

Vermont 911 Strategic Plan

October 2021

**State of Vermont
Enhanced 911 Board
100 State Street – 5th Floor
Montpelier, VT 05620-6501**

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Vermont 911 Strategic Plan

1. EXECUTIVE SUMMARY

1.1 BACKGROUND AND PURPOSE

This strategic plan documents the current 911 environment in Vermont and identifies the goals and priorities for the statewide 911 system and associated programs for the next five years. This plan is intended to provide guidance and direction to Enhanced 911 Board (“Board” or “911 Board”) staff operations and initiatives. The plan will also serve as a mechanism to engage with and inform various stakeholders about plans for the statewide 911 program.

1.2 THE PLANNING PROCESS

In May 2021, a draft strategic plan was developed by the Board’s Executive Director, Information Technology (IT) Manager, Geographic Information System (GIS)/Database Administrator and Emergency Communications Training Coordinator (ECTC). The draft, which incorporated input from all Board staff members, will be presented for discussion and approval by the Enhanced 911 Board at its July 2021 meeting. As the plan evolves, the Board will continue to align its work with industry standards and best practice to identify and implement program goals and objectives and will solicit input from stakeholders as necessary.

The plan will be reviewed and updated on an ongoing basis with formal updates presented to the Board every two years.

1.3 GOALS AND OBJECTIVES

This plan identifies the following high-level goals for Vermont’s 911 program:

1.3.1 Legislative, Regulatory and Governance Structure – The Board will develop and implement appropriate mechanisms to ensure an effective legislative and regulatory environment and a sound and stable governance model for the statewide 911 program.

1.3.2 Program Structure – The Board will maintain appropriate staffing levels and/or supporting resources to efficiently achieve program goals and objectives, will support the professional development and wellness of staff members and 911 call-takers, and will continue to support mutually beneficial partnerships with Public Safety Answering Points (PSAPs), municipalities, state, local and county governmental agencies, industry and national partners.

1.3.3 NG911 Technology – The Board will continue to advance Next Generation 911 (NG911) technology in collaboration with the system provider and will support furtherance of the TFOPA NG911 maturity model in alignment with industry standards and best practice. NG911 system technology and operations will be delivered in an efficient manner that best serves the public.

1.3.4 PSAP Integration – The Board will identify opportunities for improved data sharing and interoperability with Vermont’s dispatch centers and emergency response community while also expanding interstate and regional NG911 system interconnections where appropriate.

1.3.5 Board Programs and Initiatives – The Board will ensure all programs and initiatives align with relevant industry standards, best practice and the mission statements outlined in Section 4. The focus of the Board program and initiatives will be on solutions that benefit the 911 caller and call-taker.

1.3.6 Economics – The Board will work collaboratively with legislative and administration officials to ensure dedicated and reliable funding exists for the statewide 911 program. The Board will regularly evaluate the cost and benefits of all aspects of the program to ensure effective use of the public funds entrusted to it.

2. INTRODUCTION

2.1 HISTORY AND BACKGROUND OF 911

In 1937, Great Britain became the first country to implement a three-digit emergency telephone number. Other countries around the world followed with the development of similar three-digit access to emergency services. In 1967, in response to a recommendation from a presidentially-established commission, AT&T announced that the numbers 911 were reserved for emergency use across the United States. The first 911 call in the nation occurred on February 16, 1968, in Haleyville, Alabama.

2.2 HISTORY AND BACKGROUND OF 911 IN VERMONT

The work to implement a statewide 911 system in Vermont began in 1992 with a study conducted by the Vermont Department of Public Service in response to concerns from consumers, emergency service providers and legislators. In 1994, Act 197 was signed into law enabling the implementation of statewide enhanced 911 system and creating the Vermont Enhanced 911 Board (“Board” or “911 Board”). Following several years of planning and system development, Vermont’s statewide 911 system became operational on November 18, 1998, when a 911 call requesting medical assistance in southern Vermont was answered and processed by a fully trained and certified 911 call-taker at the Williston PSAP. Since that first call, over four million calls have been delivered into the statewide system and processed by Vermont’s 911 call-takers.

