

BEXAR METRO 9-1-1 NETWORK

2020

ANNUAL REPORT



BEXAR METRO

Our Mission Statement

“The District’s mission is to deploy and maintain a state-of-the-art 9-1-1 emergency communication system that enables citizens in distress to quickly communicate their requests for police, fire, or emergency medical assistance; and to ensure member jurisdictions have the appropriate 9-1-1 tools necessary to efficiently and accurately receive and process those requests.”





MESSAGE FROM THE CHAIRMAN OF THE BOARD

January 2021

On behalf of the Bexar Metro 9-1-1 Network Board of Managers and staff, I am proud to present to you the Bexar Metro Fiscal Year 2020 Annual Report. This publication provides accounting of Bexar Metro's Fiscal Year 2020 revenues, required expenditures, and an overview of the critical services the District provided to our forty (40) participating jurisdictions during the year. I believe you will be impressed with the breadth and quality of emergency communication services the District provides to the citizens of Bexar, Comal, and Guadalupe Counties.

The Quarry Run Regional Operations Center continues to support not only its anchor tenant, Bexar County Public Safety Communications, but stands ready to serve as a backup to the twenty (20) Emergency Communications Centers (ECCs) providing 9-1-1 services within the District. The readiness and viability of this critical facility were tested several times in 2020 through a combination of planned ECC relocations supporting building remodels, pilot projects testing split 9-1-1 call handling operations, and contingency relocations due to equipment or power failure.

Bexar Metro welcomes your feedback and any questions on the information presented in both the Annual Report and Audit Report. Please do not hesitate to contact Brett Schneider, Executive Director, at the District offices with questions concerning the reports or any services provided by the District. He can be reached at (210) 408-3911 or via email at bschneider@bexarmetro.org.

Thank you for your continued support of the Bexar Metro 9-1-1 Network.

Sincerely,

James C. Hasslocher
Chairman



THE BOARD OF MANAGERS

The authority for the Bexar Metro 9-1-1 Network is Texas Health and Safety Code, Chapter 772, Subchapter D, Section 772.301—formerly Vernon’s Annotated Civil Statutes Article 1432e, as approved by the Texas 69th Regular Legislative Session in Senate Bill 750 on May 21, 1985, and subsequently approved by a local election on January 17, 1987.

The Bexar Metro Board is the governing body appointed by member counties and municipalities and has the statutory authority to control and manage the District by providing oversight of policy and fiscal matters. The Executive Director of Bexar Metro is appointed by the Board and is responsible for the overall management of District matters.

The following is a list of the 2020 Board of Managers and the entities that they represent:

- | | |
|--------------------------------|--------------------------------|
| James C. Hasslocher (Chairman) | Bexar County |
| Stephen R. Schneider | Bexar County |
| Judge Sherman Krause | Comal County |
| Dudley Wait | Guadalupe County |
| Heberto Gutierrez | City of San Antonio |
| Chief William McManus | City of San Antonio |
| Cathy C. Talcott | City of New Braunfels |
| Suzanne de Leon | Bexar County Council of Mayors |



James C. Hasslocher



Stephen R. Schneider



Judge Sherman Krause



Dudley Wait



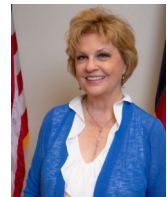
Heberto Gutierrez



Chief William McManus



Cathy C. Talcott



Suzanne de Leon



MESSAGE FROM THE EXECUTIVE DIRECTOR

The mission of the Bexar Metro 9-1-1 Network (Bexar Metro or District) is to ensure the citizens of Bexar, Comal, and Guadalupe Counties have immediate access to emergency services regardless of technology or type of device. In 2020, the District’s 9-1-1 system processed approximately 1.8 million emergency requests. To ensure we remain in a position to provide the highest caliber of service to our citizens, participating jurisdictions, and the Emergency Communications Centers (ECCs) we support, it is imperative we continue to evolve with technology and provide the resources – in both equipment and training – to guarantee the ECCs have the tools necessary to facilitate a quality public safety response. The 9-1-1 technology we provide, coupled with the six hundred and twelve (612) dedicated 9-1-1 professionals serving at the front-line of the emergency response cycle, serve as the public’s lifeline to Police, Fire, and Emergency Medical services.

