal Impact of Development Scenarios

Ongoing Revenues

The calculation of revenues generated by the five development scenarios identified that the three denser programs (walkable neighborhood, mixed housing walkable neighborhood and urban activity center) produced more total revenue and revenue per acre than the other two scenarios. The walkable neighborhood program generates $976,866 annually, which equates to $7,445 per acre, as shown in **Table 3**. The mixed housing walkable neighborhood program generated $1,274,958, or $9,807 per acre. The urban activity center program generates $2,115,003 annually in revenue or $32,539 per acre.

The conventional neighborhood program generates $423,441 in annually revenue or $3,257 per acre. The suburban activity center program generates $837,120 in annual revenue, which equates to $12,879 per acre.

Table 3
Ongoing Revenues

Description	Conventional Neighborhood	Walkable Neighborhood	Mixed Housing - Walkable	Suburban Activty Center	Urban Activity Center
Ongoing Revenues					
Sales Tax Revenue	$30,469	$69,643	$116,659	$69,572	$167,324
Property Tax Revenue					
O&M	$259,605	$593,383	$739,323	$120,280	$240,561
CPS Energy Revenue	$106,634	$243,734	$331,498	$102,792	$235,928
Other Revenue	$26,734	$61,106	$87,478	$544,476	$1,471,191
Ongoing Revenues	**$423,441**	**$967,866**	**$1,274,958**	**$837,120**	**$2,115,003**
Revenue per Acre	**$3,257**	**$7,445**	**$9,807**	**$12,879**	**$32,539**

Source: Economic & Planning Systems

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Ongoing Expenditures

The three denser development programs also produce the highest expenditures of the scenarios analyzed, as shown in **Table 4**. The walkable neighborhood has an ongoing expenditure total of $574,730 annually, or $4,421 per acre. The mixed housing walkable neighborhood program has an ongoing expenditure of $752,100, or $5,785 per acre. The urban activity center total expenditure estimate is $964,378, or $14,937 per acre. The total ongoing expenditure for the conventional neighborhood program is $312,613 annually, or $2,405 per acre. The total expenditure total for the suburban activity center is $428,339, or $6,590 per acre.

Table 4
Ongoing Expenditures

Description	Conventional Neighborhood	Walkable Neighborhood	Mixed Housing - Walkable	Suburban Activty Center	Urban Activity Center
Police Expenditures	$97,343	$222,499	$308,384	$173,085	$428,514
Fire Expenditures	$149,984	$265,563	$343,298	$183,009	$418,894
Infrastructure Expenditures	$48,654	$48,654	$48,654	$42,179	$42,179
Other Expenditures	$16,631	$38,014	$51,763	$30,066	$74,791
TOTAL ONGOING EXPENDITURES	**$312,613**	**$574,730**	**$752,100**	**$428,339**	**$964,378**
Expenditures per Acre	**$2,405**	**$4,421**	**$5,785**	**$6,590**	**$14,837**

Source: Economic & Planning Systems

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Net Fiscal Impact

The net fiscal impact of each of the five development scenarios is shown in **Table 5**. The urban activity center has the highest net positive fiscal benefit of the five programs with a net fiscal impact of $1,150,625 ($17,702 per acre). The net fiscal impact of the suburban activity center is $480,605 ($7,394 per acre). The mixed housing walkable neighborhood had a net impact of $522,859 ($4,022 per acre). The net impact of the walkable neighborhood is $393,136 ($3,024 per acre), and the conventional neighborhood has the lowest net fiscal impact of $110,829 ($853 per acre).

Table 5
Net Fiscal Impact

	Conventional Neighborhood	Walkable Neighborhood	Mixed Housing - Walkable	Suburban Activty Center	Urban Activity Center
Ongoing Revenues					
Sales Tax Revenue	$30,469	$69,643	$116,659	$69,572	$167,324
Property Tax Revenue					
O&M	$259,605	$593,383	$739,323	$120,280	$240,561
CPS Energy Revenue	$106,634	$243,734	$331,498	$102,792	$235,928
Other Revenue	$26,734	$61,106	$87,478	$544,476	$1,471,191
Ongoing Revenues	**$423,441**	**$967,866**	**$1,274,958**	**$837,120**	**$2,115,003**
Revenue per Acre	**$3,257**	**$7,445**	**$9,807**	**$12,879**	**$32,539**
Ongoing Expenditures					
Police Expenditures	$97,343	$222,499	$308,384	$173,085	$428,514
Fire Expenditures	$149,984	$265,563	$343,298	$183,009	$418,894
Infrastructure Expenditures	$48,654	$48,654	$48,654	$42,179	$42,179
Other Expenditures	$16,631	$38,014	$51,763	$30,066	$74,791
TOTAL ONGOING EXPENDITURES	**$312,613**	**$574,730**	**$752,100**	**$428,339**	**$964,378**
Expenditures per Acre	**$2,405**	**$4,421**	**$5,785**	**$6,590**	**$14,837**
Net Fiscal Impact	**$110,829**	**$393,136**	**$522,859**	**$408,781**	**$1,150,625**
Net Impact per Acre	**$853**	**$3,024**	**$4,022**	**$6,289**	**$17,702**

Source: Economic & Planning Systems

H:\133029-San Antonio Comp Plan Initial Studies\Models\Fiscal Impact\[133029-Fiscal Model_2-23-15.xlsm]SUMMARY

3. SA2020 IMPACT OF DEVELOPMENT PATTERNS

Eight indicators within the SA2020 plan were analyzed to enable the City to gauge its progress. These indicators have been analyzed based on the findings of Chapter 2 of this report and the Component 2 study to document how growth can be both fiscally sustainable and supportive of larger city measures of progress. The indicators are ways to measure the goals set within SA2020. All of the goals are designed to be achievable by 2020. The indicators all measure the change from 2010 to 2020 to test impact on these recognized priorities.

In 2010, EPS built a Sustainable Urban Economics Model for the City's Office of Environmental Policy as part of a grant received by the City under the Federal Energy Efficiency Block Grants program. The model was structured to measure the triple bottom line impact of six policy goals. The findings and factors derived completing the Sustainable Urban Economics Model was also used to augment the analysis of the impact of SA2020 goals. SA2020 indicators that were relevant, potentially impacted and/or measurable based on the study are analyzed below.

Housing Related Goals

1. ***Increase downtown housing units by 5,000 units including mixed income and student housing.***

   As of the 2013 indicator report, there were 4,185 units in downtown in 2012; 881 units had been added since 2010 and 4,119 additional units are needed to reach the goal. The market analysis completed in Component 2 estimated that the CBD would increase in households by 12,000 units by 2040, which averages to 400 units annually. Based on interviews with downtown area developers, monthly absorption for apartments of 50 units in the greater downtown area was the estimated rate of absorption, which equates to 600 units per year. As of first quarter 2014, research results indicate that nearly 2,000 units were in the development pipeline (i.e. under-construction, approved, planned/proposed) in the central subarea.

   Based on current construction trends and market analysis, it is likely that this goal will be achieved. The current City policies and incentives are working well and there is strong market momentum for apartments in downtown, with new units achieving the highest rental rates in the City. For-sale multifamily housing is still struggling to gain market traction, but will become more feasible as land prices and rental rates continue to grow. Potential barriers to achieving this goal include a lack of development sites, the cost to upgrade aging infrastructure (specifically replacing aging water pipes to meet fire flow requirements), and a lack of residential services to support the housing growth (i.e. groceries, service retailers, area amenities).

2. ***Increase the number of pedestrian oriented neighborhoods in San Antonio.***

   See discussion below.

3. ***Increase the citywide Walk Score (44 in 2010) by 20 percent.***

   These two goals are identified within SA2020 and are similar in nature. The goal of increasing walkable neighborhoods does not have a measureable indicator. The goal of increasing citywide walkability is admirable but it may be better evaluated with smaller geographies.

The Walk Score is a good indication on how walkable an address, neighborhood, or city is and can be evaluated objectively. This approach determines how prevalent walkable neighborhoods are in San Antonio. The Walk Scores for 368 neighborhoods in San Antonio were tested. Of these 368 neighborhoods, 50 had a Walk Score of 50 or higher indicating that the neighborhood is "Somewhat Walkable" or "Very Walkable". Only three neighborhoods, Downtown, Five Points, and Tobin Hill, have a Walk Score of 70 or higher, which is considered very walkable. Based on the Walk Score only 14 percent of neighborhoods are "walkable".

The market analysis completed in Component 2 identified demand for walkable neighborhoods in San Antonio and illustrated, using Walk Score, that very few of San Antonio's fit this definition. In order to increase the number of walkable neighborhoods, changes to the land use regulations controlling new development are needed to allow and/or require new developments to provide walkable neighborhood attributes. As well, reinvestment in existing neighborhoods is needed to improve the infrastructure to support walking and generate greater mixture of uses.

4. ***Increase the ratio of urban core housing as compared to suburban housing by 35 percent.***

   This indicator is designed to measure new residential building and/or renovation permits issued within the I-410 Loop as a percentage of new development in San Antonio. The target is an increase of 35 percent of the capture rate of new household development activity. From 2000 to 2012, the Inside 410 subareas captured 14 percent of new households in the City. The forecast created for Component 2 estimated that the Inside 410 subareas would capture 22 percent of new households from 2010 to 2040. Based on the forecast, the City has the potential to achieve this goal.

Employment Related Goals

5. ***Increase the number of downtown employees by 25 percent.***

   According to the AAMPO, there was an estimated 46,000 employees within the Central Business District in 2010. The market analysis completed in Component 2 estimated the CBD would increase in employment by 33,000 jobs by 2040, which is an average annual increase of 1,100 jobs.

   Based on the estimated annual rate of growth for employment in the CBD found in Component 2, the City will come close to the goal with an estimated increase of 11,000 jobs by 2020, which is a 24 percent increase. Approximately two-thirds of the forecast job increases in the CBD are estimated to be within the traditional driving industries (health care, education, and tourism). The decrease in employment in the CBD in the recent decade was driven mainly by job loses outside these sectors. The biggest challenge for employment in downtown is to start attracting employment not related to public administration, health care or tourism. Downtown lacks Class A office space, which makes it difficult to lure companies to downtown. However, the larger issue to employment attraction to downtown is related to the workforce that lives near downtown and the perception by outsiders and local officials that San Antonio is a "suburban market" for office space and users. The recent, significant increase of housing development in downtown will help bolster the case that a talented, desirable workforce lives near downtown. More efforts are needed to attract businesses to the CBD, but also to generate job growth within existing businesses and encourage more business formation downtown.