2.3 OVERVIEW OF STRATEGIC PLAN

2.3.1 Background and Purpose – This strategic plan documents the current 911 environment in Vermont and identifies the goals and priorities for the statewide 911 system and associated programs for the next five years. Once approved by the Board, this plan will provide guidance and direction to Board staff operations and initiatives. The plan will also serve as a mechanism to engage with and inform various stakeholders about plans for the statewide 911 program.

2.3.2 Planning Process – Beginning in May 2021, a draft strategic plan was developed by the Board’s Executive Director, Information Technology (IT) Manager, Geographic Information System (GIS)/Database Administrator and Emergency Communications Training Coordinator (ECTC). The draft, which incorporated input from all Board staff members, will be presented for discussion and approval by the Enhanced 911 Board at its July 2021 meeting. As the plan evolves, the Board will continue to align its work with industry standards and best practice to identify and implement program goals and objectives. Input may be sought from various stakeholders, including the following:

- State and Regional PSAP Administrators
- Emergency Service Responders and Dispatch Agencies
- Municipal Coordinators
- Vermont Public Service Department

- Vermont Department of Health
- Vermont Agency of Digital Services

2.3.3 Plan Maintenance and Updates – The strategic plan will be reviewed and updated every two years, or more frequently as needed. The biennial update will be presented to the full Board for discussion and approval at the appropriate interval.

3. CURRENT 911 ENVIRONMENT

3.1 LEGISLATIVE AND REGULATORY ENVIRONMENT

3.1.1 Governance – 30 V.S.A §§ 7051- 7061 created the Enhanced 911 Board and identified it as the single governmental agency responsible for statewide enhanced 911¹. The Board is responsible for the design, implementation and operational oversight of the statewide 911 system. To that end, the Board develops and implements policy, system design, standards and procedures necessary for oversight and management of the statewide system. Statute requires the Board adopt certain rules related to the system and authorizes it to adopt other rules as necessary to carry out its responsibilities.

The 911 Board consists of nine members, appointed by the Governor, representing the emergency medical, fire and law enforcement communities, municipalities and the public at large.

The Board is an independent state board not attached to any other state agency or department, and, as required by statute, consults with various state agencies and local community service providers to meet its responsibilities.

3.1.2 Board Rules – The Board has adopted the following rules:

- **Technical and Operational Standards (1995)** – to assist in the development and operation of a reliable, uniform statewide 911 system.
- **Individual Privacy and the Automatic Location Information (ALI) Display (1997)** – specifies the requirements related to a “Private Citizen” designation on an ALI record.
- **Locatable Addressing (Updated 2012)** – outlines the responsibility of municipalities to adhere to the 911 Board’s addressing standards.
- **911 Requirements for Enterprise Communications Systems (July 2019)** – defines the 911 requirements for all Enterprise Communications Systems (ECS) that provide access to the Public Switched Telephone Network (PSTN).
- **Outage Reporting Requirements for Originating Carriers and Electric Power Companies (January 2021)** – establishes protocols for the Board to obtain information about outages experienced by originating telephone service providers and electric power companies so the Board can assess the impact of those outages on access to 911.

¹ <https://legislature.vermont.gov/statutes/chapter/30/087>

3.1.3 State and National Regulatory Agencies – The Board routinely consults with the Vermont Department of Public Service (PSD) regarding regulatory and service issues impacting access to 911. The Board also engages with the Public Utility Commission (PUC) as necessary, including recent workshops on host-remote isolation and battery backup requirements for non-line powered voice service. The PUC rule governing Continuous Emergency Access (CEA)² sets requirements for certain originating service providers related to continuous access to the 911 system.

The Federal Communications Commission (FCC) has developed rules to ensure all originating service providers deliver their subscribers' calls to 911, transmit the caller's location to 911, notify 911 call centers of certain outages, and certify they are taking certain reliability measures. The FCC has also established wireless location accuracy requirements. Board staff regularly review wireless location data to ensure the FCC requirements are being met in Vermont. An FCC advisory committee, the Communications Security, Reliability, and Interoperability Council (CSRIC), provides recommendations related to a variety of 911 issues to help ensure the security and reliability of these systems. The Board engages with the FCC on questions or concerns related to their requirements as needed.

