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Emergency Medical Services System Valuation Study

September 2021

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CONTENTS

ACKNOWLEDGEMENTS

AP Triton, LLC wishes to extend its sincere appreciation to each of those individuals whose contributions and assistance made this project possible.

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In addition, we wish to thank each of the City employees, firefighters, officers, and support staff who daily serve the citizens and visitors of the City of Pflugerville, Texas.

EXECUTIVE SUMMARY

The rates for services appear to be artificially low but must be compared to the actual cost of providing services. Travis County Emergency Services District Two (TCESD2) currently uses an advanced life support (ALS) rate and a basic life support (BLS) rate for services. This should be transitioned to a single rate for the response and transport. There is no requirement to create a BLS and ALS rate. Reimbursement through Medicare and Medicaid is based on the services provided, not the rates charged, and has a capped amount regardless of the amount charged. Commercial insurance typically pays 75-85% of the charges. If the City of Pflugerville chooses to implement a third service EMS department, AP Triton would advise adopting a single base rate for transport services and creating additional charges for BLS services and ALS services. In addition to a single base rate, the City should consider a treat and non-transport fee to cover the cost of assessment and any supplies used to treat a patient on scene that does not ultimately require transport.

Without an actual cost of providing services either through a contract with a private provider or providing the services "in-house," it is difficult to establish an accurate rate for services. However, with some simple adjustments described above, AP Triton conservatively estimates the EMS system's value at closer to $3 million per year. This increase does not take into consideration the ASSPP ambulance program. This program uses a cost reporting methodology that helps bridge the gap between the provider's cost incurred and the amount currently being paid for Medicaid services. This program is also known as charity care, which includes private pay beneficiaries in the payer mix. Until an actual cost of services has been established, this total amount from ASSPP is unknown.

The following figure shows AP Triton's EMS revenue valuation of the City of Pflugerville.

Projected Revenue for Service Area

Cost center	Revenue - Current	Revenue - Proposed	Difference
Transport	$2,200,000	$3,000,000	$800,000
Treat / Non-transport	$0	$21,000	$21,000
Subscription	$0	$375,000	$375,000
ASSPP	unknown	$250,000	$250,000
Totals	$2,200,000	$3,646,000	$1,349,640

This analysis concludes that the City of Pflugerville could implement ambulance transportation and the medical billing structure described throughout the document. Meeting current performance standards can be achieved without additional tax funding.

Section I:
Project Overview

PROJECT OVERVIEW

In June 2021, AP Triton completed a Fire/EMS Assessment for the City of Pflugerville. The focus of the study was to identify options for the provisions of emergency medical services (EMS) ambulance transport within the city limits and extra-territorial jurisdiction (ETJ).

The analysis determined that Travis County ESD2 (TCESD2) was providing fire service response at a level of meeting or exceeding industry standards. TCESD2 began providing ambulance transport services in 2017 based on the concern that Austin Travis County EMS (ATCEMS)was providing inadequate services. AP Triton did not find any data or evidence to support this claim. In fact, the data provided by the computer assisted dispatching (CAD) system utilized by Travis County showed that ATCEMS was comparable in performance up to 2016 and is currently exceeding performance requirements in the City of Pflugerville when responding to automatic aid. Additionally, AP Triton did not find any evidence or data to support TCESD2's claim that patient outcomes have improved since TCESD2 took over the system in 2017. Both claims made by TCESD2 are baseless.

It is important to understand that TCESD2 was not chartered to provide ambulance transport services. All monies generated within TCESD2 were designated only for the provision of fire response and first responder services. TCESD2 had neither the experience nor the funding to take over ambulance transport in 2017.

TCESD2's lack of experience and previous financial and service demand analysis has resulted in inefficient delivery of services and self-inflicted economic unsustainability requiring a significant increase in tax funding.

Based on the above analysis, AP Triton developed five options designed to provide the same level of EMS response performance without the need for additional tax funding.

- Option One: Maintain Status Quo
- Option Two: Private Ambulance Provider for the City
- Option Three: City-Owned Third Service EMS
- Option Four: Transport by Austin-Travis County EMS
- Option Five: City Fire & EMS Department

All the options recommended that a System Valuation Study be completed before making future decisions. The study would evaluate the medical billing practices, potential subsidy programs, and necessary changes to medical billing rates. The completed analysis determines the overall valuation of the system.

This analysis is a continuation of the original assessment and provides the necessary information to make an informed decision regarding ambulance transport within the jurisdiction of the City of Pflugerville.

System Valuation

THE BREAKDOWN OF THE CURRENT EMS SYSTEM

The major components of the Emergency Medical Service (EMS) pre-hospital care response system are provided by the fire service in the form of first responders assigned to engine companies and ambulances for transports through the access of the 911 dispatch system.

In the system, requests for medical emergency and non-emergency 911 calls are handled by jurisdictional PSAP (dispatch) centers that use algorithm-based guidelines to simultaneously send the appropriate engine company, truck, squad, and/or ambulance units to the incident.

EMS system design requires choices be made. Some options have potential controversy in which cost, service levels, and provider organization selections must be balanced. Local officials are challenged with making choices that are consistent with the wishes of the constituency. What may be affordable or politically acceptable in one community may not be in another.

System Design

The City recognizes the value of emergency medical services and believes the current Pre-Hospital EMS delivery system should be redesigned. This redesign should be updated from the status quo to a more modern and robust delivery model that balances the revenue in the system against the community's needs, including the transport of patients.

The major components of the EMS System and pre-hospital care response system in Pflugerville are universal access through 911, a dispatcher triage protocol, basic life support services, advanced life support services, and transportation to the nearest or most appropriate hospital to handle the patient's disposition.

Broken down to the core components, an EMS incident follows a predetermined pathway. A 911 call is made and received at the PSAP. The call is either triaged or passed to a secondary PSAP where emergency medical dispatch (EMD) occurs. Pre-arrival instructions are provided to the caller while first responders and an ambulance are typically dispatched. Upon the arrival of the ambulance, the patient may be treated on scene or prepared for transport to the local hospital.

Most EMS calls lead to the transport of the patient to definitive care. Additionally, a significant amount of EMS delivery and care is provided before the arrival of the ambulance.

Problem Statement

The City of Pflugerville is questioning the capacity of TCESD2 to provide ALS ambulance transport with fiscal responsibility and sustainability. This analysis will identify the financial feasibility of alternate models for the provision of delivering pre-hospital health care.

Methodology

The challenge to adapt to a new delivery system, improved quality of service, and lowering the cost per capita to patients requires reengineering service delivery models to meet the "Triple Aim" of the Affordable Care Act (ACA). The City also recognizes a discussion on future partnerships will be in the best interest of their constituents and could potentially lower healthcare costs while improving patient satisfaction throughout their service area.

This study takes into account that without a clear understanding of the revenue available in the service area, there is no way to consider a system redesign as cost and revenue must be balanced. Evidence supports that without a complete understanding of revenue potential, the system deployment is subjective as to whether the system can fully meet the needs based on revenue or can generate profit that may be reinvested back into the system.