6. Maintain steady job growth in the traditional San Antonio economic sectors.

The traditional San Antonio economic sectors are health care, tourism, education and military. The health care, tourism and education industries grew by an annual average rate of 3.0 percent between 2000 and 2012. The forecast completed for Component 2 estimated these industries would grow by an annual rate of 2.7 percent from 2010 to 2040. The City is likely to continue to experience steady job growth in its traditional economic sectors.

The Component 2 report did, however, find that the City needs to diversify its economic base. While the traditional economic drivers provide a reasonably strong economic base for the City, the average wages in these industries are lower than the countywide average. Employment growth within the City's identified industry clusters and other industries is essential to ensure economic vitality.

7. Pursue 10 percent job growth in the healthcare and biosciences, information technology and information security, aerospace, and the new energy economy sectors.

SA2020 does identify a goal to diversify the economic based by pursuing 10 percent job growth in the following sectors: health care and biosciences, information technology and information security, aerospace, and the new energy economy. Based on the forecast completed for Component 2, the City is expected to increase in employment within the identified sectors by a substantial amount. Using EPS definitions of these industries (excluding health care), the sectors identified are expected to grow by an annual rate of 2.1 percent between 2012 and 2040, which is the total annual growth rate for employment in Bexar County. These same sectors in aggregate decreased in employment between 2000 and 2012. Oil and Gas employment is a major reason this increase is expected, as Oil and Gas employment is expected to grow by 4.9 percent annually. Growth in the other sectors is estimated to be less robust and should be a main focus of economic development efforts for the City.

Vehicle Miles Traveled (VMT) Goal

8. Reduce vehicle miles traveled per person by 10 percent.

The goal to reduce VMT by 10 percent was one of the six policy goals tested in 2010 as part of the Sustainable Urban Economics Model project. This policy objective had the most measurable outcomes and largest impact on the triple bottom line of all the policies measured. Transportation accounts for a full third of CO_2 emissions in the United States and is the fastest-growing sector of greenhouse gas (GHG) emissions. Research has revealed that technological improvements in vehicles and fuels alone will likely be offset by the continued growth of driving in the U.S. Automobile vehicle miles traveled (VMT) is the most frequently used measure of driving in planning research fields. The amount of driving in a region depends on a number of factors but is primarily driven by a combination of land use patterns and available choices in alternative modes of transportation.

A variety of policies and actions can be used in an attempt to reduce VMT. These include pricing strategies, land use and smart growth strategies, non-motorized transportation strategies, public transportation improvement strategies, regional ride sharing, car sharing, and commuting strategies, and regulatory strategies.[1] The 2010 analysis assumed an investment in alternative modes of transportation, including bicycle infrastructure, an expansion of existing bus transit, and an expansion to new public transportation systems to reduce annual auto VMT in Bexar County.

The 2010 study found that a 10 percent reduction of VMT results in the greatest amount of GHG emissions reductions of all the policies tested. Assuming new transit improvements, a reduction of VMT results in the second largest one-time economic impact and largest annual ongoing economic impact of all the policies tested. A 10 percent reduction in VMT also has the greatest impact on household disposable income, providing households with greater spending potential, and improved health conditions. Specific topical findings included:

- **Obesity –** SA2020 has a goal of a 10 percent reduction adult obesity rates. The 2010 study assumed that a reduction in VMT would be facilitated, at least partially, by a shift in mode share. Specifically, an increase in the number of people who walk or bike. The modeled decrease in VMT increased the number of miles walked and biked by San Antonio residents. This increase in walking and biking was estimated to decrease the number of obese residents by 4.4 percent. The estimated result was an obesity rate of 25.1 percent, down from the current rate of 29 percent. For modeling purposes, increased walking and biking was estimated to occur instantly. However, to change the behavior of residents to facilitate increase walking and biking will take time and will require several different strategies. Investments in the built environment encourage alternative modes but are only a piece of the overall strategy. It is worth emphasizing that the reduction in obesity from mode shift alone is substantial and warrants additional consideration in terms of implementation tools.

[1] Cambridge Systematics; *Moving Cooler: An Analysis of Transportation Strategies to Reduce Greenhouse Gas Emissions*. Urban Land Institute, 2009.

- **Pollution -** SA2020 has a goal of reducing the per capita pollution emissions from transportation, with a goal of 100 percent compliance with EPA standards. The 2010 study found that reducing VMT by 10 percent would decrease greenhouse gas emissions by 1.5 percent. The most impactful component of reducing VMT on emissions was a reduction in total motorized miles traveled. Shifts to alternative modes such as buses or fixed guideway transit systems can reduce emissions but these modes still produce emissions. Decreasing the amount of miles traveled by residents can have a major impact on both VMT and emissions as it reduces all emissions.
- **Accidents –** SA2020 has a goal of reducing the number of accidents per 100,000 people by 50 percent. This is an ambitious goal, which will take several different strategies to achieve. The 2010 study estimated that 10 percent reduction in VMT would result in 2,200 less annual auto accidents. This reduction translates to a 5 percent reduction in total auto accidents in the City.

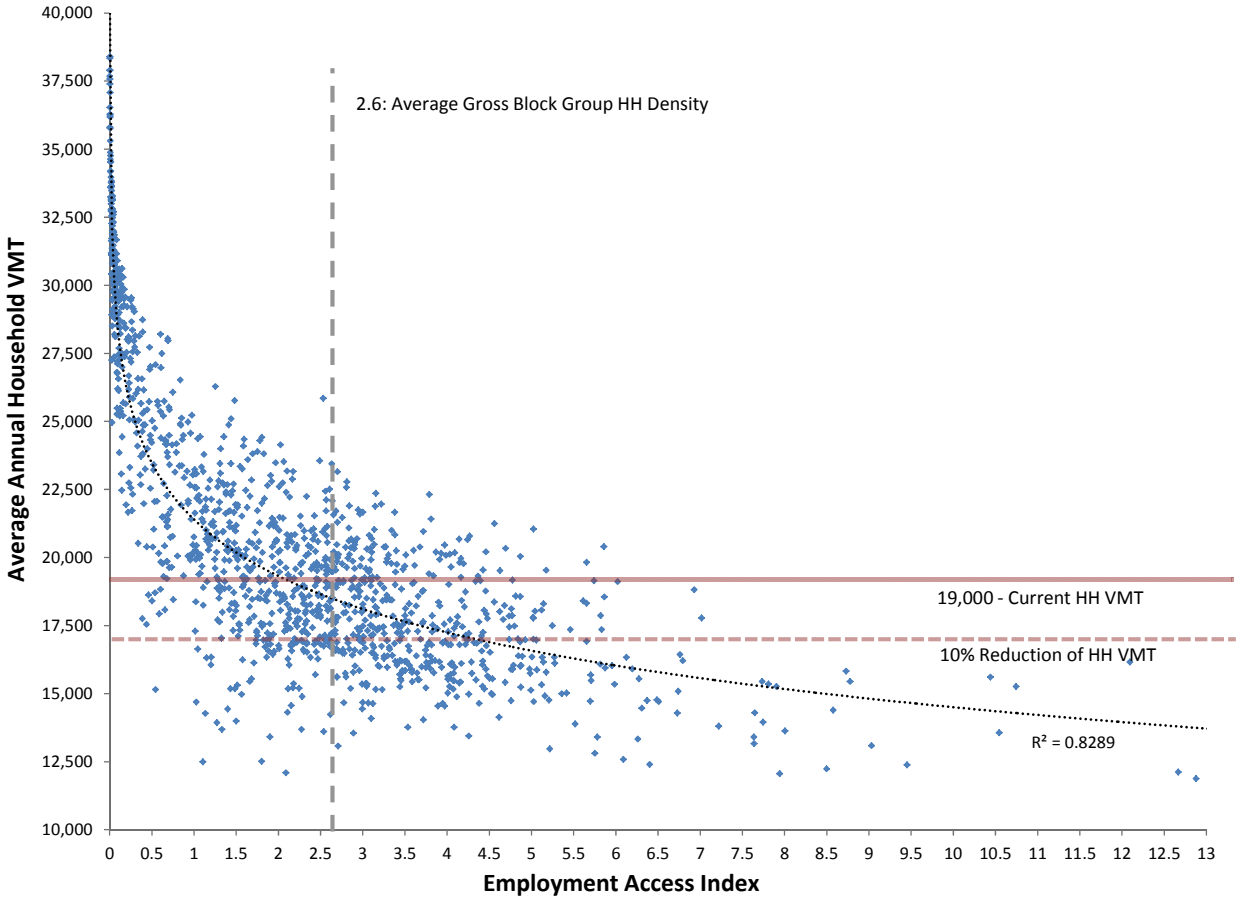
The reduction of VMT, as described above, has numerous positive impacts on the economy, society, and environment. Approaches to reducing VMT can vary. The relation of this SA2020 goal, the 2010 Sustainable Urban Economics Model, and Component 2 of this study can most directly be found in relation of VMT to the built environment.

EPS analyzed U.S. Census Location Affordability Index (LAI) data for Bexar County to understand how VMT correlates to the built environment. Using average household VMT, employment access index and gross household density for every U.S. Census Block Group in Bexar County, EPS measured the correlation between average annual household VMT and these two measures to understand how they impact VMT.

The average annual household VMT has a strong correlation to the gross housing unit density of the households within the block group. This correlation is illustrated in **Figure 3**. As gross housing unit density increased the annual average household VMT decreases logarithmically. The figure illustrates that a modest increase in housing unit density correlates to a decrease in VMT. The figure also illustrates that increases in density have a diminishing return on reducing VMT.

The average annual household VMT for Bexar County is approximately 19,000, which is shown in **Figure 3**. The average gross housing unit density for each block group is 2.67 units per acre. The gross density is measured by the total number of units in a block group divided by total land area, which also includes right of ways, commercial parcels, and other non-residentially used land. As a point of comparison, EPS estimates the City of San Antonio's average household density is 4.5 units per acre, which is measured by dividing total units by acreage of residentially used parcels.