After several years of planning and design, we will soon begin the systematic transition of all twenty-one (21) ECCs from the current digital 9-1-1 selective routing system to the new, IP-Based Next Generation Core Services (NGCS) platform. We anticipate the transition to begin in September, with all locations on the new system by end of year. The next phase of the project, the rehome and further diversification of over two hundred (200) wireline central office, Voice over IP (VoIP), and wireless carrier interconnection points, will begin in early 2022. Once complete, the NGCS architecture will set the foundation for the integration of future technologies and, more importantly, achieve a greater level of system redundancy and diversity than available in today’s 9-1-1 network.

This annual report provides a summary of revenues and expenses incurred by Bexar Metro during 2020 in support of our mission to provide quality Enhanced 9-1-1 service. In addition to the financial aspect, a synopsis of major accomplishments and system enhancements, many related to the aforementioned NGCS project, are included. The overarching goal of each system enhancement or project initiated by the district is to further strengthen, safeguard, and improve upon the 9-1-1 lifeline serving the 2.3 million citizens residing within the district.

Bexar Metro remains committed to providing our citizens with one of the most technologically advanced and resilient emergency communications systems in the nation. Please do not hesitate to contact me at (210) 408-3911 for additional information on our programs or if I can be of service.

Respectfully,

Brett Schneider, ENP
Executive Director



DISTRICT ACCOMPLISHMENTS

- Enhanced network diversity and redundancy between the Vesta Host Systems and ECCs with the transition from a network auto-failover to a dual path, diverse access design
- Created a Network Operations Center (NOC) for 9-1-1 technicians and staff to monitor 9-1-1 network, core equipment, and call activity to proactively address potential issues before they impact emergency call delivery
- Next Generation 9-1-1 - Initiated project to transition twenty-one (21) Emergency Communications Centers (ECCs) to the AT&T Next Generation Core Service (NGCS) platform, providing greater 9-1-1 selective routing resiliency and diversity through a nationwide core of six selective routing systems
- Began transition of current tertiary LTE back-up solution to FirstNet
- Increased Quarry Run fiber and copper infrastructure by 50% to enhance capacity and diversity between building demarcation points, data centers, and areas housing public safety infrastructure
- Created an Incident Security Operations Center (ISOC) at the Saddletree headquarters equipped to monitor, detect, and mitigate cyber-attacks on the 9-1-1 administrative and critical networks supporting public safety operations at Quarry Run
- Redesign of proposed Bexar Metro network to NGCS interconnection to increase 9-1-1 call ingress and egress paths for enhanced diversity and redundancy
- Created an implementation plan to transition 9-1-1 routing core infrastructure to an Ether Channel, high availability design in conjunction with NGCS deployment
- Achieved 99.75% match rate, exceeding the National Emergency Number Association (NENA) standard for data synchronization between the Master Street Address Guide (MSAG), Automatic Location Information (ALI) Database, and Geographic Information Systems (GIS) data
- Executed a contract with Sanborn for high accuracy oblique and ortho imagery data and developed interim solution to support z-axis (vertical) location accuracy requirements mandated by the Federal Communications Commission (FCC)
- Renovated the former Regional Emergency Operations Center space at Saddletree to support ISOC operations
- Upgraded Data Center B power and HVAC to accommodate increased customer data center presence and expanded footprint
- Implemented new policies, procedures, equipment, and services to mitigate the spread of COVID-19, not only in the Bexar Metro facilities, but, also the ECCs as well.

SECURITY OPERATIONS



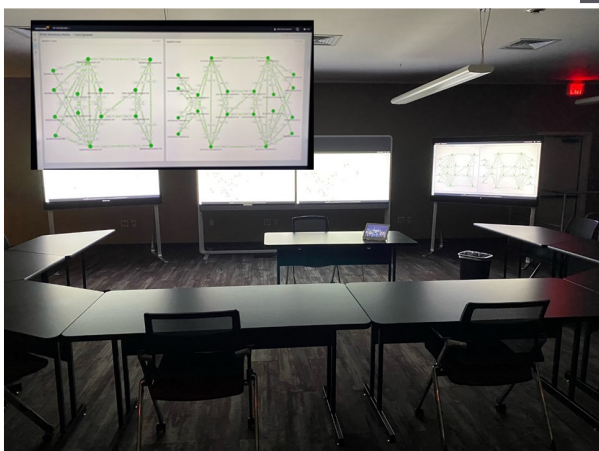
As many of us know, we have had quite a year in the network and cyber security realm. This includes not only the build-out of our Network Operations Center (NOC) at Quarry Run and the Incident Security Operations Center (ISOC) at Saddletree, but also the stand-up of the monitoring and reporting software (SolarWinds) for observing both the 9-1-1 and administrative networks.