3.2 PROGRAM STRUCTURE

3.2.1 Board and Board Staff – The policies and directives established by the Board are implemented by staff members hired by the 911 Board.

3.2.1.1 Executive Director – Statute authorizes the Board to appoint an Executive Director, subject to the approval of the Governor. The Executive Director executes the Board's mission, policies and directives, provides leadership and direction for the statewide 911 program and day to day management of the Board's operations and staff. The Executive Director is the Board's primary spokesperson to constituent groups, telecommunications providers, local/state/federal governmental and legislative officials, the media and the public.

The Executive Director is authorized to hire additional staff, with the approval of the Board. The Board's staff currently consists of nine full-time employees and one part-time support staff member. Staff member responsibilities fall into four categories as outlined in the following sections.

3.2.1.2 IT Management – The Board's IT staff consists of the 911 IT Manager and an IT Specialist. The IT Manager's responsibilities include management and oversight of the contracted 911 system and system provider; strategic planning and oversight of multiple 911 Board programs and projects; development of all technical reports and requests for proposals; and coordination with the system provider during upgrades and implementations of new systems. The IT Manager is also responsible for keeping a keen eye on the quickly changing Next Generation 911 (NG911) industry to ensure

² https://puc.vermont.gov/sites/psbnew/files/doc_library/7100-continuous-emergency-access_0.pdf

Vermont's 911 system remains relevant and meets the needs of 911 callers and call-takers.

The IT Specialist works under the direction of the IT Manager and assists as appropriate with the IT Management responsibilities. The IT Specialist manages and coordinates 911 office technology and works with the State of Vermont Agency of Digital Services. Responsibilities include maintenance of the GIS services, troubleshooting 911 system problems and working with 911 stakeholders to resolve issues.

The IT staff share 24/7 responsibility for carrying a pager during off hours so incidents occurring in the PSAPs, originating service provider outage reports, and other issues impacting the system can be monitored and immediately addressed. The IT staff members have the technical expertise to understand and evaluate the actions of the contracted system provider and work to ensure the public has reliable access to emergency services.

3.2.1.3 GIS /Database Administration – The GIS/Database staff consists of the GIS/Database Administrator, two GIS Technicians and one Data Integrity Analyst. This team is responsible for the development and maintenance of multiple databases critical to the operation of the statewide system. GIS/Database staff work closely with town officials and originating service providers to ensure the validity of the databases and the accuracy of the mapping system.

The GIS/Database Administrator has overall responsibility for the GIS program, works with vendors to develop new GIS tools used by the program, coordinates work on the ALI database, works with wireless carriers to ensure that new installations of cell towers are configured to properly route 911 calls to the appropriate PSAP, and oversees work of the two GIS Technicians and Data Integrity Analyst.

One GIS technician works primarily in the field using a specially adapted vehicle, which includes a laptop computer equipped with VT 911 system specific software and mapping tools integrated with a GPS receiver. This hardware and software combined with data collection methodologies ensure that critical 911 location data collected during fieldwork conforms to the 911 Board's Standard Operating Procedures for Enhanced 911 GPS data collection. The second GIS technician assists the 911 Database Administrator with the administration and maintenance of the 911 system GIS databases, updates and audits geo-spatial data stored in GIS enterprise databases, and assists in the coordination of database activities with internal and external stakeholders. Both GIS technicians work to ensure mapping data is accurate and up to date.

The Data Integrity Analyst administers the Enterprise Communications System (ECS) Compliance Program, coordinates with all telephone service providers to obtain updates to the ALI database and resolve discrepancies reported by call-takers, works with towns to ensure that accurate information about police, fire and emergency

medical service (EMS) responders are reflected in the 911 system, coordinates changes in Emergency Service Zones (ESZ), and conducts audits of ALI database.

3.2.1.4 Training and Communications – The Board’s Training and Communications Department (TAC) consists of two Emergency Communications Training Coordinators (ECTC) who work under the general direction of the Executive Director. The Board has carried a vacancy in this department since February 2020 due, in part, to the COVID-19 pandemic as well as impacts of an ongoing budget deficit (see Section 3.6.2). As both situations resolve, the Board expects to fill the vacancy.