The City of Pflugerville has commissioned a professional consultant to advise them of the best practices and model for discussing a new deployment for providing emergency medical transport services within the City of Pflugerville.

Understanding Healthcare Financing

Understanding healthcare financing and the principles that go along with it are often confusing. With the mixture of Medicare, Medicaid, private commercial insurance, second- and third-party payers, workers' compensation, private payers, auto insurance, travelers' insurance, ACA, co-pays, and deductibles, clarification is necessary for local government officials to make an informed decision. Although the overall industry is very complex, the actual processes within this system can be simplified.

Healthcare is the largest civilian industry in the United States. Every day, millions of dollars are billed and collected within the healthcare finance industry. Most of those transactions are from the small physician offices and medical groups that serve most Americans' needs. Most of America's healthcare billing and collections are done in-house through these small offices and medical groups. Although smaller and often narrower in the billing categories

than the more prominent medical groups or hospitals, these smaller healthcare providers use the same 68,000 billing codes to complete the day-to-day billing process.

Simply stated, EMS and ambulance billing are some of the most straightforward healthcare billing processes in America's healthcare system. Municipalities often avoid the medical billing process deferring the task to private sector business.

Unlike the general healthcare system that must categorize the service into one of 68,000 ICD-10 codes, ambulance billing under direction from the Centers for Medicaid and Medicare Services (CMS) uses a bundled billing process. When submitting a bill for services, it should contain only the general services provided and not an itemized bill for services. When billing Medicare or Medicaid for services, only four items are generally accepted for reimbursement. When billing private or commercial insurance, a bundled bill is the accepted method as adopted by CMS.

Another misconception is the assumption that the private sector has the advantage of expert knowledge beyond the capacity of a municipality relating to medical billing. As significant as the healthcare system is, emergency ambulance transports make up less than a fraction of 1% of the system cost. The bundled billing system is the industry standard and very straightforward. The largest provider in America, Medicare, has an 800 number for providers to call for billing inquiries. The same applies to Medicaid as well as the other large insurance providers. After a short time, any provider can acquire the expertise to facilitate medical billing practices.

Medical Billing Process

There is a certain degree of easily attainable knowledge of the rules and regulations associated with the billing process. Many government agencies conduct all billing services in-house. As previously mentioned, some of the largest providers of healthcare are local governments. County hospitals, clinics, mental health, and dental offices are all services that are provided in almost every county in the state. Local government provides ambulance service billing and collections every day across the country. Most public entities have a collection rate on par with the private providers, and in some cases, with a higher collection rate.

When an agency chooses not to provide billing in-house, the most logical choice is to use an outside billing company specializing in billing EMS and ambulance services. Numerous companies provide this service for public and private ambulance providers. The companies specializing in EMS billing have varying collection rates. The difference is

collections are generally due to internal billing and collection policies. The provider's billing and collection policies determine the reimbursement rate.

For example, two ambulance providers respond to the same patient and provide the same treatment and services. Both charge the county rate of $1,600. Ambulance Provider A waives the co-pay and deductible of $200 and collects the insurance payment of $1,400 as payment in full. Ambulance Provider B accepts a compromise offer of $150 for the co-pay and deductible and collects the $1,400 insurance payment. Provider A has a collection rate of 87% of the billable amount, while Provider B has a collection rate of 98%. Without knowing the billing and collection policy, one could be led to believe Provider B has the better billing company because of the higher collection rate when both providers are using the same billing company. The difference is the providers' collection policies.

Determining System Valuation

Numerous factors impact the value of an EMS system. The monetary value of the system essentially refers to how much money in terms of revenue can be garnered from the system. There are no varying methods for collecting revenue from an EMS system. There is a fixed amount of money available to all providers regardless of their public or private status. This is often called the cap. There is a disparity in the revenue collected amongst various providers due to two main areas - billing and collections.

Agencies often base the success of billing practices on historical collection rates. This process provides an inaccurate perspective of the efficacy of the billing process. Collection rates are just one aspect of the successful management of a system. The following key factors determine the success of billing and collections.

- Billing policy
- Collection policy
- Transport rates
- Documentation
- Billing contractor's level of effort
- Understanding the payer mix

Billing Policy

Establishing a billing policy is one of the primary steps a provider needs to accomplish to get the most monetary value from the system. When a service is provided, there is an assumption that there will be a charge for that service.

Numerous factors will determine what is included in the patient billing and collection policy. The more aggressive the policy, the more potential there is to collect. However, some areas do have a fixed rate attached, and this alone will create a fixed cap on the maximum collections available within the system. There will also be a relatively consistent and established number of calls for service in each period; therefore, adding additional ambulances in the system does not necessarily equate to running more calls and transporting more patients.

The expectation is that all the patients who request to be transported or whose medical condition requires it will be transported to the appropriate facility. There will be fluctuations in the call volume, but significant or seasonal changes in call volume are predictable; therefore, reimbursement for some services based upon the number of calls is relatively established and forecastable. It should be noted that an increase in call volume does not directly correlate to an increase in revenue. The areas of the billing policy which will determine revenue are collection policy, transport policy, documentation accuracy, billing contractor level of effort, and understanding the payer mix.

Collection Policy

The collection policy is the most significant aspect of the collection process affecting the revenue stream. Federal regulations which control billing require that every patient receive a bill for services rendered to prevent what is known as "cherry-picking," where only specific groups of patients are billed.

How aggressive a company is with the collection of those bills is a matter of business philosophy. Most private ambulance companies, and hospitals for that matter, have very aggressive collection policies, while many public ambulance providers have much less aggressive policies. The reason for this disparity is simple: private ambulance companies are in the business of generating profit. For these companies, sending a patient to collections or placing them on a rigorous payment plan is an industry best practice. Conversely, political considerations and public relations must be addressed in the public sector because most patients will also be taxpayers.

A simple formula to consider is this: once the collection effort reaches a point where the return in either money or political consequences is less than the monetary gain, the collection process should cease.

Transport Fees

It has already been discussed that a fixed number of transports will occur in each period. Still, there is a subsection of patients whose medical condition will not require immediate transport. The percentage of transports has a direct impact on the revenue received. Fewer transports result in less revenue.

In the private sector, it is in the employees' best interest to maintain an acceptable transport rate since it is directly related to the success of their employer and, subsequently, their employment. When a patient is not transported due to the advice or insistence of the paramedic or EMT, there is a loss of revenue that results from these actions. For example, if three units in the system facilitate one non-transport for various reasons each shift, this equates to 1,095 non-transports per year. Using the current pre transport collection rate, this amounts to nearly $500,000 per year in lost income. There will always be a percentage of calls that will not result in a transport due to circumstances. This is to be expected and can be projected as a percentage of the overall call volume.

Documentation

The documentation provided by a paramedic on the patient care report (PCR) also plays a significant role in the collection rate achieved by the provider. One often overlooked area is proper training of field units in the documentation process that accurately reflects the actual assessment and treatment provided on scene. These actions will then capture the correct reimbursement rate.