The NOC at Quarry Run has seen the biggest transformation, both physically and functionally. The WebEx Room Kit doubles as NOC display boards. When not functioning as display units for meetings, the screens display vital network maps and Vesta Activity View dashboards. The physical layout of the room further serves the purpose of a NOC allowing individual workstation views of the dashboards and interaction via WebEx in the event of remote collaboration.

Saddletree has also seen a metamorphosis in the old Regional Emergency Operations Center (REOC) area. The addition of these WebEx Room Kits and interactive boards has also enabled this space to serve as a Incident Security Operations Center (ISOC) while simultaneously leveraging WebEx collaboration. The large open area further enables collaboration within the room while facilitating interaction with remote users during incident response. When not using the WebEx meeting capabilities, the screens display vital network statistics, cyber security incidents, and traffic analysis data.

Much of this newfound data being displayed in the NOC and ISOC are a result of the newly implemented network monitoring and alerting solution called SolarWinds. SolarWinds is gathering information from not only Bexar Metro's internal systems, but also from the 9-1-1 network infrastructure. This platform can see into network devices and report on a myriad of information, including utilization of individual links, system processing capabilities, any errors or misconfigurations, and traffic flow data. Having all this information in a central place allows Bexar Metro to analyze traffic and system information, to receive alerts on any anomalies, and even to plot growth patterns for predictive forecasting.

Expanding the capability to monitor 9-1-1 systems, network traffic, and security events represents Bexar Metro's commitment to not only provide unprecedented service to our residents and the ECCs that service them, but also position the District as a leader in the nation for 9-1-1 service and network operations and security.





TRANSITIONING TO NEXT GENERATION 9-1-1

What is Next Generation 9-1-1? Next Generation 9-1-1 (NG9-1-1) replaces Enhanced 9-1-1 by adding additional capabilities to support changes for current and new types of Originating Service Providers. NG9-1-1 adds flexibility for Emergency Communications Centers (ECCs) and 9-1-1 Authorities, as well as adding features to integrate and interoperate with emergency entities beyond the ECC.

There are various reasons why migration to Next Generation 9-1-1 is essential. There is a fundamental shift in the telecommunications landscape, moving away from the older technology of central offices and the circuit switch infrastructure. This architecture was primarily designed for voice communications and interconnecting voice callers. With the advent of computer broadband, data networks have evolved differently, because this data has different demands. Furthermore, communications are becoming more and more mobile, resulting in the old circuit-switched landlines being phased out. The telecommunication carriers are replacing their old infrastructure with new IP-based switches that can simultaneously handle voice and data within the infrastructure across the shared network. As a consequence, the legacy selective routers are nearing the end of their life cycles. Bexar Metro and AT&T signed a contract to begin the rollout of one of Texas' first Emergency Services Internet Protocol Networks (ESInet), and staff began working on the deployment of this network during the first quarter of 2020.

NG9-1-1 utilizes an ESInet, IP based services and applications, Databases and Data Management which connect to ECCs by employing spatial routing to deliver emergency calls. Deployment of an ESInet will allow the caller to transmit text messages, images, video, and vital related data to the ECCs. NG9-1-1's intention is to be a system of systems interconnected at local, regional, state, federal, national, and international levels to form an IP-based inter-network (network of networks). There may be several ESInets deployed within the State of Texas that can service many ECCs and allow for sharing of cost and resources.