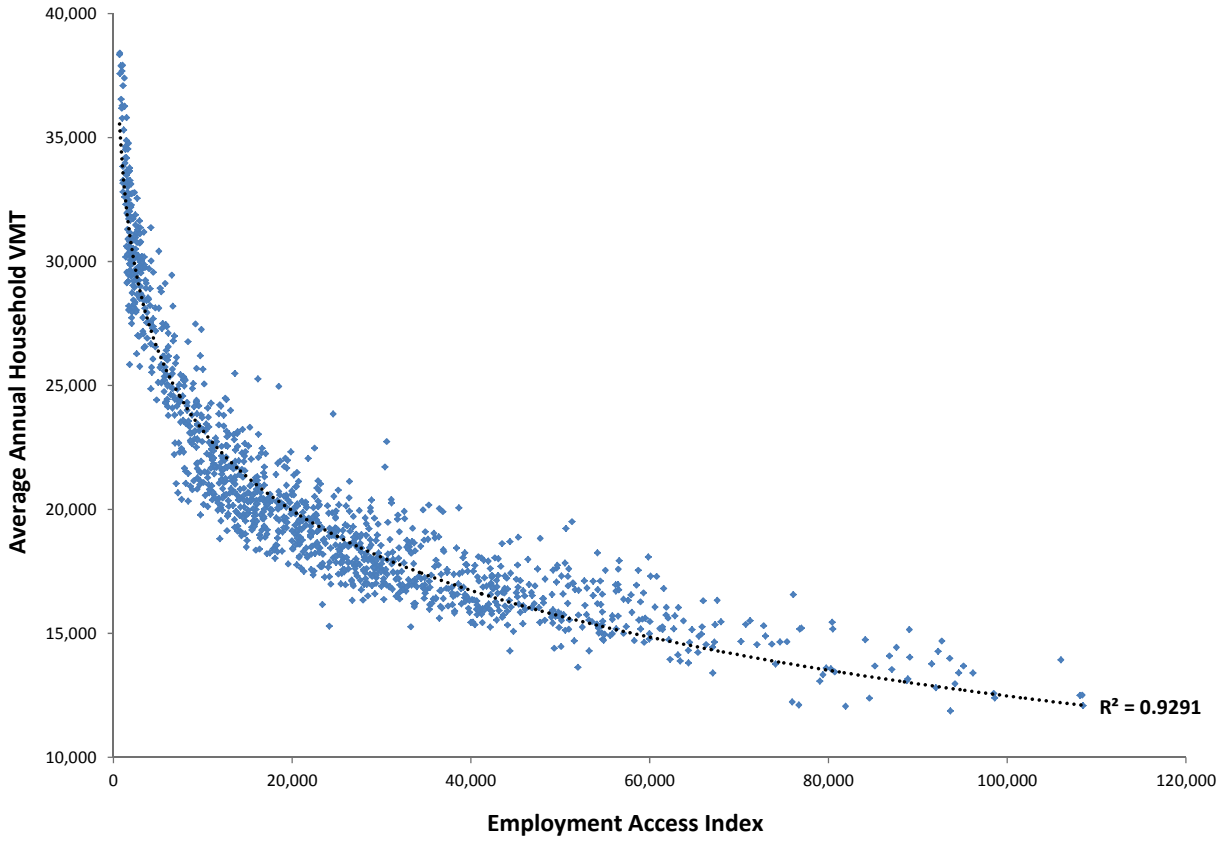
Figure 3
Average Annual Household VMT and Gross Household Density



A 10 percent reduction in annual household VMT would equate to an average annual VMT of 17,100 for San Antonio households. Using the U.S. Census LAI data, EPS found that the average gross household density of block groups with an annual average VMT lower than 17,100 was 3.95 units per acre. Increasing the density of housing can have a substantial impact on VMT, as households that are in a more compact area tend to drive less. This analysis also shows that it would a take a substantial increase in average density to impact VMT as much as desired.

The U.S. Census LAI data has a measure of the employment density of a block group. The measure is related to where residents of U.S. Census block groups work. The measure is called the Employment Access Index (EAI). The EAI measures the number of residents employed within a certain distance of the block group by counting the number of residents who work within their own block group and adjacent block groups. The goal is to create a relative index of employment opportunities for each block group. Measuring the EAI against household VMT shows that there is a strong correlation between the two, as shown in **Figure 4**. As the presence of employment increases the average annual VMT decreases. The data show that almost all of the block groups (575 of 596 block groups) that have an average annual VMT of less than the County average (19,000 annual VMT) have an EAI of over 20,000 jobs. All of the block groups with a lower than average annual VMT are within the Loop 1604 and 74 percent are within the I-410 Loop.

Figure 4
Average Annual Household VMT and Employment Access Index



These two analyses of the correlation of housing and employment density to VMT, illustrate the importance the built environment has on reducing the reliance on the automobile. The findings also reinforce the importance of the two major findings of Component 2, which are the need to provide more walkable, compact neighborhoods and the need to cluster employment in centers. These findings, not only are directly related to the market demand and preference, but also can have a major impact on many of the citywide objectives laid out in SA2020.

4. ACTIVITY CENTER INVESTMENT OPPORTUNITIES

An outcome of the identification of the 13 Activity Centers in Component 2 was a desire by City of San Antonio staff to understand improvements the City can make or partner on that will facilitate redevelopment/development within the Activity Centers. The goal is to identify a set of civic actions, policy changes and tools that will expand development opportunities, attract capital, accelerate development timing, and catalyze specific centers. EPS focused on four Activity Centers to identify improvements that address land availability, redevelopment impediments, and infrastructure capacity issues in each area. The four centers are Greater Airport Area, Brooks City Base, Medical Center, and Midtown. EPS evaluated improvements and changes to determine the ones that might have the greatest market impact, and Vickrey & Associates identified capacity issues in the centers based on the needed infrastructure to support development on ten catalyst sites.

Activity Center Catalyst Sites

Ten potential catalyst sites were identified within the four employment centers, which are shown in **Table 6**. The sites were chosen based on the presence of vacant and/or underutilized land, the quality of the location, and the potential for (re)development. It should be noted that the owners of these parcels may have no desire to develop these parcel or may choose to develop the parcels with different uses. As well, the redevelopment of some of the parcels may not be desirable or feasible upon more in depth investigation. The sites were used as hypothetical examples to determine the infrastructure issues that major development projects will encounter. As shown in the **Table 6**, the hypothetical development programs are aggressive. The purpose of the exercise is to illustrate the impact of a higher density development pattern on the sites to identify infrastructure barriers.

Table 6
Catalyst Site Development Programs

		Test Development Program		
Site ID	Acres	Residential Units	Retail Sq Ft	Office Sq Ft
Greater Airport Area 1	25.4		100,000	600,000
Greater Airport Area 2	17.6		50,000	400,000
Greater Airport Area 3	24.4	500	200,000	100,000
Greater Airport Area 4	26.5	750	250,000	200,000
Greater Airport Area 5	49.0		200,000	750,000
Midtown 1	12	720	15,000	
Midtown 2	9.3		50,000	600,000
Brooks 1	278.0	2,500	350,000	250,000
Brooks 2	453.2	3,000	400,000	400,000
Medical Center 1	136.6	2,000	75,000	2,500,000

Source: Economic & Planning Systems

Infrastructure Barriers

It should be noted that the parcels selected are generally representative of those in the area and have been tested with different development programs to test for impediments. The findings can be applied to the larger district and should not be interpreted as specific expectations about future development potential of a given site. Other factors, not the least of which include the landowner's direction, will affect future buildout.

The analysis of infrastructure barriers related to the four employment centers and the 10 catalyst sites were developed to help identify any infrastructure related needs the City may be able to address to aid development. The questions centered on the availability and capacity of water, sewer, storm drainage, traffic, and dry utilities infrastructure. The questions analyzed include:

Employment Center-wide Questions

1. Are there any major infrastructure issues in the area related to the capacity to serve future development?
2. Are there any indications that infrastructure may be reaching its capacity now and in the future?

Site Specific Questions

1. Can the existing infrastructure in place support the proposed development?
2. If not, is there a feasible solution to the problem?
3. If there is not sufficient infrastructure, what are the improvements needed and what is a high level cost estimate for the improvement?
4. Are costs excessive rendering certain sites and the corresponding high-density development programs infeasible?
5. What are potential tools that could be employed to defray costs?

Brooks Activity Center

The Brooks Activity Center is located near the Brooks City Base in southeast San Antonio. Currently, no major infrastructure capacity issues are noted for this area, although both water and sanitary sewer are not readily accessible to the two identified catalyst sites within the center. Sanitary sewer and water mains would need to be extended in order to provide these services to the identified sites in the employment center. The vacant and redevelopment parcels identified within the Activity Center are shown in **Figure 5**. The catalyst sites for this Activity Center are shown in **Figure 6.**

Approximately half of the Activity Center is located within a City-designated Airport Hazard Overlay District (AHOD). Being within close vicinity to Stinson Airport and Lackland Air Force Base, the Brooks Employment Center is subject to the City's AHOD. Developments within this area are subject to City and Federal Aviation Administration (FAA) restrictions based on their proximity to the airports.

Brooks Catalyst Site 1

The Brooks 1 Catalyst Site (Brooks 1) is located at the northeast corner of the intersection of IH-37 and Loop 410 in southeast San Antonio. There are no existing water mains bordering the site, and SAWS currently propose no main extensions. However, an existing 24-inch water main is located just outside of Loop 410 (within the Loop 410 right-of-way), which could be accessed if needed. Access to this main would require boring under Loop 410 and an off-site main extension to provide service to the site. SAWS regulations would call for a main extension along the frontage of the property; a high-level cost estimate has been provided to assimilate the cost associated with a 24-inch main extension to the site along the Loop 410 frontage. The estimated cost is $1.7 million. A 12-inch main (minimum) would be required on the site to service the Brooks 1 site.

The site currently has access to 60-inch and 72-inch sewer mains that run parallel to each other at the northeast corner of the site. On-site main extensions would be required to service the remaining site area in order to provide sanitary sewer service. This would include a minimum 8-inch main extension with associated manholes and service laterals as applicable. While the Brooks 1 site is not located on the City's Future Land Use Plan, it does not appear that capacity will be an issue for sewer or water service.

Salado Creek and an unnamed tributary to Salado Creek currently traverse the site, with approximately 62 percent (170+ acres) of the Brooks 1 site residing within the 100-year FEMA floodplain. There does not appear to be any existing storm drainage infrastructure or channel improvements on the Brooks 1 site; however, Salado Creek crosses under a bridge constructed as part of Loop 410. This existing structure may inhibit larger storm events from effectively passing under the roadway, causing backwater effects and larger areas located within the floodplain. Conducting a detailed floodplain analysis of the proposed site conditions and downstream conditions could potentially remove additional portions of the site from the floodplain. Development of this site is severely limited due to the large floodplain that is currently mapped on the site.

Interior roadways would be needed to access the various areas developed with the site. According to City standards, proposed roads that tie in to the access roads of either IH-37 or Loop 410 would need to be Primary Arterial (as identified in the City's Major Thoroughfare Plan) sections with a maximum right-of-way width of 120 feet. Once permanent access points are established for the site, smaller roadway sections can be used throughout the catalyst site. The site does not currently contain, or is adjacent to, any roadways that are identified to be developed on the City's Major Thoroughfare Plan (MTP).