Reimbursement, mainly through Medicare and Medicaid, is based upon the patient's needs and not reimbursed simply because they called for transport. Simply stated, many calls that should be billed and paid at an ALS rate are often reimbursed at the BLS rate, while some that should have been collected at either the ALS or BLS rates are not found to meet any reimbursement criteria and are left unpaid due to incorrect or inaccurate documentation. Accurate documentation can substantially increase revenue in an area where the service is already being provided.

Billing Contractor's Role

The billing contractor or billing office also plays a significant role in the collection rate. The level of effort demonstrated by the billing provider displays a direct correlation to the collections received.

There are two common ways public providers conduct billing for ambulance services. The first is to use an outside third-party billing company that performs all billing on behalf of the

provider. Their ability to collect depends on several factors, the most significant being the billing policy dictated by the agency. A relaxed or vague billing and collection policy will result in less collection of revenue.

Most billing companies base their fees on a percentage of the amount they collect. Suppose the provider has a billing and collection policy that allows a reduced amount to be collected. In that case, the biller will likely charge a higher percentage rate to meet their profit margin. Conversely, a well-defined billing and collection policy will reduce the time spent by the billing office in working arrangements with the patients.

Another method of billing and collections is to conduct all billing in-house. There are many of the same challenges with doing billing in-house as with using third-party billers. The single most significant obstacle in establishing in-house billing services is setting up the infrastructure. When considering establishing in-house billing, there exists multiple facets to take into consideration. These issues include creating a business operation facility, , hardware, software, personnel, and training – all which require a large capital outlay at least six to nine months in advance.

It should be understood that even though there is a fixed and finite amount of money that is available in the service area, there are numerous variables that influence a provider's ability to collect that revenue. Establishing policies, training of personnel, and close monitoring of the delivery system will pay forward in collecting revenue. The advertised percentage of collections by billing companies is nearly irrelevant because it does not address all the facets that influence billing.

The City of Pflugerville has options to facilitate EMS billing.

- Subcontract the ambulance billing services to a private contractor who does the billing and collections on the City's behalf.
- Facilitate the billing process in-house

The advantages and disadvantages of each process will need to be evaluated. In addition to the method selected for billing, the City should review the billing and collection services annually to ensure that best business practices and policies are currently meeting the City's needs and objectives. These include:

- Understanding the payer mix

- Reimbursement is based upon providing service and billing the appropriate party responsible for the service provided. Within the healthcare industry, there are primarily four categories, or cost centers, for reimbursement:
    - Medicare, which is the primary healthcare coverage for persons over the age of 65
    - Medicaid, which is a component of the federal Medicaid program and is provided for specific qualified individuals and families (primarily low income at 138% of the federal poverty level)
    - Commercial insurance, most commonly associated with benefits provided by employers to their employees but also may be purchased independently
    - Private pay, which is the term generally applied to those without insurance.

There are numerous sub-categories available and used for reimbursement within these categories, but they will not be discussed in this report. Sub-categories are predominantly workers' compensation, liability, and auto insurances.

Each community will see differences in how the payer mix influences healthcare financing and reimbursements. As we discuss ambulance revenue in this document, we must also understand that many different economic and population subsets exist. To begin to create a possible reimbursement scenario, it is necessary to understand that different areas will have different ratios of the payer mix demographic. This can be highly complicated simply because an area of the community with a large population over the age of 65 will historically have a significant Medicare reimbursement. Due to healthcare issues that escalate with age, a corresponding increase in call volume would be expected. Conversely, an area with a high commercial insurance demographic is likely to have a higher reimbursement rate; however, if that area has an average population between the ages of 30 to 50, that age group typically has fewer healthcare issues and thus fewer transports. This means that while a system has an overall total reimbursement, the various locations within the service area will have different call volumes and individual reimbursements for each unit in the system

In reviewing the data collected from Emergicon, we have a relatively accurate payer mix for TCESD2 for the year reported (10/19-9/20). To create an estimate for the potential value of the EMS transport system, a comparison must be drawn between the current charges for service and revenue collection and modifying the current rates. The report does not break out the revenue reports provided by the existing provider about the emergency 911 transports, interfacility, non-emergency, and CCT transport numbers.

Payer Mix

The following figure shows the payer mix for TCESD2.

Figure 1: Percentage of Total ALS & BLS Transports (10/1/2019 – 9/30/2020) *

Cost Center	Transports	Percentage
Medicare	2,204	41.3%
Medicaid	593	11.1%
Commercial Insurance	1,356	25.4%
Private Pay	1,153	21.6%
Totals	5,306	99.4%

Numbers provided by Emergicon and reported as less than 100%

Figure 2: TCESD2 Charges and Collections

Charges	Collections	Percentage
Gross Charges	$5,829,031.53	100%
Cash Collections	$2,206,360.69	37.85%
Charge Per Trip	$1,092.19	100%
Collection Per Tx	$413.41	37.85%

Upon review of the provided financials of the transport system, several items are concerning. The first is the percentage of collection to charges. This shows the collections are at nearly 38% of charges. This often indicates that charges are below reasonable for the payer mix. In high-performing and well-structured systems, a 25-32% collection percentage would be well within normal ranges. Collection rates above 33% would typically show higher than normal Commercial Insurance demographics, while collection rates below 25% indicate that rates may be slightly higher than expected or the rates are in line with the industry, but the operating area has a higher-than-normal Medicaid participation.

Based on the Medicare and Private Pay payer mixes provided by Emergicon, these are within what would be considered average, indicating that the rate structure is artificially low for the demographic.

When discussing rates for services, there are several thought processes on this subject. The first discussion point is whether ambulance transport services are, in fact, part of the emergency services paid for by the tax dollar. Each agency must address this. However, a

good rule of thumb to start with is if the tax dollars(s) are assigned explicitly to EMS and ambulance transport services, there should not be a charge for the services. An example would be Hazardous Materials incidents. At the same time, the response to fires, accidents, and rescues is part of the all-hazard response paid for by the tax dollar.

The hazardous materials incident is generally caused by an individual act that impacts the operating budget financially. Therefore, fees can and do get charged for those incidents. In most cases, EMS and ambulance transport services benefit the end-user without placing the public at risk. Unless tax dollars have been allocated to a specific service such as ambulance transport, fees are appropriate to the patient as they utilize public services for personal needs.

Conversely, if tax dollars are not allocated to a specific need, such as ambulance transport services, then the rates charged for those services must align with the cost. Otherwise, using tax dollars to offset those services could be construed as a gift of public funds to the individual using the transport services. This is an essential factor when reviewing the cost versus revenue discussion.

System Valuation

Applying the reimbursement formula to the payer mix also requires adjusting for collection rates. Unfortunately, the collection rate varies between payer mixes, as discussed above. To recap, private pay is typically the lowest reimbursement cost center with aggregate reimbursement of between 5-7% collection rate. This is followed by Medicaid, then Medicare, and commercial insurance. In reviewing the ratio between charges and collections, we find the average reimbursement comes in at $413.41. This amount is below the funded rate for Medicare, less the patient's co-pay. We would expect the Medicare demographic to be in the $465 range. This low reimbursement falls in line with the rate structure currently used in TCESD2. The average charge for services for FY19-20 was $1,092.19 all inclusive.