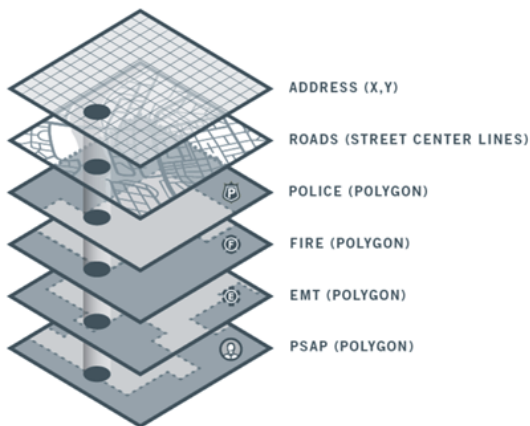
The ESInet is the transport mechanism, so rather than having a Centralized Automatic Message Accounting (CAMA) trunk from point A to point B, in the future we will have an IP network - but not just any IP network. The network will be secure, reliable, private, and managed for emergency communications services. It will be public safety grade, meaning that its uptime should be 99.999%. The network will be shared by all public safety agencies. By adopting the same networking standards as most of the other industries, which is known as i3, we will be essentially paving the way for features and abilities that traditional trunking cannot do. The ESInet is not i3 architecture or NG9-1-1 but will provide infrastructure for i3 core functional processes, NG9-1-1 services, and interoperable agencies.

Current call delivery to 9-1-1 ECCs utilizes central offices, regulated telecommunications service providers, and known networks. As we transition to NG9-1-1, the network will become an IP-based network with additional security known as a Border Control Function (BCF). The BCF acts as a gateway or firewall into the Next Generation system. The current call location data consists of the customer address, the Emergency Service Zones (ESZs) and the Master Street Address Guide (MSAG), which collectively form the Automatic Location Information (ALI) displayed at the ECCs. In NG9-1-1, the MSAG function will be replaced by the Location Validation Function, which will more efficiently validate an address. The Location Database effectively does the roles of both the ALI database and the Location Information Server, which is a functional element providing locations of endpoints (i.e., calling device) in an IP-capable originating network.

The current Selective Router will be replaced with an Emergency Service Routing Proxy, while our Selective Router Database will be replaced with an Emergency Call Routing Function (ECRF) and Policy Routing Function (PRF). The ECRF is a functional element that returns a route to the appropriate ECC for the caller's location (either civic address or geo-coordinates). Should that ECC be busy, the PRF determines the next hop in the path so those calls can be answered by the alternate ECC.

A large component of spatially routing the 9-1-1 calls in an ESInet involves a Geographic Information System (GIS), which is a system for capturing, storing, displaying, analyzing, and managing geographically referenced information and the associated attributes. A GIS is not a map, but a relational database. For years, Bexar Metro staff have maintained GIS data layers for our ECCs. The GIS data was put to rigorous comparisons to validate topology features of the datasets against the MSAG and ALI data. The National Emergency Number Association (NENA) recommends that MSAG and GIS data reach a 98% or greater match rate before using GIS data for NG9-1-1. Bexar Metro has maintained an in-house 99% match rate by comparing our ALI and MSAG data to our GIS data. Upon the initial load of Bexar Metro’s GIS data layers to the Enterprise Geospatial Database Management System (EGDMS), 99.75% of the features were loaded without any critical errors.

Next Generation 9-1-1 Geographic Information System (GIS) Data Layers



NG9-1-1 GIS Required Datasets:

- Street Centerline
- Public Safety Answering Point (PSAP) Boundary
- FIRE, LAW, EMS Boundaries
- Authoritative Boundary

Strongly Recommended:

- Site/Structure Address Points
- Road Name Alias Table
- Cell Site and Sectors
- Municipal, County, State Boundaries

GIS Data Layers - Initial Upload to Enterprise Geographic Database Management System (EGDMS)

| Date Submitted | Agency Layer Name | Total Count | Changed/Added Feature Count | Critical Errors* | Proceeded to Production |
|----------------|--------------------|----------------|-----------------------------|------------------|-------------------------|
| 7/29/2020 | ADDRESSES | 794,054 | 794,054 | 832 | 793,222 |
| 7/29/2020 | EMS | 37 | 37 | 1 | 0 |
| 7/29/2020 | FIRE | 65 | 65 | 0 | 65 |
| 7/29/2020 | LAW | 55 | 55 | 1 | 0 |
| 7/29/2020 | PROVISIONING | 1 | 1 | 0 | 1 |
| 7/29/2020 | PSAP | 33 | 33 | 0 | 33 |
| 7/29/2020 | STREET CENTERLINES | 131,729 | 131,728 | 1,438 | 130,291 |
| | TOTAL | 925,974 | 925,973 | 2,272 | 923,612 |