The TAC team is responsible for the development, implementation and management of all certification, recertification, and continuing education training programs for Vermont’s 911 call-takers. TAC staff members ensure the Board-approved standardized emergency protocols for police, fire and EMS are maintained in coordination with the Board’s medical control and other experts. TAC is also responsible for the Board’s quality control program and regularly interacts with all PSAPs on training and other issues. When the current ECTC vacancy is filled, the TAC staff will renew efforts related to public education and outreach, initial training of 911 town coordinators, administration of the CARE program, and development of a new call-taker wellness program.

3.2.1.5 Administration – The administrative staff consists of one full-time Administrative Services Coordinator and a part-time Program Specialist. The Administrative Services Coordinator provides support for all other departments and the Executive Director, administers the 911 Compliance Grant Program, coordinates and completes general office functions including invoice processing, payroll, and procuring supplies, responds to subpoenas for 911 call recordings, and serves as Clerk to the 911 Board.

The Program Specialist works under the direction of the Administrative Services Coordinator and supports general office administrative functions, assists in various projects and undertakes special projects as needed by various departments.

3.3 CURRENT 911 TECHNOLOGY

3.3.1 NG911 System Design Overview – The Vermont NG911 system is a fully -hosted [i3](https://www.nena.org/page/i3_Stage3)³ compliant system provided by INdigital, an NG911 service provider based in Fort Wayne, Indiana. INdigital has provided the Emergency Services IP Network (ESINet), Next Generation Core Services (NGCS), and Customer Premise Equipment (CPE) for Vermont’s 911 system since its implementation in October 2020. INdigital also provides statewide NG911 systems in Indiana, Alabama, and New Hampshire.

Vermont’s NG911 system consists of two geo-diverse datacenters that process, route, and deliver 911 calls to one of the six PSAPs in the State of Vermont. Wireless and Voice over Internet Protocol (VoIP) originating service providers (OSPs) connect to both