The Brooks 1 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Brooks Catalyst Site 2

The Brooks 2 Catalyst Site (Brooks 2) is located at the southeast corner of the intersection of IH-37 and Loop 410 in southeast San Antonio. The site is bordered by an existing 24" water main that runs along Loop 410 and an 8" main that traverses the southwest corner of the site; there are no proposed main extensions identified from SAWS data. The Brooks 2 site would require a minimum 12" water main to be extended on the site to provide service. Since the existing 24" main already borders the site, it does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to be available to the Brooks 2 site. Currently, there are two large diameter lines that cross the site. These two lines (64" and 80") travel from north to south along Rosillo Creek. While no off-site main extensions are anticipated, on-site mains would be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon development programs created for the potential Catalyst Sites, the future land use includes residential, retail and office space; according to these uses, it does not appear that capacity will be an issue for sewer or water service.

Rosillo Creek and Salado Creek currently traverse the site, with approximately 56 percent (275+ acres) of the Brooks 2 site residing within the 100-year FEMA floodplain. Drainage infrastructure on the site is limited almost exclusively to existing bridge class structures and bar ditches within TxDOT ROW. These existing structures, particularly the bridge crossings, may inhibit larger storm events from effectively passing under the roadway, causing backwater effects and larger areas located within the floodplain. The only other infrastructure noted from aerial observation was a concrete structure that was constructed at an electrical easement crossing of Rosillo Creek. Other than this structure, there does not appear to be any other existing storm drainage infrastructure or channel improvements on the Brooks 2 site. Conducting a detailed floodplain analysis of the proposed site conditions and downstream conditions could potentially remove additional portions of the site from the floodplain. Development of this site is greatly limited due to the large floodplain that is currently mapped on the site. Proposed drainage infrastructure on-site would be required to convey storm water runoff to either of the two creeks.

Interior roadways would be needed to access the various areas developed with the site. According to City standards, proposed roads that tie in to the access roads of either IH 37 or Loop 410 would need to be Primary Arterial street sections with a maximum right-of-way width of 120 feet. Once permanent access points are established for the site, smaller roadway sections can be used throughout the catalyst site. The site does not currently contain nor is adjacent to any roadways that are identified to be developed on the City's MTP.

The Brooks 2 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing overhead transmission lines that are located onsite. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Greater Airport Area Activity Center

The Greater Airport Area (GAA) Activity Center is located near San Antonio International Airport in northeast San Antonio. The vacant and redevelopment parcels identified within the Activity Center are shown in **Figure 7**. The catalyst sites for this Activity Center are shown in **Figure 8**.

Data from SAWS shows several large sanitary sewer main upgrades and extensions throughout the Activity Center. With the diameter of the mains ranging from 18" to 42", it appears that SAWS is planning to increase the capacity for this area. While the consultant team is not aware of any capacity issues at this time, the plans for the various sewer mains indicate that SAWS is preparing for capacity increases.

Water main extensions were also identified within the center, but none of these extensions appear to be significant upgrades for increasing capacity. The catalyst sites identified within the GAA currently have access to water and sanitary sewer mains.

Being within a close vicinity to the San Antonio International Airport (SAIA), the Activity Center is subject to the City's AHOD. Developments within this area are subject to City and FAA restrictions based on their proximity to the airport.

Greater Airport Area Catalyst Site 1

The Greater Airport Area Catalyst Site 1 (GAA 1) is located at the southwest corner of the intersection of US Highway 281 and Loop 410 in northeast San Antonio.

The site is bordered by existing 16- and 8-inch water mains that run east and west along Rector and Chulie Streets; there are no proposed water main extensions identified from SAWS data within the GAA 1 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to be available to the GAA 1 site. Currently, there are two 8-inch lines that cross the site and a 24-inch line west of the site. The two 8-inch lines travel east and west along Rector and Chulie and the 24-inch line runs north to south along the existing concrete drainage channel. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for GAA 1 includes retail and office space, which matches the existing land use for this site; according to these uses, it does not appear that capacity will be an issue for sewer or water service. SAWS data does indicate that the 24-inch main is part of a 2011-2015 CIP project that includes upsizing it to a 42" sanitary sewer main that would run along the same alignment.

An unnamed tributary runs from north to south, just west of the site; approximately 1.4 acres of the 28- acre site is currently located within the 100-year FEMA floodplain. Drainage infrastructure on the site appears to consist of local drainage systems to convey storm water runoff from the developed land to the tributary west of the site. Conducting a detailed floodplain analysis of the proposed site conditions could potentially remove a portion of the site from the floodplain. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to either of the existing concrete channel located west of the site.

The GAA 1 site appears to have adequate access in the form of existing driveways and through-streets. It does not appear that interior roadways would be needed to access the various areas developed with the site. The site does not currently contain nor is adjacent to any roadways that are identified to be developed on the City's MTP.

The GAA 1 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Being within a close vicinity to SAIA, the GAA 1 site is subject to the City's AHOD. Developments within this area are subject to restrictions from the City and FAA Part 77 of the Federal Aviation Regulations. Limitations are based on a development's proximity to the airport, and more specifically, runways. Construction of vertical structures is limited to a maximum of 200 feet in height within 10,000 feet of the designated runways, depending on the location with respect to the various imaginary surfaces that are established by the FAA guidelines.

Greater Airport Area Catalyst Site 2

The Greater Airport Area Catalyst Site 2 (GAA 2) is located at the southeast corner of the intersection of US Highway 281 and Loop 410 in northeast San Antonio.

The site is bordered by existing 8-inch water mains that run east and west along Halm Street and north and south along Airport Boulevard, with a 16-inch main running east and west through the site along Parkridge Street; there are no proposed water main extensions identified from SAWS data within the GAA 2 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to be available to the GAA 2 site. Currently, there are several 8-inch lines that border the site; the mains run north and south along Airport Boulevard and Eastern Street, and east and west along Halm, Parkridge, and Hallmark. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for GAA 2 includes retail and office space, which matches the existing land use for this site; according to these uses, it does not appear that capacity will be an issue for sewer or water service.

The existing site conditions appear to use surface drainage to allow storm water to discharge to street right-of-ways from the site. If drainage infrastructure does exist on the site, it may consist of surface inlets and underground storm drains. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to an existing low or local collection point.

The GAA 2 site appears to have adequate access in the form of existing driveways and through-streets. It does not appear that interior roadways would be needed to access the various area developed with the site. Airport Boulevard is identified on the City's MTP as a Secondary Arterial Type A; according to City standards, smaller street sections intersecting this type of street may require additional ROW dedication to the City. It does appear that portions of Airport Boulevard have been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The GAA 2 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Being within a close vicinity to SAIA, the GAA 2 Catalyst Site is subject to the City's AHOD. Developments within this area are subject to restrictions from the City and FAA Part 77 of the Federal Aviation Regulations. Limitations are based on a development's proximity to the airport, and more specifically, runways. Construction of vertical structures is limited to a maximum of 200 feet in height within 10,000 feet of the designated runways, depending on the location with respect to the various imaginary surfaces that are established by the FAA guidelines.

Greater Airport Area Catalyst Site 3

The Greater Airport Area Catalyst Site 3 (GAA 3) is located at the intersection of San Pedro Avenue and Rampart in northeast San Antonio. This area is within the AHOD and is not part of an existing MDP.

The site is bordered by existing 8-inch water mains along Rampart and Southbridge Streets and San Pedro Avenue; there is no proposed water main extensions identified from SAWS data within the GAA 3 site. Since water service exists for the site, it does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to be available to the GAA 3 site. Currently, there are three 8-inch lines and an 18-inch line that either cross the site or are adjacent to the site. The 8-inch line alignments are within San Pedro Avenue, and York and Langton Streets; the 18" line runs along Thames Street. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for GAA 3 includes residential, retail and office space which is consistent with the existing land use for this site; according to these uses, it does not appear that capacity will be an issue for sewer or water service. SAWS data does indicate that the 18-inch main within Thames is planned to be upgraded to a 33" sanitary sewer main that would run along the same alignment.

This catalyst site is not directly adjacent to a creek or open channel with a studied floodplain, but one is in the area. An unnamed tributary runs from north to south, just west of the site and appears to receive storm water runoff from the area. There does not appear to be any existing drainage infrastructure within the site.

The GAA 3 site appears to have adequate access in the form of existing driveways and through-streets. It does not appear that interior roadways would be needed to access the various areas developed with the site. San Pedro Avenue is identified on the MTP as a Primary Arterial Type A; existing conditions of this roadway appear to match those specified in the UDC for this type of street.

The GAA 3 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Greater Airport Area Catalyst Site 4

The Greater Airport Area Catalyst Site 4 (GAA 4) is located at the northeast corner of the intersection of San Pedro Avenue and Isom Road in northeast San Antonio. This area is within the AHOD and is not part of an existing MDP.

The site is bordered by existing 8-inch water mains that lie within San Pedro Avenue and Isom Road; there is no proposed water main extensions identified from SAWS data within the GAA 4 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to be available to the GAA 4 site. Sanitary sewer service is available via existing 8-inch mains within San Pedro Avenue, Isom Road, and on-site. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for GAA 4 includes residential, retail and office space; the site currently appears to be composed of retail and office space. Based on a change in land use, it does not appear that capacity will be an issue for sewer or water service.

The existing site conditions appear to use surface drainage to allow storm water to discharge to street right-of-ways from the site. If drainage infrastructure does exist on the site, it may consist of surface inlets and underground storm drains. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to an existing low or local collection point.

The GAA 4 site appears to have adequate access in the form of existing driveways and through-streets. It does not appear that interior roadways would be needed to access the various areas developed with the site. Isom Road is identified on the City's MTP as a Secondary Arterial Type B and San Pedro Avenue is identified as a Primary Arterial Type A; according to City standards, smaller street sections intersecting these types of streets may require additional ROW dedication to the City. It does appear that San Pedro Avenue and Isom Road have been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The GAA 4 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Greater Airport Area Catalyst Site 5

The Greater Airport Area Catalyst Site 5 (GAA 5) is located east of Hwy 281, north and south of Arion Parkway in northeast San Antonio. This area is within the AHOD and a portion of the site is part of the existing Arion Park MDP.