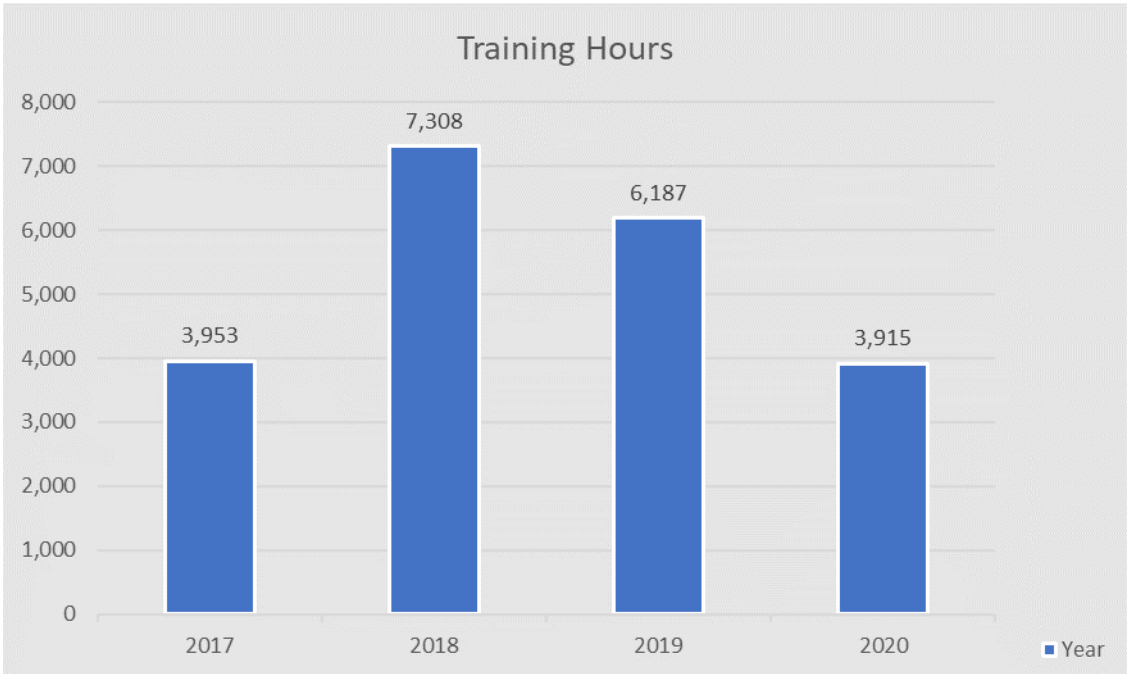
The ESInet is virtually engineered from the ground up to carry these various data types, along with traditional voice, while being exceptionally secure and available. New ways to share information across the public safety network is poised to change the way we do business more than any other advances in the past. There will be significant human resource impacts to the 9-1-1 call takers, who may experience increased workloads and the need for new training to respond to these new communication types. As the District transitions to NG9-1-1 and experiences significant changes to our network and business model, Bexar Metro staff continue to utilize national industry standards as guidance for deployment.



TRAINING & EDUCATION

As the Bexar Metro Training Program continues to grow, develop, and implement various training and educational programs, it is also expanding into the virtual training world.

In 2020, 561 telecommunicators attended various types of training, utilizing web-based programs to communicate. COVID-19 shut down all in-person training presenting many challenges. However, we managed to accomplish and provide 3,915 training hours.