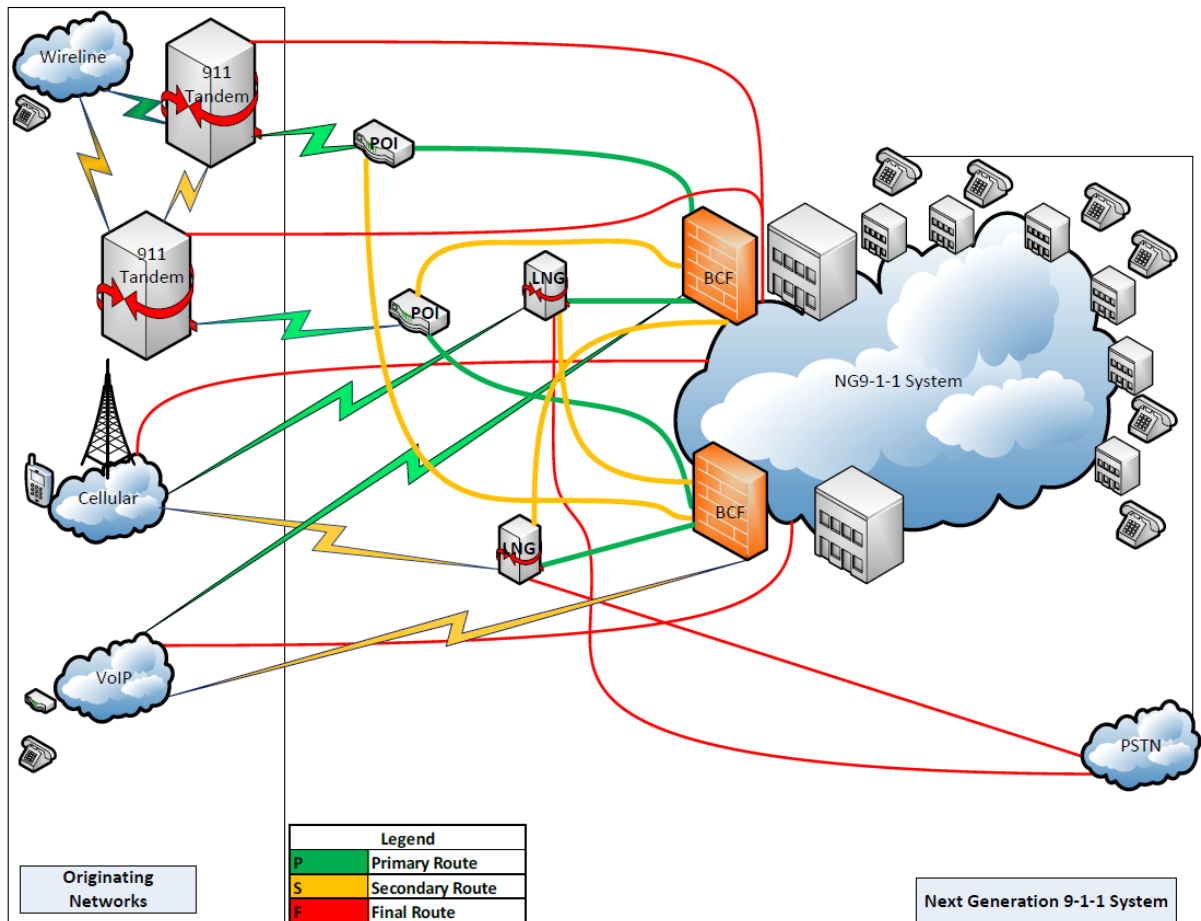
³https://www.nena.org/page/i3_Stage3

datacenters to deliver their subscribers' 911 calls to the Vermont 911 system. The Local Exchange Carriers (LECs) connect to two geo-diverse points of interface (POI). INdigital then transports the LEC's 911 calls from the POI to one of the geo-diverse datacenters.

The NG911 system is sized to process two- and one-half times the normal annual call volume of approximately 200,000 calls. The system is designed and built with no single points of failure. Mechanisms are in place to ensure redundancy, diversity, and failover to meet five-nines (99.999%) reliability.

The national vision for NG911 implementation is the creation of a nationwide "system of systems". Since the INdigital implementation, Vermont has begun work in this area with the recent establishment of an interstate agreement with New Hampshire that allows for more efficient exchange of caller location information between the two states.

The diagram below provides a high-level depiction of Vermont's NG911 system and the originating service providers connections to it.



3.3.2 NG911 Maturity Model – Vermont is among the leaders nationally in the implementation of NG911 services. Overall, Vermont is considered to be at the transitional level of maturity as defined by the FCC’s Task Force on Optimal Public Safety Answering Point Architecture (TFOPA) [NG911 maturity model](#)⁴.

As reflected in the [National 911 Annual Report for 2019](#)⁵, Vermont has reached the jurisdictional end state in the maturity model domains of governance, GIS data, NG911 core services, security, and operations. Vermont is at the transitional state in the categories of routing and location, network, PSAP call handling and optional interfaces.

3.3.3 Originating Service Provider (OSP) Networks – During the transition to INdigital as the NG911 system provider in 2020, all OSPs providing service in Vermont were given the opportunity to connect to the new NG911 system via Session Initiation Protocol (SIP) or Time-Division Multiplexing (TDM). The vast majority of OSPs elected to connect via TDM, though a few VoIP providers elected to connect via SIP. Regardless of the underlying connection and call delivery type, all service providers have connections to both geo-diverse datacenters to deliver their subscribers’ 911 calls to Vermont 911. As a tertiary last resort, the OSPs were provided a telephone number that the OSP can use to deliver their 911 calls in the event of a failure on their primary and secondary connections to the geo-diverse datacenters.

3.3.4 PSAP Configuration – The Enhanced 911 Board partners with five law enforcement agencies to provide call handling services at six PSAPs within the State of Vermont. The Board provides the 911 equipment and ensures all call-takers meet the Board’s certification and continuing education requirements. Each PSAP covers a defined geographic area within the State of Vermont and 911 calls are routed to a specific PSAP based on the caller’s location. If a PSAP is busy and unable to answer the 911 call from their geographic area, the call is automatically rerouted to an available call-taker in one of the other five PSAPs. A formal Memorandum of Understanding (MOU) is in place with each PSAP that outlines the responsibilities of the PSAP and the Board and identifies certain performance measures upon which a PSAP reimbursement is based.