The site is bordered by existing 24-, 16- and 12-inch water mains within the Hwy 281 ROW, Nakoma Road, and Coker Street, respectively; there are no proposed water main extensions identified from SAWS data within the GAA 5 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to currently be available to the GAA 5 site. Sanitary sewer service is available via an existing 10-inch main north of the site. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for GAA 5 includes retail and office space; the site currently appears to be composed of retail and office space. Based on a change in land use, it does not appear that capacity will be an issue for sewer or water service.

Salado Creek runs east and west, just north of the site; approximately 0.2 acres of the 51-acre site is currently located within the 100-year FEMA floodplain. Drainage infrastructure on the site appears to consist of local drainage systems to convey storm water runoff from the developed land to Salado Creek north of the site. Conducting a detailed floodplain analysis of the proposed site conditions could potentially remove that portion of the site from the floodplain, but since this area is small compared to the site, no action is recommended. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to either of the existing concrete channel located west of the site.

The GAA 5 site appears to have adequate access in the form of existing driveways and through-streets. It does not appear that interior roadways would be needed to access the various areas developed with the site. Nakoma is identified on the City's MTP as a Secondary Arterial Type A; according to City standards, smaller street sections intersecting these types of streets may require additional ROW dedication to the City. It does appear that Nakoma has been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The GAA 5 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Medical Center Activity Center

The Medical Center Activity Center is located in northwest San Antonio. Interstate Hwy 10 (IH-10) borders the employment center along the east side, from Huebner Road to the intersection with Loop 410. The vacant and redevelopment parcels identified within the Activity Center are shown in **Figure 9**. The catalyst sites for this Activity Center are shown in **Figure 10**.

Data from SAWS shows minimal sanitary sewer main upgrades within the employment center. With the diameter of the mains ranging from 15" to 24", it appears that SAWS is planning to increase the capacity for this area, but only at the downstream point of the center. While V&A is not aware of any capacity issues at this time, the plans for the various sewer mains indicate that SAWS is preparing for future capacity increases.

Water main extensions were also identified within the center, but none of these extensions appear to be significant upgrades for increasing capacity. The catalyst site identified within the Medical Center Activity Center currently has access to water and sanitary sewer mains.

Being within a close vicinity to local airports, the Activity Center is subject to the City's AHOD. Developments within this area are subject to City and FAA restrictions based on their proximity to the airport.

Medical Center Catalyst Site 1

The Medical Center Catalyst Site1 (MC 1) is located southeast of the intersection of Hamilton Wolfe and Floyd Curl Drive in northwest San Antonio. This area is within the AHOD and is not part of an existing MDP.

The site is bordered by an existing 12-inch water main within the Hamilton Wolfe ROW, with an additional 12-inch main running through the site along Floyd Curl; there are no proposed water main extensions identified from SAWS data within the MC 1 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to currently be available to the MC 1 site. Sanitary sewer service is available via an existing 8-inch main that runs northeast to southwest along Zarzamora Creek. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon stress tests performed by EPS on the potential catalyst sites, the future land use for MC 1 includes retail and office space; the site currently has minimal development on the site. It does not appear that capacity will be an issue for sewer or water service.

Zarzamora Creek runs northeast to southwest through the site; approximately 2.3 acres of the 147-acre site is currently located within the 100-year FEMA floodplain. Drainage infrastructure on the site is linked to systems constructed with existing roadways. Runoff from the undeveloped land continues along natural flow paths to Zarzamora Creek. Conducting a detailed floodplain analysis of the proposed site conditions could potentially remove a portion of the site from the floodplain; however, this area appears to be within a designated drainage easements, so modifications to the floodplain mapping may not provide a benefit for the future development. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to Zarzamora Creek.

The MC 1 site appears to have adequate access in the form of existing driveways and through-streets. Babcock Road is identified on the City's MTP as a Primary Arterial Type A; according to City standards, smaller street sections intersecting these types of streets may require additional ROW dedication to the City. It does appear that Babcock has been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The MC 1 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Midtown Activity Center

The Midtown Activity Center is located just northwest of near downtown San Antonio. The vacant and redevelopment parcels identified within the Activity Center are shown in **Figure 11**. The catalyst sites for this Activity Center are shown in **Figure 12**.

Data from SAWS shows several sanitary sewer main upgrades and extensions throughout the employment center. With the diameter of the mains ranging from 12" to 90", it appears that SAWS is planning to increase the capacity for this area. While the consultant team is not aware of any capacity issues at this time, the plans for the various sewer mains indicate that SAWS is preparing for capacity increases.

There are no water main extensions identified within the center that would impact the service delivery to the Activity Center. The catalyst sites identified within the Midtown Activity Center currently have access to water and sanitary sewer mains.

SAWS staff members were interviewed on two occasions during the course of the project. These discussions identified that often infill development projects in older areas of the City have often faced issues with water service. Specifically, the older water mains are not able to provide enough water pressure to redevelopment projects to support the required fire flow needed to meet the building code. Upgrading water mains to create sufficient pressure can be a major cost that can prevent redevelopment. This issue is likely most prevalent in the Midtown and CBD Activity Centers. The analysis completed for this study did not determine if improvements would be needed to provide adequate water pressure. The analysis did find the water mains were sufficient to provide water service. The prevalence of this issue varies greatly even from block to block as the presence of adequate water mains is dependent on several factors including how recently the main was built or upgraded and the surrounding uses.

Midtown Catalyst Site 1

The Midtown Catalyst Site 1 (MT 1) is located between San Pedro Avenue and Flores Street, south of Myrtle Street in San Antonio. This area is within the AHOD and is not part of an existing MDP. The site is bordered by existing 8-inch water mains along Flores and Myrtle, and an existing 12-inch main within San Pedro. There are no proposed water main extensions identified from SAWS data within the MT 1 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to currently be available to the MT 1 site. Sanitary sewer service is available via an existing 8-inch main along Myrtle, a 12-inch main along Flores, and a 15-inch main along San Pedro. The 12-inch main along Flores is identified to be upgraded to an 18-inch main and the 15" main in San Pedro identified to be upgraded to a 24" main. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for MT 1 includes retail and residential space; the site currently consists of office space and outdoor parking and storage for VIA. It does not appear that capacity will be an issue for sewer or water service.

San Pedro Creek runs north to south through the site; approximately 0.16 acres of the 9-acre site is currently located within the 100-year FEMA floodplain. Drainage infrastructure on the site is linked to existing systems that convey storm water runoff to the creek. The creek is routed underground as it goes through the site, and is discharged to a natural channel downstream of the site. Conducting a detailed floodplain analysis of the proposed site conditions could potentially remove a portion of the site from the floodplain; however, this area appears to be within a designated drainage easements, so modifications to the floodplain mapping may not provide a benefit for the future development. Additionally, the headwaters of San Pedro Creek are located just north of the site within the San Pedro Park area. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to San Pedro Creek without adverse impacts downstream or upstream.

The MT 1 site appears to have adequate access in the form of existing driveways and through-streets. San Pedro Avenue is identified on the City's MTP as a Primary Arterial Type B; according to City standards, smaller street sections intersecting these types of streets may require additional ROW dedication to the City. It does appear that San Pedro has been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The MT 1 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Midtown Catalyst Site 2

The Midtown Catalyst Site 2 (MT 2) is located between McCullough and Brooklyn Streets, northwest of IH-35 S in Downtown San Antonio. This area is within the AHOD and is not part of an existing MDP. The site is bordered by existing 8-inch water main along Elmira, and an existing 10-inch main along Brooklyn/Cypress. There are no proposed water main extensions identified from SAWS data within the MT 2 site. It does not appear that a separate off-site main would be required to be extended to the site.

Sanitary sewer service appears to currently be available to the MT 2 site. Sanitary sewer service is available via existing 8-inch mains along Elmira, McCullough and Euclid, and a 10-inch main along Brooklyn. There are no main extensions in the SAWS data that were identified for this catalyst site. While no off-site main extensions are anticipated to provide service, additional on-site mains may be required to service the site. The length and location would vary based upon the type of development, but any main extensions would require a minimum diameter of 8 inches. Based upon the development program, the future land use for MT 2 includes retail and office space; the site currently consists of office space and surface parking. It does not appear that capacity will be an issue for sewer or water service.

The existing site conditions appear to use surface drainage to allow storm water to discharge to street right-of-ways from the site. If drainage infrastructure does exist on the site, it may consist of surface inlets and underground storm drains. Any proposed drainage infrastructure on-site would be required to convey storm water runoff to an existing low or local collection point.

The MT 2 site appears to have adequate access in the form of existing driveways and through-streets. McCullough and Brooklyn Streets are identified on the City's MTP as Secondary Arterial Type B; and Elmira is identified as a Primary Arterial Type A. According to City standards, smaller street sections intersecting these types of streets may require additional ROW dedication to the City. It does appear that these streets have been widened to meet the minimum street type requirements as identified in the City's Unified Development Code (UDC). No other streets adjacent to or within the site are identified on the City's MTP.

The MT 2 site is located within the CPS service area for gas and electricity. No service issues are anticipated with the development of the site, as there are existing services provided to the site. Electricity would be provided via aboveground and underground services. Existing gas main locations are not known for the area, but if available, gas could be extended to the area. The chosen provider would extend cable and/or fiber optic lines to the site.

Activity Center Investments and Next Steps

The analysis of infrastructure serving potential catalyst sites in the four Activity Centers identified few major infrastructure barriers or gaps that need to be addressed to spur development. In some of the more inner-city Activity Centers, such as Midtown and perhaps the Greater Airport Area, water and sewer mains were present and appear to be large enough to serve redevelopment projects, but the analysis was not able to determine if the age of the infrastructure may require replacement. This could be a barrier to redevelopment.

Aside from potential unforeseen infrastructure issues, the focus of the City to spur development activity in these centers should be on providing connections to and within these centers for multiple modes and creating land use plans that ensure that areas are developed in an urban form that maximizes their potential.

Brooks Activity Center

The Brooks City Base redevelopment has been able to capture significant development activity. The base already has a good mixture of employment uses and has introduced newer residential uses that are helping build a mixed used Activity Center at Brooks. The City should continue to work with the Brooks Development Authority (BDA) to attract additional development to the area. The success of the base redevelopment will generate additional development demand for the surrounding area.

The Brooks Activity Center has significant potential going forward to become a major employment center and also generate market demand for the south side of San Antonio. The Brooks City Base development needs to be leveraged to its full potential to generate development demand but also help change the predominate development patterns in the area, which is primarily low density and auto oriented. While the BDA has been able to attract strong users to the base, the development pattern on the base so far has been continuation of the suburban low-density pattern that exists today. The base needs a coordinated master plan that leverages its infrastructure assets and public financing mechanism to generate a denser, walkable employment center. The City should work with the BDA to help shape the future land use and development decisions on the base to ensure the development is built to its full market potential. The introduction of transit and infrastructure for multiple transportation modes should also be encouraged to facilitate a more dense development pattern.