Below are some of the training courses we were able to complete utilizing virtual instruction:

1. Denise Amber Lee: A Victim’s Plea
2. HOPE IN THE MIDST OF CHAOS: The Las Vegas Shooting
3. Communications Training Officer
4. Customer Service and the COVID Connection
5. Domestic Violence – Isolation with Your Abuser
6. Suicide and Crisis in the COVID era
7. 9-1-1 Stress Strategies – A Heroes Choice

Texas Commission on Law Enforcement (TCOLE), is the governing entity overseeing training, amongst other areas of law enforcement. Some of the rules implemented by the TCOLE are as follows:

1. All training courses must be approved by the TCOLE prior to implementation.
2. No licensure course training, no exceptions.
3. No cellular telephone training: all training must be received on a laptop or desktop computer with a camera so the instructor has visual contact with students at all times.

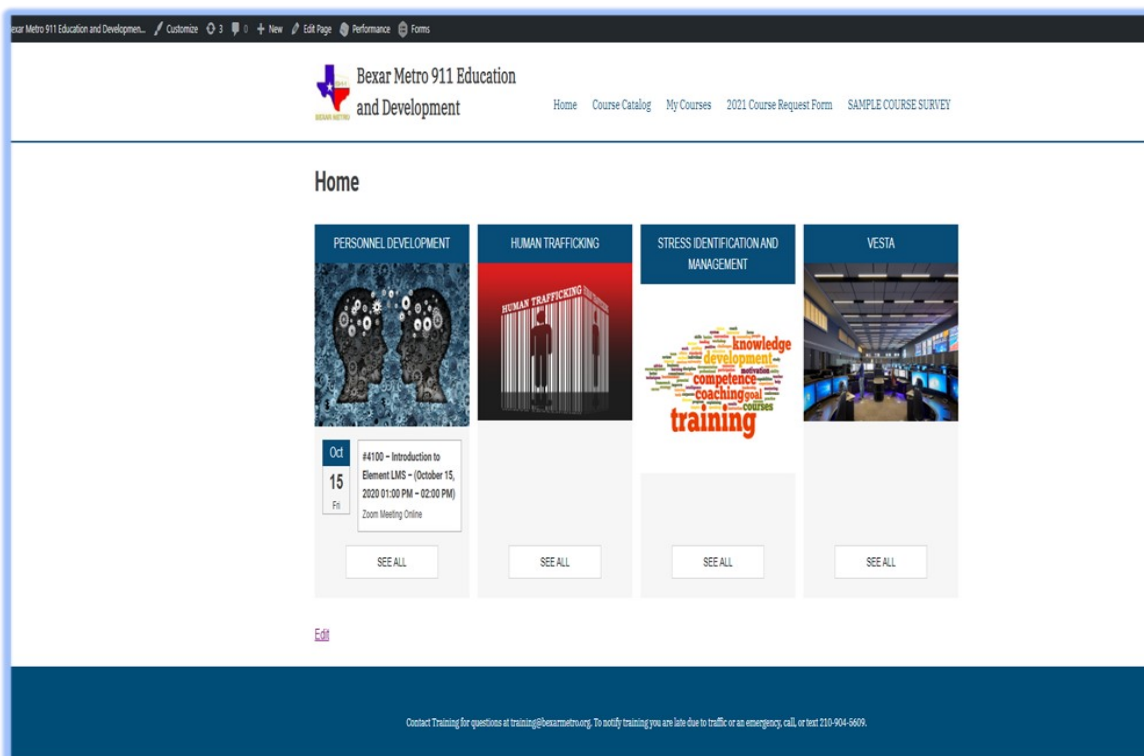


Bexar Metro accomplished an important milestone with the Department of Public Safety (DPS). Our training department was the only one out of the entire state approved to train the state mandated TCIC/TLETS. This accolade was due to several factors, including:

1. Training record history and course critiques over the course of 23 years.
2. Knowledge and enforcement of course policies.
3. Using the paid version of WebEx meetings.

Bexar Metro also launched a training website, a first at Bexar Metro. This resource is limited to only those currently employed at the agencies in our three-county service area, Bexar, Comal, and Guadalupe Counties. Our trainer, Denera White, has the task of confirming employment rosters with each agency every 6 to 8 weeks. All agencies are aware that if an employee is terminated, Bexar Metro is to be notified immediately so that access to the affected account may be suspended. New employees must be registered into for access. Bexar Metro maintains ultimate control over access to the training system.

This new website allows us to post courses, take registrations, maintain a waiting list for classes, provide automated course critiques, certificates and more. We are excited about this new adventure and cannot wait to expand and host courses elsewhere as well. The website allows for keeping track of that also!