In a 2018 study of ten cities across the country (Chicago, Cleveland, La Jolla, Longview, New York, Oklahoma City, Phoenix, Pinellas Co., San Diego, Seattle, and Tucson) the average base rate (less mileage, oxygen, medications, etc.) was $1,393.90 per transport. This nationwide survey revealed a 28% higher rate than what is currently charged by TCESD2. When including the charges for mileage at $38 per mile plus oxygen, the average rate is above $1,600 (and these rates are likely higher now than they were in 2018).

ALS vs BLS Base Rates

Charges based on services provided are currently divided between ALS rates and BLS rates. While many feel it's appropriate to only charge for the level of care provided, the reality is that the expense is not in the service provided but in the services that responded.

In the case of Medicaid and Medicare, reimbursement is determined based on the service provided regardless of the level of staffing. In other words, a BLS staffed ambulance that responds and transports a BLS patient will receive the same reimbursement amount as an ALS staffed ambulance transporting a BLS patient. While an ALS staffed ambulance is more expensive to staff due to the higher salaries for paramedics, equipment, and medications carried, the reality is that it does not cost less to respond and transport a BLS patient by an ALS ambulance. Creating two separate billing schedules for a single cost is neither required nor advised. This creates an artificially low-rate structure.

CMS has requested that ambulance providers use a bundled billing methodology to streamline the process. This better business practice includes adopting a single base rate, then adding on the rates for mileage, oxygen, and ALS supplies. This alone would generate a greater level of reimbursement than what is seen today. The previous figure above shows that the collection revenue is reported as $2.2 million based on the service charges.

These charges are broken out at 57% ALS, 41% BLS, and 2% ALS 2. This suggests that slightly less than half the number of transports are being billed at a reduced rate despite the staffing level being higher in ALS staffed units.

Deployment to Cost Recovery

Reimbursement is only one factor to consider when evaluating a system. As the statistics provided pointed out, the reimbursement must support the system, and the system cannot exceed in cost what the revenue can support. Basic business principles follow this process.

The selection of a system depends on if the model determined is under development or has yet to be decided. AP Triton will first address system demand. System demand is simply how many units are needed to meet the response and transport needs based on call volume.

Understanding Unit Hour Utilization

Unit Hour Utilization (UHU) is a misunderstood topic and is inundated with many myths. Many people believe that a hard number must be followed to comply with the standard. The reality is there is no such standard. UHU was initially developed to determine the

number of units needed to meet the demand of a particular geographical area based on call volume. While there is no regulating agency that sets a UHU standard, a recognized industry best practice of .25 to .31 for UHU is an excellent place to set the initial deployment of units. It is Time on Task (TOT) that is important. TOT is the actual amount of time spent on all functions that impact service delivery. One major national ambulance provider refers to the same measurement as Workload UHU or WUHU. This company tries to keep WUHU/TOT at less than .5, with their optimum being .41 to .45, depending on location. It is reasonable that the City should seek to maintain the UHU and TOT within these parameters. This will provide for a reasonable workload that supports the mission. UHU and TOT are extremely important from several standpoints.

- Ensures the number of units is appropriate for the mission demands
- Determines unit locations
- Determines the cost of the system

Initially, UHU is used to determine the minimum number of units required to meet the demand. This calculation assumes a one-hour duration for each transport but does not consider the number of hours it takes to run the system. A static UHU is determined by dividing the number of transports by unit hours in the system. Using ESD2 data as reported, there were 5,337 emergency transports system-wide; however, we will use a liberal 5,500 transport count for the calculation. This does not accurately reflect the number of hours needed to operate the system. UHU assumes that each transport is equal to one hour and that units are being utilized in an equitable manner, which is highly unlikely. UHU does not consider multiple calls coming in at once, actual transport time to and from a given hospital, patient off load times, or time for training and restocking units, etc.

The TOT is most important in determining the number of unit hours needed in the system. TOT is best calculated by pulling CAD data that shows the actual time on task for each response. This includes dispatches that result in a transport, are canceled enroute, canceled upon arrival, and treat no transport. Combining all these incident types that the units are dispatched to will show actual demand and the time of day the demand is most needed.

The current transport volume is less than 5,500 transports per year. While a time study has not been provided, we will use 102 minutes per transport to determine the number of hours needed to service the system's transport volume. The 102-minute factor was used as this is consistent with typical systems seen in both urban and semi-rural systems. To determine

actual TOT, we must use actual CAD data. These time-on-task hours will be converted to an appropriate number of deployed units to meet demand and an acceptable UHU/TOT.

The following calculations determine the estimated TOT for the current system.

- 102 minutes x 5,500 transports = 561,000 minutes on task
- 561,000 minutes / 60 minutes in an hour = 8,434 hours on task
- 9,350 / 26,280 = .36 TOT

This deployment suggests that based on 5,500 transports, three 24-hour units would meet system demand and also provide capacity for greater transport volume if needed.

The next step will use straightforward cost inputs to determine a unit hour cost for deployment. The purpose of this calculation is not to provide an actual unit hour cost but to provide perspective on the validity of the current rates and help determine the rates needed to support the deployment model. The EMT/Paramedic hourly rate provided is the highest in the state for this provider, and the overhead cost is actual to the hourly rate. The actual salary and benefits package will be determined if the City considers staffing their ambulances as a third service. The following information is consistent with industry standards in the region.

Figure 3: Estimated Total Unit Hour Cost

Description	Cost per Hour
Paramedic	$20/hour
EMT	$16/hour
Roll-ups all-inclusive @ 37%	$13.32/hour
Overhead cost @ 20%	$9.86/hour
ICR @ 26%	$15.39/hour
Ambulance depreciation + replacement	$7.53/hour
Monitor / gurney depreciation + replacement	$3.54/hour
Supplies / fuel / maintenance	$4.56/hour
10% reserve fund	$12.51/hour
Total Unit Hour Cost	**$102.71(Based on paramedic wages)**

The above calculation uses hypothetical hourly, benefits, overhead, and indirect cost rates. The items that follow are accurate for depreciation and operations. The final unit hour cost could be more or less because actual costs cannot be input into the calculation. However, this does provide a very realistic cost to start discussions of the best deployment model.

The next step is to determine the actual cost of service and modify the current rate structure to meet system costs. Based on the unit hour costs and the deployment of 26,280-unit hours, the total cost of providing ambulance services to the City is $2.7 million ($102.71 x 26,280 = $2,699,219).

The current collection rate as reported is $2.2 million leaving a difference or unfunded cost of $500,000. Simply modifying the existing rate structure to a single average base rate as noted above in the 2018 study of 10 cities establishes an average rate of roughly $1,600 per transport. The resulting revenue would be $3 million annually. This revenue estimate does not include co-pays, deductibles, or out-of-pocket expenses.

Exploring Additional Areas for System Revenue

Throughout the development of a study, items such as policies or concepts come to light that provide opportunities that may prove beneficial to the system. Although the following items are routinely implemented, changed, or eliminated, it is still in the system's best interest to bring them forward for discussion. Public officials may have to make decisions based on political philosophy rather than business best practices.