Greater Airport Area Activity Center

The Greater Airport Area has the highest concentration of employment of any of the Activity Centers identified in Component 2. The area is also the most disconnected and has the most varied land use pattern of any of the centers. The Greater Airport Area is perceived as mainly the San Antonio International Airport and related economic activity, however the majority of the jobs in this center are not related to the airport. The Greater Airport Area functions in many ways as a traditional Central Business District with a large mixture of uses and jobs within all industries with the majority of jobs within the Business Support Services industries due to its central location.

The Component 2 analysis identified the potential for significant additional employment growth by 2040 (36,500 additional jobs); the analysis also determined that there is a lack of development capacity if development continues at historic densities. The area needs to transition

into a different development pattern that is more dense, compact and connected. This transition will be difficult due to the disconnected nature of the overall area and the lack of vacant, easy to develop sites. The City needs to develop a subarea plan for the area that focuses on the different nodes of redevelopment that can start to transition the area's land use pattern and also attract additional development. The plan should also identify ways to increase the transit connectivity of the Activity Center both internally and also to the region, with a main focus on connecting the Central Business District and the Greater Airport Area with transit.

Medical Center Activity Center

The South Texas Medical Center is a major economic driver for the San Antonio region. The area includes 12 hospitals and a total of 45 medical related institutions providing care and education. The center has 27,500 healthcare related jobs located within it. The area was also found within Component 2 to have a high concentration of research and development activities. The Medical Center Activity Center is also home to one of the largest employers in San Antonio, USAA. The Component 1 analysis also identified a significant amount of vacant and redevelopment land capacity within the center. The major economic assets in the area have the potential to generate additional economic activity and the City should try to leverage this asset as much as possible.

The City should turn the Medical Center into an innovation district. Innovation districts are defined as place where anchor institutions, such as research hospitals and universities, and companies concentrate. The concentration is then used to connect with start-ups, business incubators and accelerators to generate economic growth as a result of the activities at the center. Innovation districts are typically compact, transit-accessible and broadband-ready. They also offer a mix of residential, office and retail uses. Innovation districts have three main attributes: 1) a concentration of institutions and businesses involved with the innovation economy; 2) a "smart urbanism" built environment with transit options, mixed-use development and walkable; and 3) a mixture of people with a range of talents and expertise that interact frequently both formally and informally.[2]

The City should partner with area hospitals, institutions and the San Antonio Medical Foundation to create a subarea plan for the district with the focus of creating an innovation district. Many of the assets essential to the district are in the Medical Center currently, including research-oriented businesses and institutions, transit connections, existing relationships and a network of employers with the center, and anchor institutions and businesses. Needed elements include neighborhood amenities that support a mixed use environment, a more compact and walkable built environment, public realm amenities including parks and plazas, and so called innovation cultivators (i.e. co-working spaces, tech transfer offices, new business incubators) that can help spur start-up and spin-off private economic activity. The next step needed is to create a vision for the future of the center.

[2] Bruce Katz and Julie Wagner; *The Rise of the Innovation Districts: A New Geography of Innovation in America.* Brookings Institute. 2014.

Midtown Activity Center

The Midtown Activity Center has a mix of uses and the assets to become an attractive neighborhood for residents and businesses and their workers alike. The two catalyst sites were chosen due to their proximity to major area assets (San Pedro Park and Metropolitan Methodist Hospital), which may increase the attractiveness of the sites to developers. These sites are currently used by the owners and may not be redevelopment sites based on the owner's future plans for the sites. The purpose of the sites is to illustrate potential areas that could be attractive for development and could also serve as development projects that can spur additional activity. Much like The Pearl redevelopment on Broadway, a redevelopment project along San Pedro Avenue, McCullough Avenue, or North Mary's Street could help draw development activity from downtown across the interstate and serve to connect the strong, historic neighborhoods to the north with downtown. The Midtown Activity Center would serve as the transition zone, with employment activity and residential development along with neighborhood serving amenities.

A common problem for many cities is trying to connect revitalizing, older neighborhoods with adjacent downtowns that have been disconnected by interstate highways. This is a problem facing San Antonio on three sides of downtown. Providing a connection can have catalytic impacts on the neighborhoods that were disconnected, as well as the downtown area, making it more attractive to both residents and employers due to the connection. The extension of San Antonio Riverwalk north of I-35 is an example of how a connection can change the market dynamics of the area. The City has the potential to use the corridors running out of downtown to the north to provide an enhanced, multimodal connection. The City should explore creative approaches to providing enhanced, attractive, and inviting infrastructure improvements that "bridge" the downtown and the neighborhoods disconnected by the inner interstate loop.