In conclusion, despite COVID challenges, the Training department was able to find other ways to implement training via virtual technologies, accomplishing and even exceeding our goals for the year.



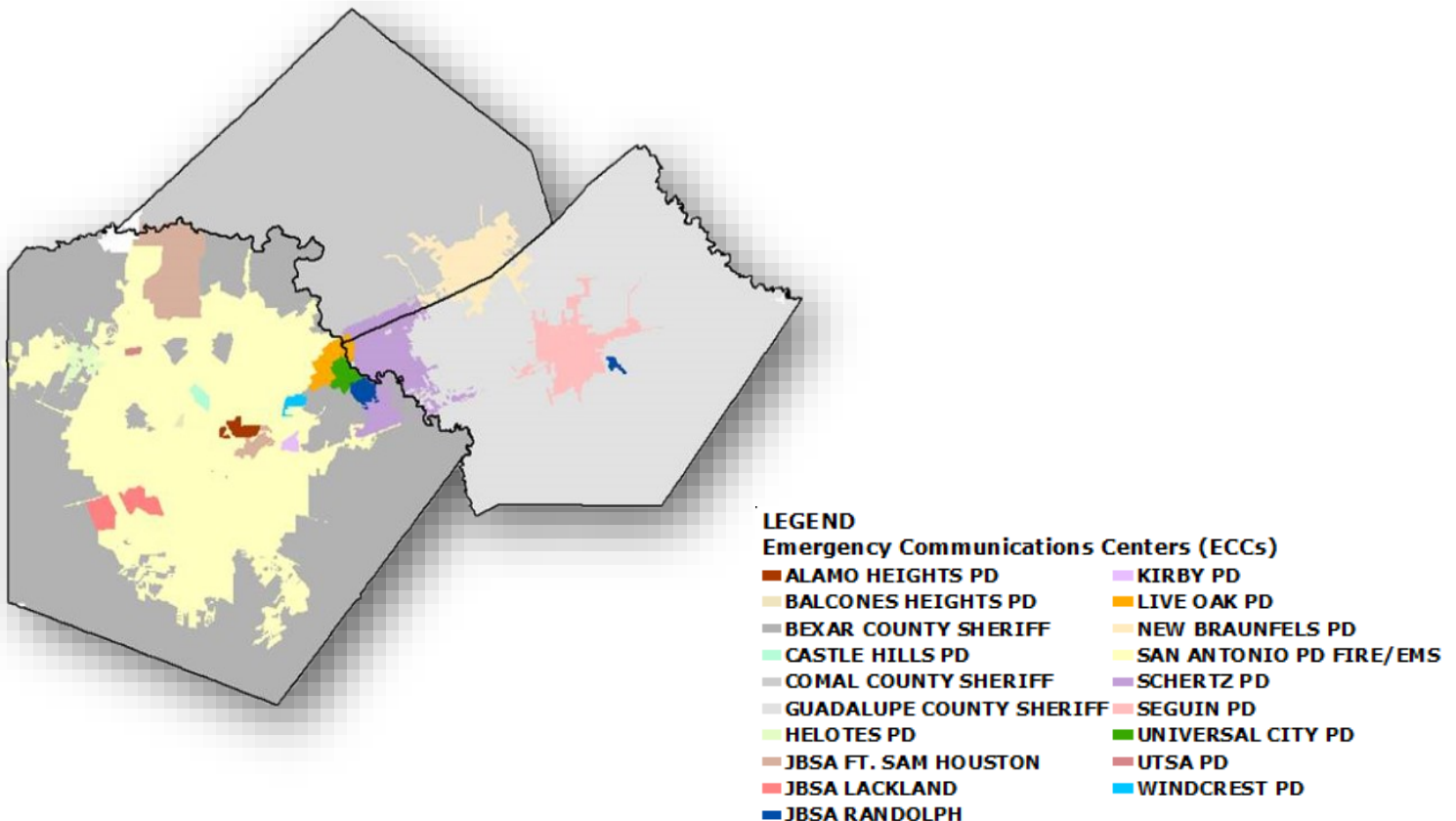
BEXAR METRO 2020 BUDGET SUMMARY

More than 95 percent of the total funding for the Bexar Metro 9-1-1 Network (Bexar Metro or District) is generated by emergency service fees on telephone services, including traditional wireline, wireless, private switch and Voice over Internet Protocol (VoIP). These small monthly service fees collected on behalf of the District by telephone service providers in Bexar, Comal, and Guadalupe counties fund the planning and implementation as well as the operations and maintenance of one of the premier Enhanced 9-1-1 systems in the nation.