Treat No Transport

Implementing a Treat No Transport (TNT) fee requires the establishment of a rate for the fee. This concept is becoming more and more common across the country and is an accepted practice as many states reimburse for TNT under the Medicaid program.

Commercial insurance has not challenged these charges. They are looked upon in the same manner as if a patient presented in a hospital's emergency department (ED), was evaluated and treated by the ED Physician, but not admitted to the hospital. Insurance is billed for the services provided, and reimbursement is not contingent upon the patient being admitted to the hospital.

The same concept applies if 911 has been summoned to the scene where a patient has been encountered but not transported. A fee can be charged and is generally reimbursed by private commercial insurance. Current transport data does not include the number of

patients contacted, assessed, treatment provided, and no transport facilitated . However, assuming a modest 15% non-transport rate in the commercial insurance demographic, this would result in roughly 200 Treat No Transport encounters. While a rate has not been established for Treat No Transport patients, using the unit hour rate of $102.71, an estimated collection of an additional $21,000 is reasonably estimated.

Subscription Programs

One of the challenges faced by municipalities, as addressed above, is the application of the billing and collection policies established by the governing entity. On one hand, they must demonstrate equitable billing and collection policies while managing a political stance that does not counter the constituents' needs. Balance billing a patient is legal but can be a political challenge as well. Asking a Medicare beneficiary to pay the 20% co-pay on a fixed income can be an uncomfortable situation. An option to defer the balance billing or co-pay scenario is to develop a subscription program for the residents within the service area.

The principles of a subscription program are relatively simple and are based on basic insurance principles. A subscription program simply allows a resident of the service area to enroll in the program voluntarily. Individuals pay an annual fee per household to the city. If an enrollee utilizes the ambulance system, the city will accept the patient coverage as payment in full.

If a patient has commercial insurance that pays 80% of the charges, the city will not balance bill the patient for the co-pays, deductibles, etc. If the patient has no insurance and does not qualify for Medicaid, their bill will be waived.

The principle behind subscription programs is that the number of enrollees outnumbers the number of patients unable to pay the co-pays deductibles etc. Assuming 10% of the general population of Pflugerville (62,000) enrolls into a subscription program at $120 per year ($10 per month), the revenue generated would be $750,000. Half of the suggested amount, or $60 per year ($5 per month), would generate approximately $375,000 per year. This program alone would be equivalent to 17% of the current total collections under the current system under ESD2.

Texas ASSPP Program

In 2009 Texas, through the state Medicaid program using the 1115 waiver process, initiated a supplemental ambulance reimbursement program. This program allows the state to pay a supplemental payment for providing Medicaid EMS transport services to Medicaid

beneficiaries and charity care for those not covered by any other mechanisms. If a provider has a cost of transport of $1,000 and the State Medicaid rate for transport is $280, the uncompensated cost is $720.

The federal government will provide a supplemental reimbursement based on the Federal Medicaid Assistance Percentage (FMAP). The 2022 FMAP for Texas is 67%. This means that using the example above and the current Medicaid ALS transport rate, the provider would see an additional $482 per Medicaid transport. Keep in mind that until an actual transport cost has been determined, final revenue is undetermined.

Calculation of Cost / Cost Recovery

This analysis has discussed in detail the elements that influence the economics of ambulance transport. Topics ranged from how healthcare financing works to the details of determining deployments and the costs associated with deployment. AP Triton has accurately determined the minimum number of unit hours needed to service the system and has included an estimated cost using unit hours.

Next, AP Triton will review the current deployment to a proposed deployment and determine if the economics work sustainably to make informed decisions on how best to proceed.

Current Deployment Economics

The current billing and collection practices of TCESD2 show matured revenues for transport services at $2,206,360.69. Using the proposed 26,280 deployed unit hours, the unit hour revenue is $83.96 per unit hour. Based on the deployed number of units, the tax assessment collected is being used to offset these costs and the current rate structure does not support the transport system.

Further, the current rate structure does not support the ambulance transport system into the future as it is currently not collecting near the actual cost of transport. This appears to be the driving force behind the additional tax assessment.

In contemplating the option of the City providing ambulance services, there are several choices. Each has associated costs and benefits. The final decision must account for system revenue balanced against system costs. AP Triton believes the City could realistically provide these services if costs are in alignment with revenues. Based on calculations provided in this report, the following figure demonstrates a realistic revenue for the service area.

Figure 4: Projected Revenue for Service Area

Cost center	Revenue - Current	Revenue - Proposed	Difference
Transport	$2,200,000	$3,000,000	$800,000
Treat No Transport	$0	$21,000	$21,000
Subscription	$0	$375,000	$375,000
ASSPP	unknown	$250,000	$250,000
Totals	$2,2000,000	$3,646,000	$1,349,640

Summary of Findings

- This analysis determines that the current ambulance deployment under ESD2 is not sustainable.
- The rate structure is not in alignment with costs.
- The bifurcation of BLS charges and ALS charges is not necessary, nor is it supporting the deployment.
- The current tax levies are subsidizing the ambulance transport.
- It is unclear if the current tax levies are for ambulance services, EMS services, or the Fire Department's general fund.

Deployment Analysis

EMS SERVICE DELIVERY & PERFORMANCE

Service Demand

The following figures show the workload over the past three years. Like most municipalities, emergency medical response constitutes the majority of emergency service delivery.

Figure 5: EMS Incident by Service Area

Location	2018	2019	2020
Pflugerville Extraterritorial Jurisdiction	587	571	676
City Limits of Pflugerville	3,003	3,428	3,380
Total	**3,590**	**3,999**	**4,056**

The following figure shows the estimates for total patient transports over the past three years. TCESD2 provided EMS transports with auto aid provided by Austin Travis County EMS. Based on historical data, the agencies had an 87% transport rate within the region. This percentage was applied to determine the number of patient transports.

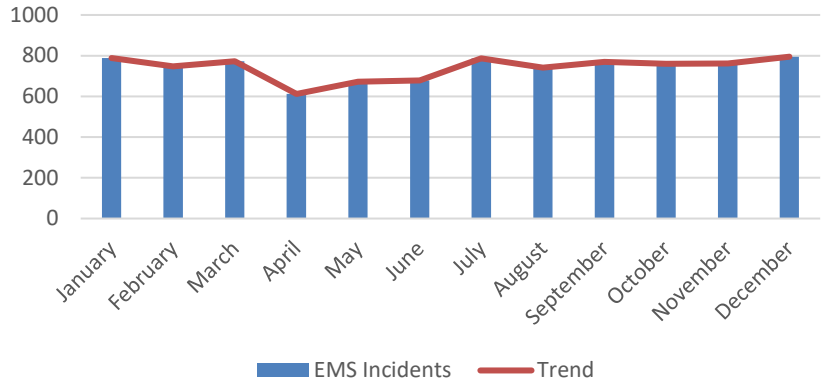
Figure 6: Estimated EMS Patient Transports (2018-2020)