Figure 5
Brooks Activity Center

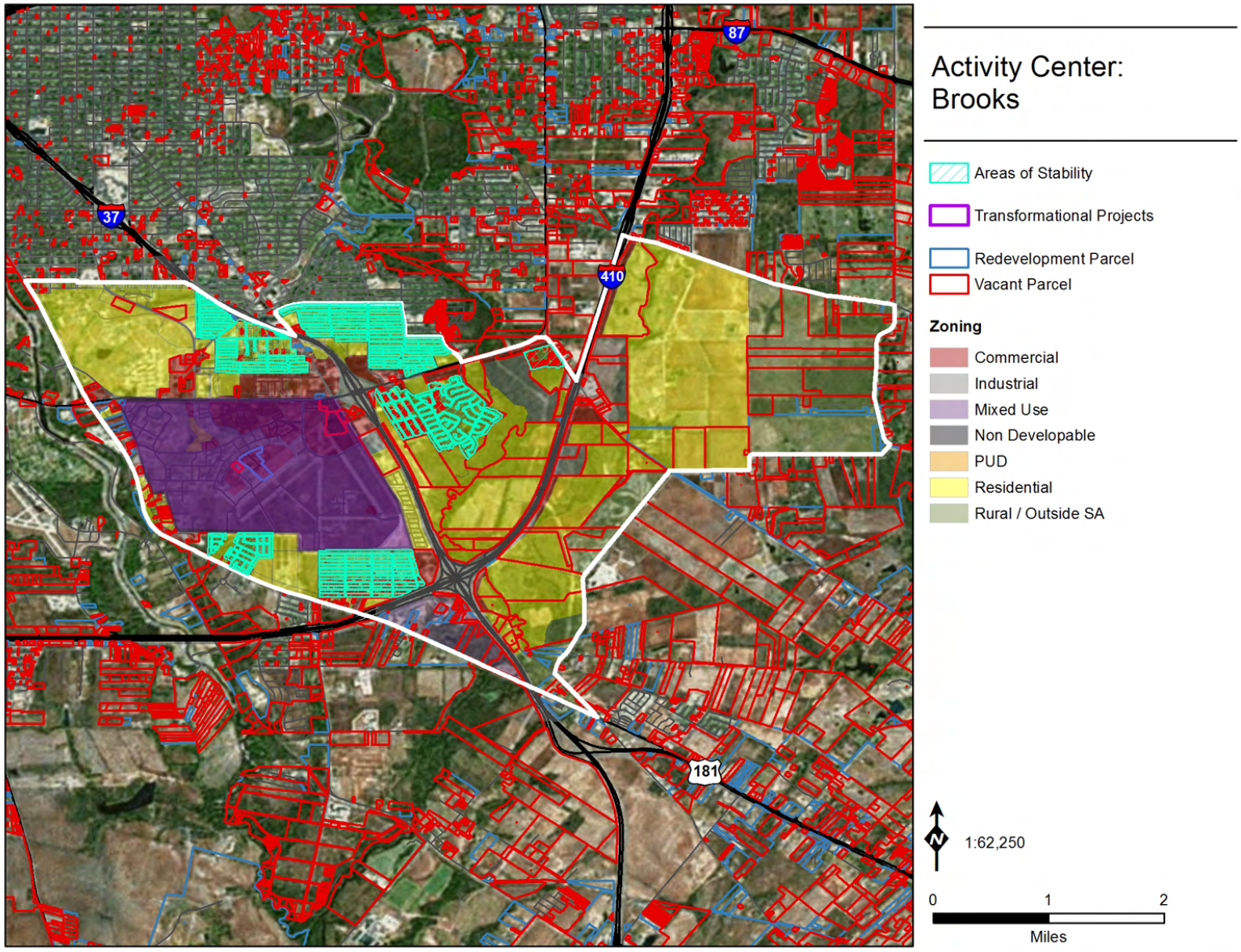


Figure 6
Brooks Catalyst Sites

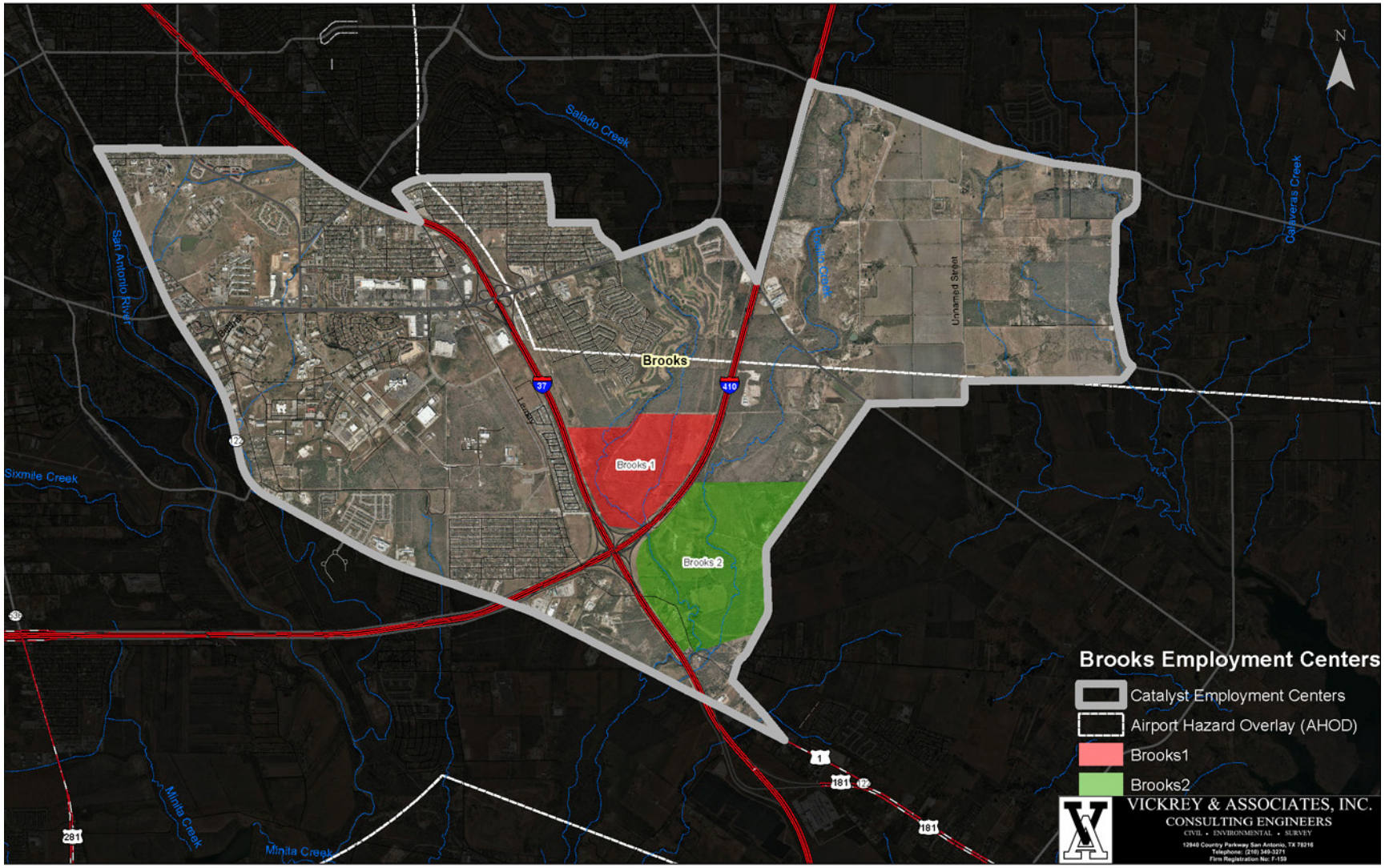


Figure 7
Greater Airport Area Activity Center

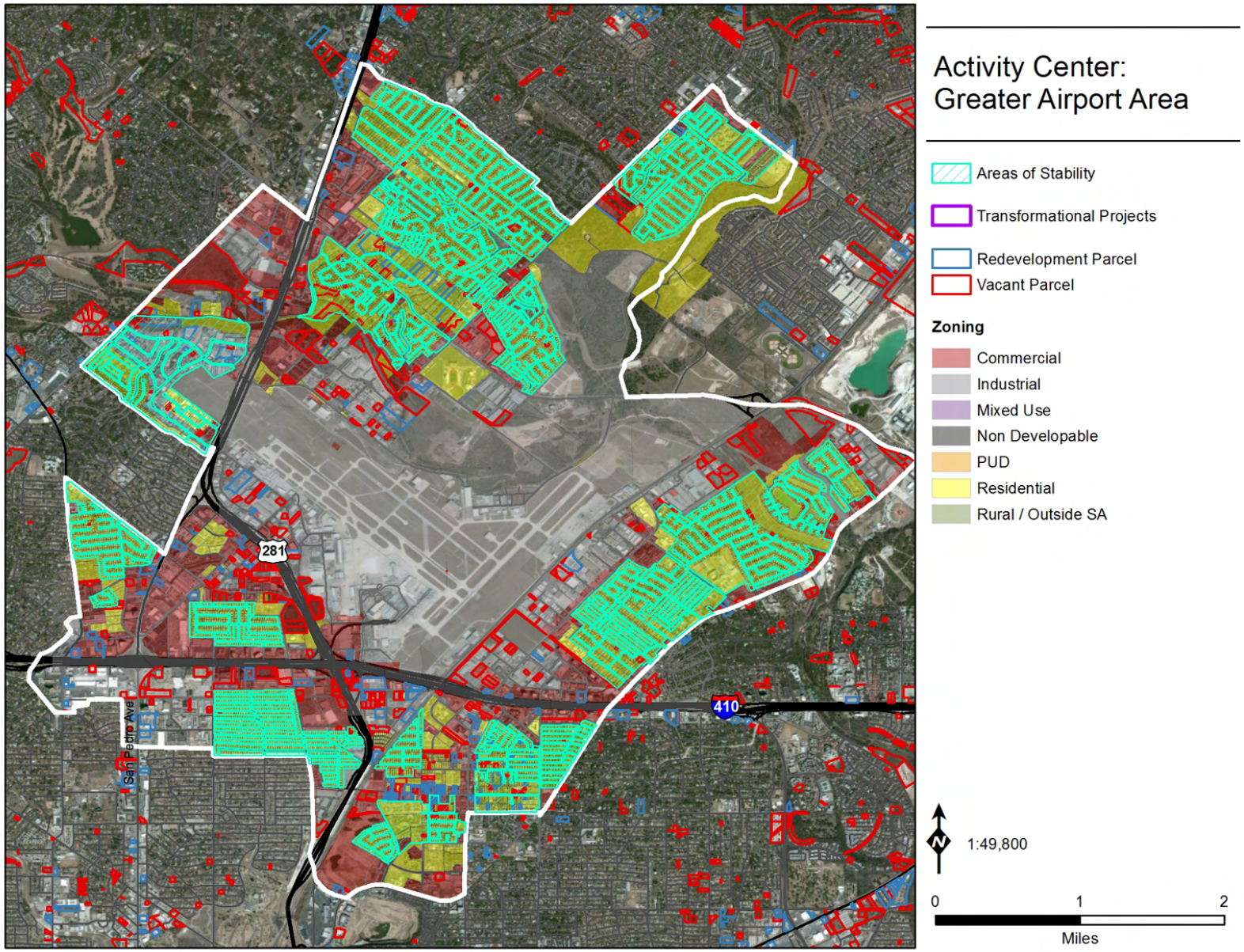


Figure 8
Greater Airport Catalyst Sites