The Bexar Metro annual budget is adopted by its Board of Managers each year after the governing bodies of each of the 40-member jurisdictions have had the opportunity to review, consider, and approve a draft version. Budget expenditures required for the 9-1-1 operation is divided into two primary sections: the Operations and Maintenance (O&M) expenditures and the Capital expenditures. The O&M expenditures provide for the ongoing management of existing operations while the Capital expenditures, including funds transferred from the capital reserve fund, provide for current and future enhancements to District Operations. The District's Capital Reserve Fund is set aside for those enhancements.

Currently, the majority of the Bexar Metro Capital Reserve Fund is dedicated to the cost associated with the current NGCS project and a 9-1-1 core, call-handling, and mapping system refresh planned for 2024-2025.

Bexar Metro has, from the start, adhered to a policy of sound fiscal planning and management and has never borrowed funds. Because of strong leadership, the District is in a strong fiscal position to meet its future obligations while continuing to enhance the services it provides to the citizens it serves.



Bexar Metro 9-1-1 Network Fiscal Year 2020 Budget Summary



| | FY 2020 Budget | FY 2020 Actual |
|---------------------------|-----------------------|-----------------------|
| Revenue | | |
| 9-1-1 Service Fee Revenue | \$ 15,417,508 | \$ 15,352,532 |
| Interest Income | \$ 228,500 | \$ 143,027 |
| Miscellaneous | \$ 312,500 | \$ 325,894 |
| Total Revenue | \$ 15,958,508 | \$ 15,821,453 |
| Planned Reserve Transfer | \$ 1,012,645 | \$ - |
| Previous Year Carry-Over | \$ - | \$ - |
| Total Funds Available | \$ 16,971,153 | \$ 15,821,453 |
| Expenditures | | |
| Personnel Services | \$ 3,164,046 | \$ 3,033,708 |
| Operations | \$ 7,936,782 | \$ 4,579,364 |
| Facilities | \$ 1,715,525 | \$ 1,478,669 |
| Education and Training | \$ 163,500 | \$ 63,430 |
| Contingencies | \$ 500,000 | \$ 250,000 |
| Total O&M Expenses | \$ 13,479,853 | \$ 9,405,171 |
| Capital Expense | \$ 1,556,300 | \$ 1,330,308 |
| Capital Reserve | \$ 1,935,000 | \$ 5,085,974 |
| Total Capital Expense | \$ 3,491,300 | \$ 6,416,282 |
| Total Expenditures | \$ 16,971,153 | \$ 15,821,453 |

The Budget Summary utilizes a cash basis for accounting. The accompanying Audit Report differs slightly because it utilizes an accrual basis.

SWORN STATEMENT

STATE OF TEXAS)
)
COUNTY OF BEXAR)

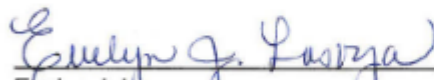
Before me, the undersigned personally appeared and stated:

I, Brett M. Schneider, Executive Director of the Bexar Metro 9-1-1 Network, do solemnly swear that the following Fiscal Year 2020 Budget Summary of revenues and expenditures is a true and correct report of the financial activities of the District for the fiscal year ending September 30, 2020.

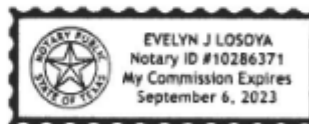


Brett M. Schneider, Executive Director

Sworn to and subscribed this 15 day of January 2021.



Evelyn J. Losoya
Notary Public in and for the State of Texas
My Commission Expires: September 6, 2023





BEXAR METRO

Bexar Metro 9-1-1 Network
911 Saddletree Court, San Antonio, Texas 78231-1523
(210) 408-3911 Telephone