Location	2018	2019	2020
Pflugerville Extraterritorial Jurisdiction	510	496	588
City Limits of Pflugerville	2,612	2,982	2,947
Total	**3,122**	**3,478**	**3,535**

Temporal Variation

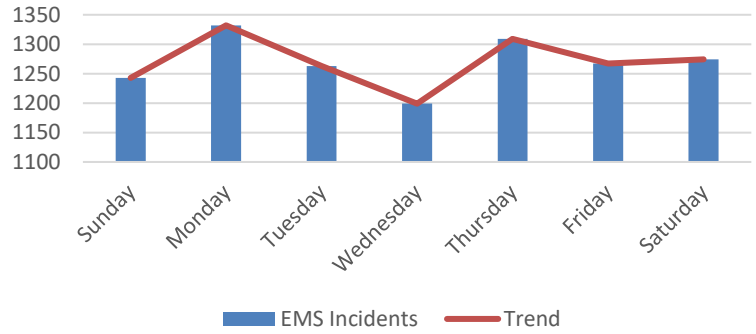
A temporal analysis of incidents reveals when the most significant service demand occurs. The following figures show how activity and demand changes based on various time measurements. The analysis was based on 2018-2020 data provided by TCESD2. The results are based on the EMS number of incidents.

Figure 7: EMS Service Demand by Month (2020)



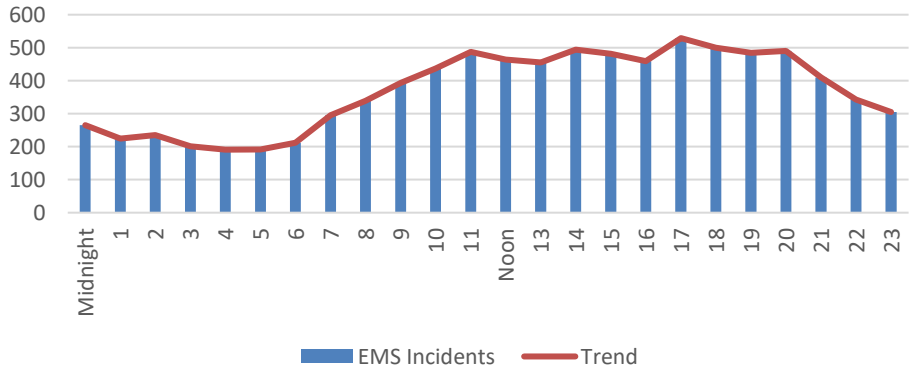
The following figure shows the call volume throughout the week. The Department has fluctuating service demand with peak demand on Monday and Tuesday.

Figure 8: EMS Service Demand by Day of the Week (2020)



The following figure illustrates the service demand by the hour of the day. During the week, a pattern has remained consistent with peak periods around 5:00 pm.

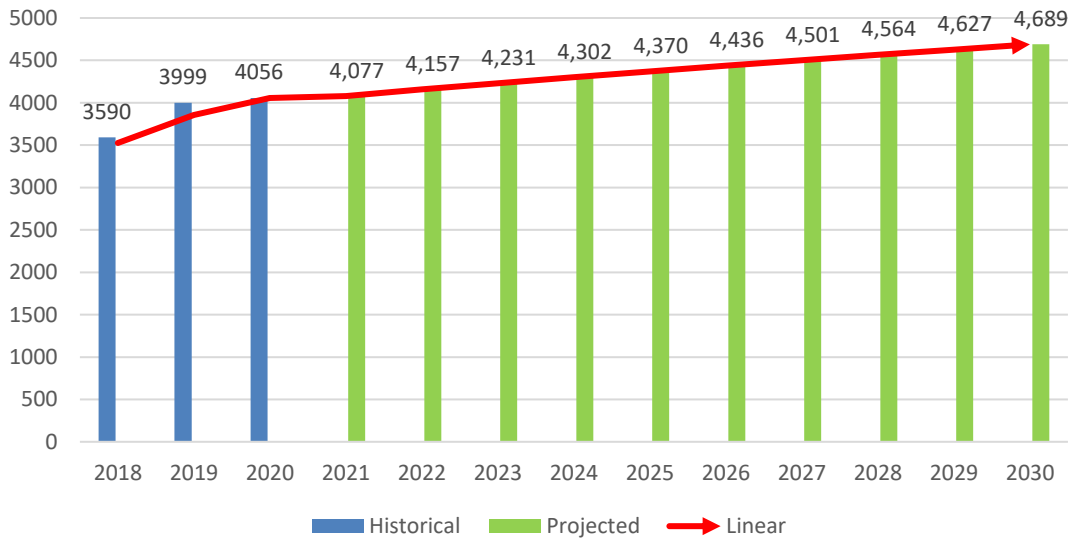
Figure 9: EMS Service Demand by Hour of the Day (2020)



EMS SERVICE DEMAND PROJECTIONS

Based on information gathered in the Pflugerville Fire-EMS Options Study, the following figure shows service demand projections for EMS incidents specific to the City of Pflugerville and ETJ.

Figure 10: EMS Service-Demand Projections (2021–2030)



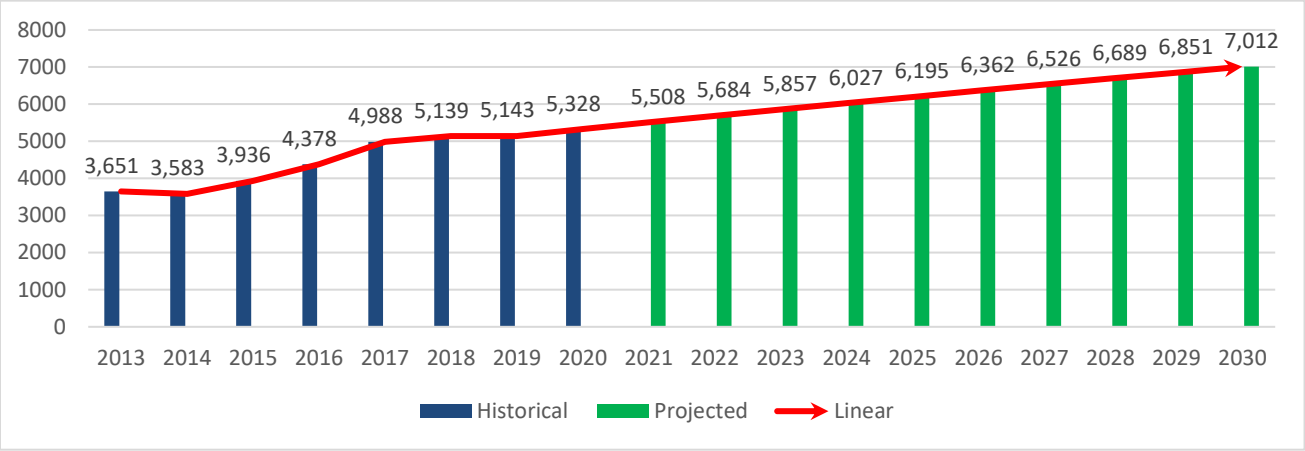
Impact of Aging Population on EMS Service Demand

The increasing number of the elderly population will increase the demand for emergency medical services as the elderly population is a disproportionately greater consumer of these services.