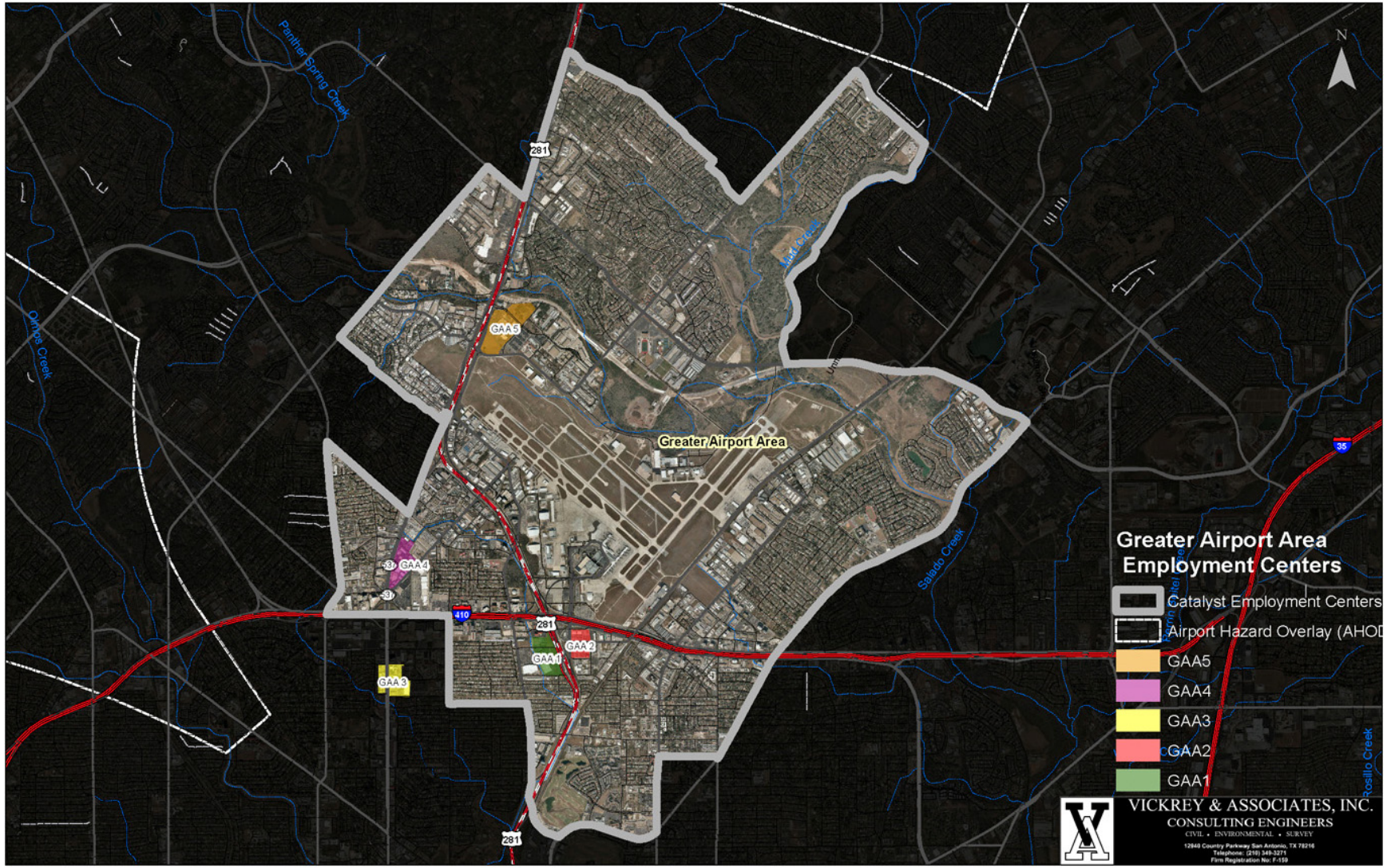


Figure 9
Medical Center Activity Center

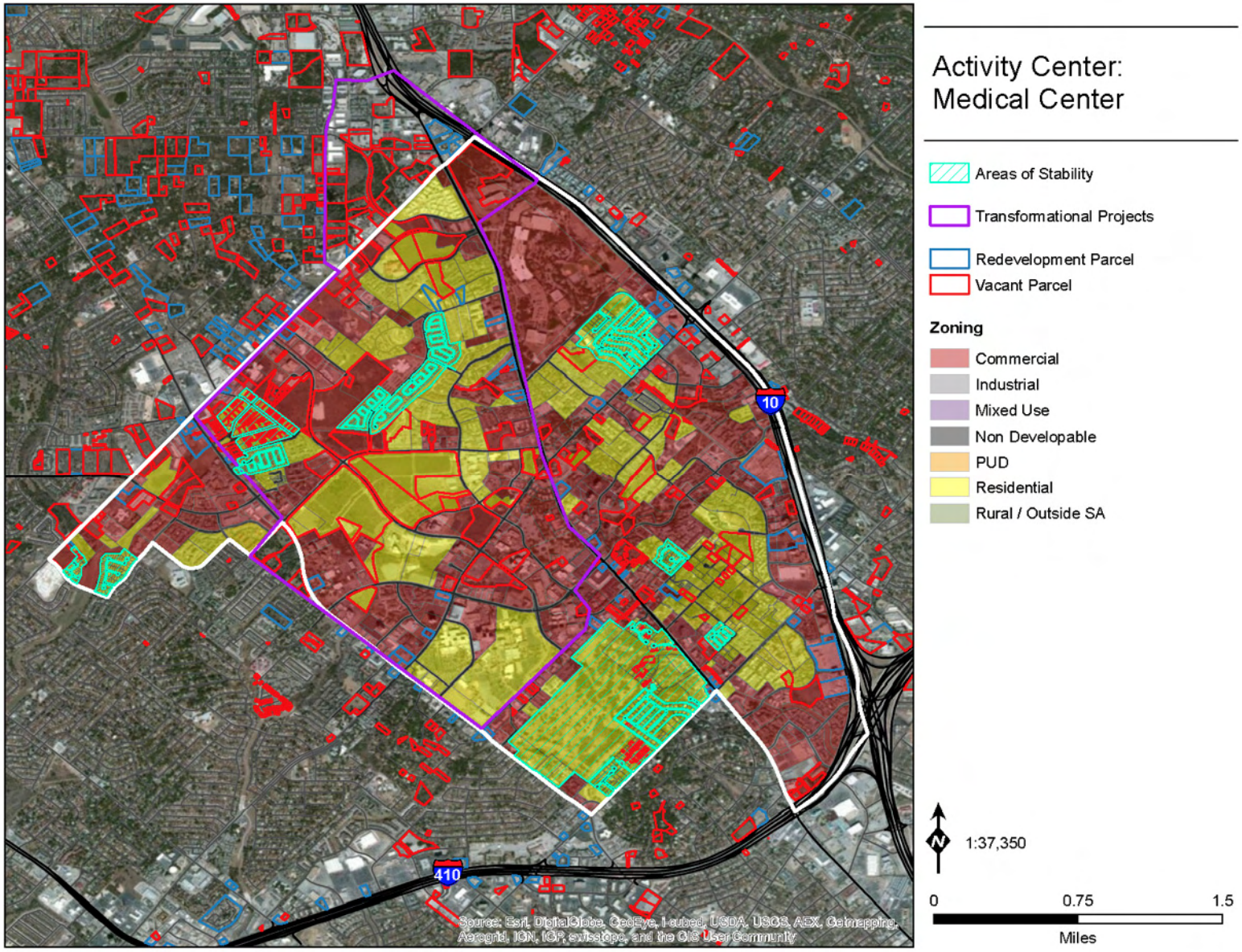


Figure 10
Greater Airport Catalyst Sites

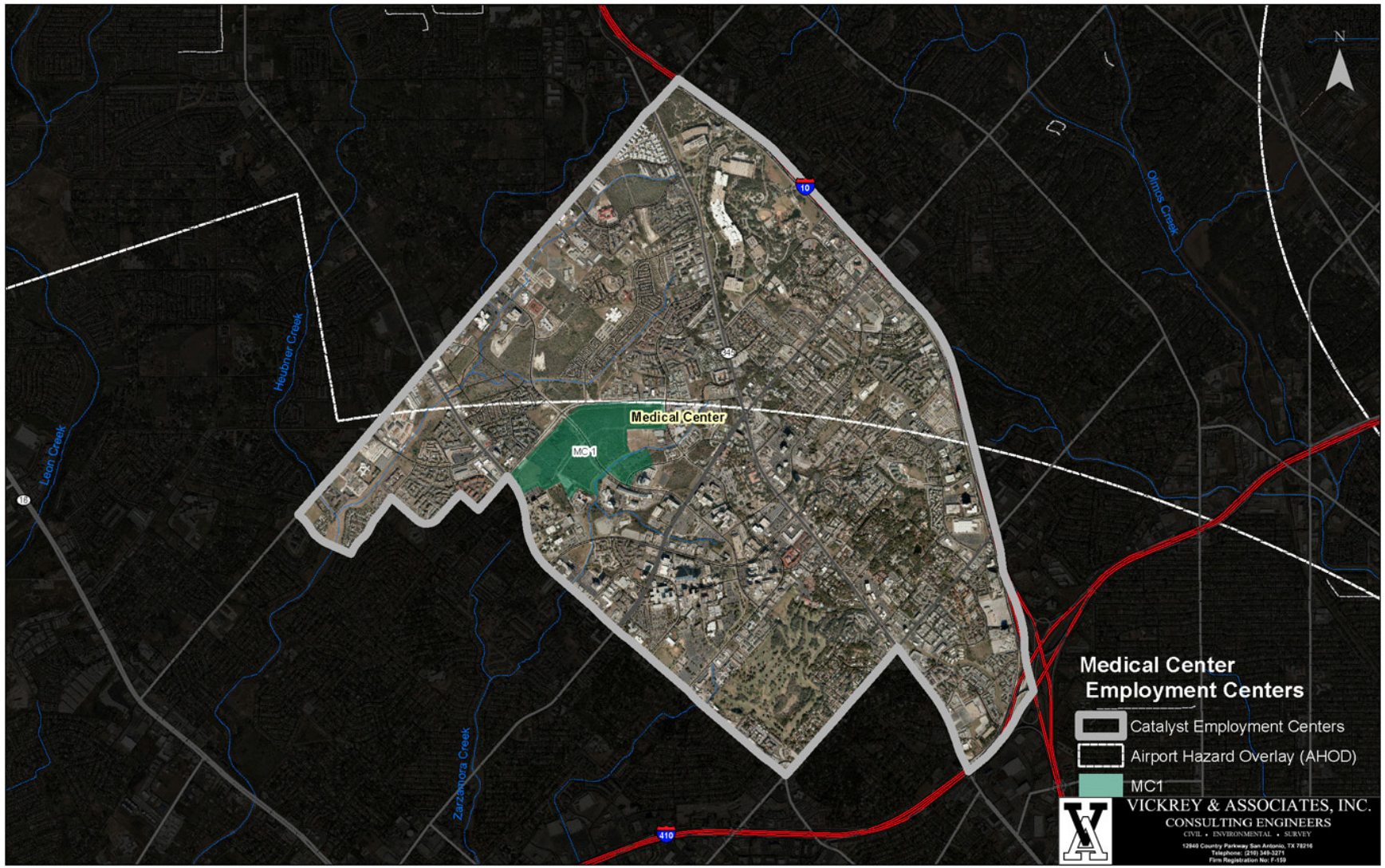


Figure 11
Midtown Activity Center

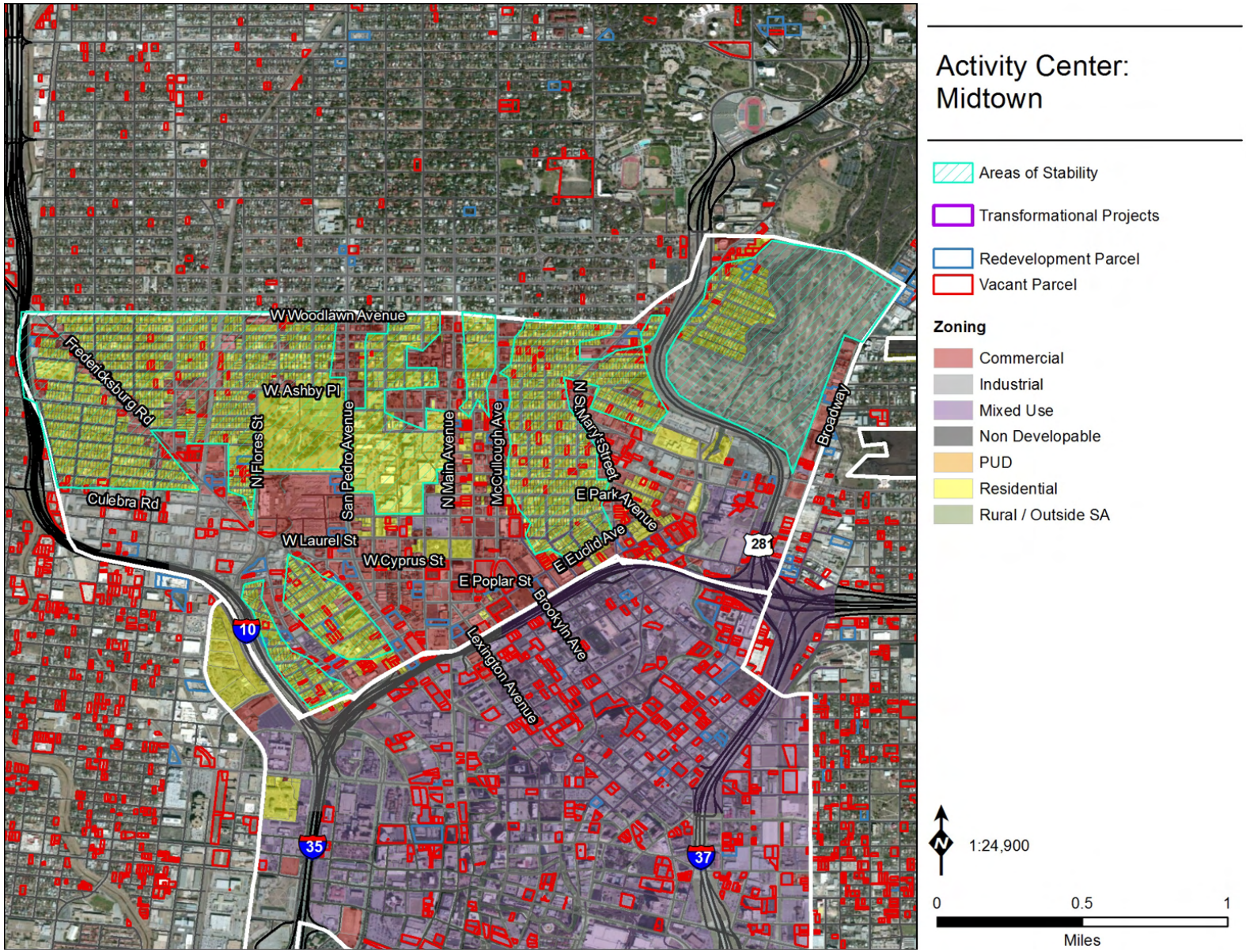


Figure 12
Midtown Catalyst Sites