The current population for persons 65 and older living in the City of Pflugerville, Texas, according to the 2019 estimate, was 5,143 or 8% of the population.[1] Over the next ten years, assuming the current 65 and older age demographic stays in the area over the next ten years, this group will increase by 32% by 2030.

It is reasonable to assume that the demand for emergency medical services in this age group will increase proportionally to the increase in the demographic size. This means that in ten years, the City of Pflugerville will experience a rise in EMS due to the more significant utilization by the elderly category.

Figure 11: Pflugerville Aging Population Projection (65 & Over)



DEPLOYMENT & OPERATIONAL STRATEGIES

The following section describes recommended basic deployment and operational strategies for a new City of Pflugerville EMS agency. It may be necessary to adjust these accordingly during the implementation and planning processes.

Medic Unit Scheduling & Deployment

The known service demand in the City of Pflugerville and ETJ indicates that the City should have three primary ALS ambulances staffed 24-hours daily to ensure adequate resources are available for emergency 911 and other calls. Additionally, a fourth ALS ambulance should be considered for coverage of the ETJ.

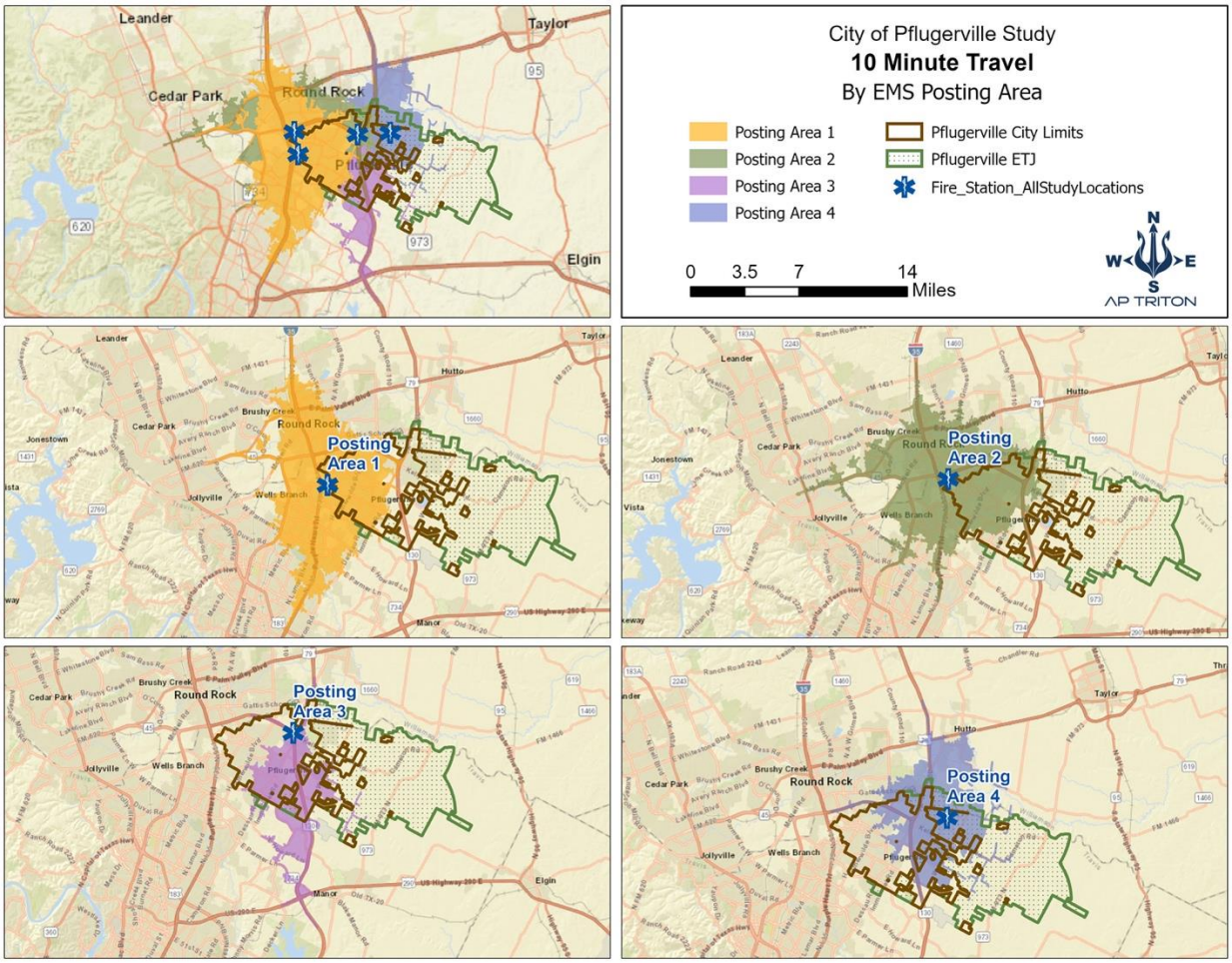
Ambulance Posting Location

AP Triton suggests setting up four posting areas within the City. The specific location will be determined by the responding unit based on access and safe posting.

- Posting Area One – Grand Ave Parkway and Central Commerce Drive
- Posting Area Two – West Pflugerville Parkway and Greenlawn Boulevard
- Posting Area Three – Texas Highway 45 (Toll) and Texas Highway 130
- Optional for ETJ – Posting Area Four – Jakes Hill Road and Speidel Drive

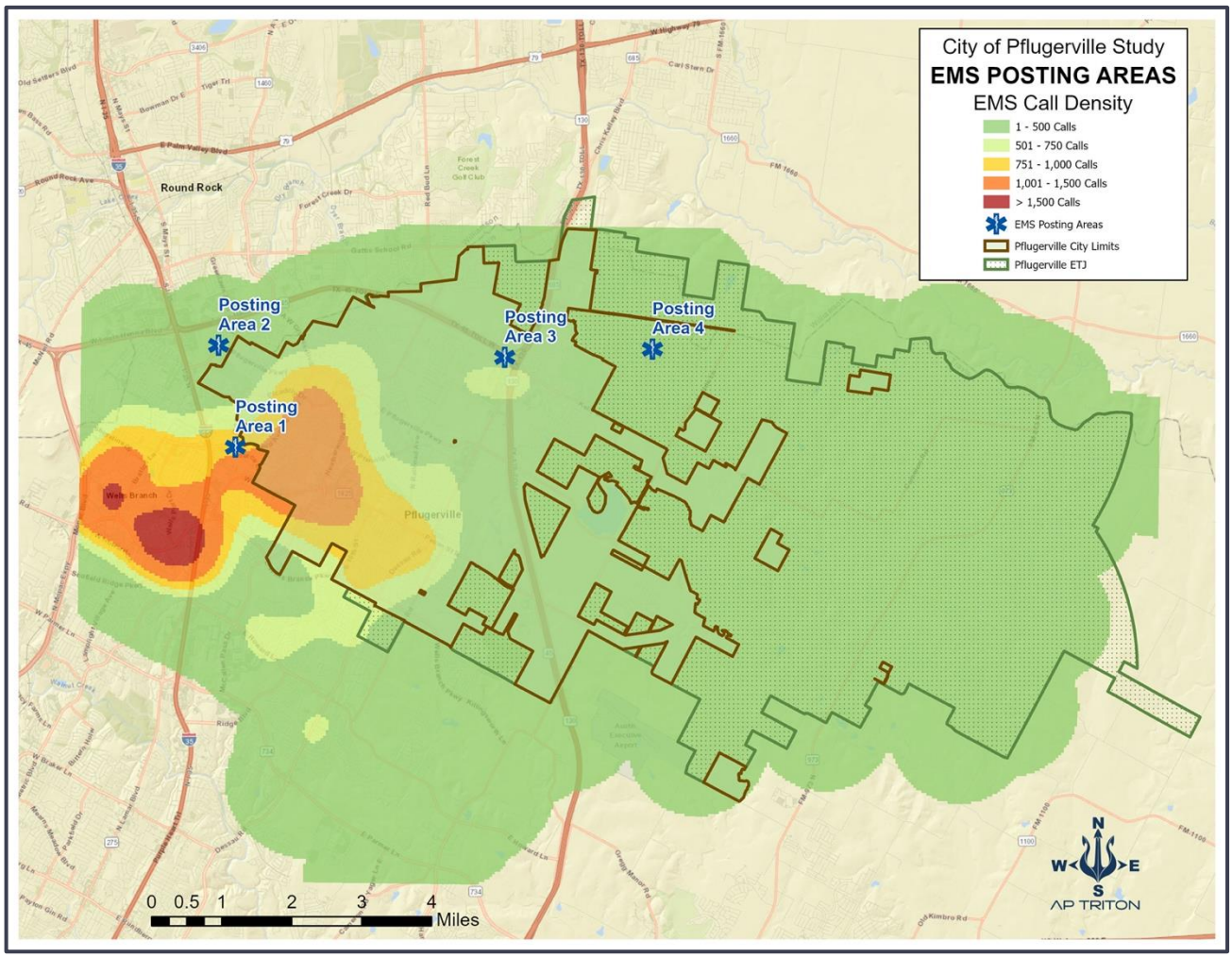
The following figure shows the 10-minute response time from each posting area.

Figure 12: Posting Areas 10-minute Response Map



The above analysis corresponds to the EMS Incident Density map developed for the Pflugerville Fire-EMS Option Study.

Figure 13: EMS Incident Density (2017-2020)



The use of ambulance posting areas in strategic areas provides dynamic coverage with surge potential in a specific area. The goal would be to provide a backup location if resources in one area run out, and an ambulance could be dispatched to that area.

Interfacility Medic Unit

Interfacility, long-distance, high-acuity transports are in higher demand, according to incident data and anecdotal evidence. The capacity and capability of the EMS system to react to 911 medical crises is reduced when primary 911 ambulances are used. AP Triton suggests future consideration for a dedicated Interfacility transfer ambulance.

- They are staffed with a minimum of one Critical Care Paramedic and one EMT or Paramedic.

- They have scheduled 12 hours, based on historical peak-demand hours for Interfacility Transports (IFTs).
- In the future, the IFT unit should be expected to supplement the 911 ambulances when service demand indicates or if the IFT unit happens to be much closer to an incident involving a critical patient.

Mobile Integrated Healthcare-Community Paramedicine

It's possible that the IFT unit could be used in the future as part of a Mobile Integrated Healthcare-Community Paramedicine (MIH-CP) program. Of course, this will be determined by the demands of the patient population. The *Center for Medicare & Medicaid Innovation Center* has recently announced a new payment model called *Emergency Triage, Treat & Transport*. This new model may be a possible future source for funding an MIH-CP program.

Response Time Performance Goals

Where possible, AP Triton supplied historical response time performance statistics and future travel times based on GIS modeling. AP Triton suggests that realistic and achievable response time performance targets be established by implementing a city EMS system. AP Triton does not recommend precise response time performance standards as a matter of policy and believes these criteria should be determined by the organization, key stakeholders, and community members.

Several elements should be considered while defining response time performance targets. Emergency communications, dispatch, and the processing of EMS incidents will not be under the control of the new EMS system. This makes it impossible to effectively control call processing speeds, dispatching accuracy, and quality assurance. Therefore, this time interval should be excluded from the total response time standard, including the interval between the time the call was received in the dispatch center and the time the ambulance was dispatched. Instead, the response time goals should focus on the following parameters.

- Turn out Time—the interval between when the ambulance was dispatched until the unit begins to respond.
- Response Time—the interval between when the unit announced they were enroute to the incident and when they announced their arrival on the scene.
- Total response time performance goals should vary based on population density (urban, suburban, and rural). Goals should distinguish between emergent, non-emergent, and interfacility transports.

The City of Pflugerville has established response time standards.

- The provider must be capable of an ALS ambulance at the scene of each life-threatening emergency request within 8 minutes within the 90th percentile of all emergency dispatch response requests within the City.
- The provider must be capable of an ALS ambulance at the scene of each life-threatening emergency request outside the City and within 8 minutes within the 90th percentile.
- When ambulances are available for non-emergency transports, the provider must be capable of an ALS ambulance at the scene of each non–emergency request within:
    - 15 minutes of the scheduled pick-up time with 24 hours advance notice.
    - 60 minutes of the time of call on unscheduled non-emergency requests.

This classification will be measured using the last 100 patient contacts or a quarterly average.

Communications & Dispatch

Two communication agencies dispatch fire, rescue, and EMS calls under the direction of the City of Austin. Austin Travis County EMS provides dispatch services for all EMS-related incidents. The Austin Fire Department dispatches for all fire-related events. Travis County Sherriff's Department serves as the Public Safety Answering Point (PSAP) in Austin, TX. The ATCEMS dispatchers are trained in Emergency Medical Dispatch (EMD) and can provide pre-arrival instructions to callers in medical emergencies.

Based on information found in the Pflugerville Fire-EMS Options Study, the performance by both dispatch centers meets or exceeds performance measurements. AP Triton recommends continued collaboration and regional dispatching.

Recommendations

RECOMMENDATIONS

- Initiate discussions with private ambulance providers to determine the ability to provide services to the City of Pflugerville and the ETJ at no cost to the City.
- Determine a unit hour cost for the private ambulance providers to determine if the City can realize revenue by purchasing unit hours from the private provider.
- Determine if it is in the City's best interest to conduct billing and collections in-house or to use a third-party billing company.
- Explore the possibility of creating ambulance services with City employees.
- Determine to what extent the current tax levies apply to ambulance transport and explore returning those tax dollars to Pflugerville to offset the deployment costs.
- Consider dynamic deployment of ambulances based on service demand throughout the day.
- Consider the use of peak-demand ambulances and staffing during the day.

APPENDIX A: TABLE OF FIGURES

APPENDIX B: REFERENCES

[1] Data USA.