3.3.4.1 Immediate Staffing Shortages: Staffing shortages occur in all PSAPs from time to time, however the shortages reached critical levels in the second half of 2021 in the two largest PSAPs in Vermont. In response, the Board deployed both of its Emergency Communications Training Coordinators as dedicated 911 call-takers during critical hours of the day. The dedicated 911 call-taker role is also supported by available staff from the Lamoille County PSAP and could be made available to other regional PSAPs as capacity allows. The impact of the dedicated call-taker role is being carefully monitored for effectiveness, will remain in place until the immediate staffing shortages are resolved, and will be used as one option for addressing future staffing shortages.

3.3.5 GIS/Database – Vermont is nationally recognized for the extent and quality of its GIS data. Having accurate GIS data enables responders to more quickly locate a caller in

⁴ https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG2_Supplemental_Report-120216.pdf

⁵ https://www.911.gov/pdf/National_911_Annual_Report_2019_Data.pdf

an emergency. Data collected and maintained by the 911 Board is used by many entities in Vermont and beyond, including towns, regional planning commissions (RPCs), state and federal agencies/organizations and other public/private sector entities. The 911 Board is the authoritative data manager of 911 GIS data in Vermont and maintains the following databases:

- **GIS** – includes all address points (E-sites), road center lines, road names, landmarks, driveways, recreational trails, footprints (includes building roof tops, solar facilities, ski areas, golf courses, etc.), technical rescue trails, fire hydrants (including drafting sites, pressurized and non-pressurized), town boundaries, and wireless sector data.
- **Telephone or Automatic Location Identification (ALI) Database**– a database of telephone records that allows the automatic display at the PSAP of the telephone number, address/location and supplementary emergency services information of the location from which a call originates.
- **ALI Discrepancy Database** – a database of records in need of review and correction. This includes records in error defined at the point of the call or through internal database audits.
- **Master Street Address Guide (MSAG)** – a database of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 911 calls.
- **Emergency Service Agencies (ESAs) and ESZs** – master dataset of police, fire and EMS names, transfer numbers, and service zone information.
- **ESZ Boundaries** – defines the geographic area served by the unique combination of police, fire and EMS responders in any town.
- **Location Validation Function (LVF) and Emergency Call Routing Function (ECRF)** – two databases, both critical to NG911 functionality, built from the address point data. The LVF is used for validating service order inserts (SOI) from originating service providers. The ECRF is used for the proper routing of calls and for ESA assignment.
- **Citizen Assistance Registry for Emergencies (CARE) data** – includes names, locations and needs of individuals who may require special assistance during a widespread event such as a power outage, isolation or evacuation.

The GIS/database staff members are responsible for maintaining these databases and incorporating updates submitted by Municipal Coordinators or other data users. All newly added addressing data is field verified by database staff using a specialized mapping vehicle.

The enabling legislation specified that municipalities must cooperate with the 911 Board to ensure accurate locatable addressing. To meet this statutory requirement, every town has assigned an Enhanced 911 Municipal Coordinator who has responsibility for providing the Board with new road information, address additions or changes, and emergency service agencies with the locations they serve. This partnership with every town has had a significant impact on the success of Vermont’s NG911 system. The Board has worked to provide different tools to make the work of the coordinators more efficient and effective. In an effort to streamline data sharing between state data stakeholders and the public and private sectors, we post all of our publicly available data to the [Vermont Open Data Portal](#)⁶.

3.4 PSAP INTEGRATION WITH EMERGENCY COMMUNICATIONS, TELECOMMUNICATIONS, AND INFORMATION NETWORKS

3.4.1 Computer Aided Dispatch (CAD) connections with Dispatch Centers – The Board currently provides 911 ALI to CAD connections at a few dispatch agencies in the State of Vermont. This allows the dispatch agencies to pull the 911 call location information into their incident or case in the CAD system. Any dispatch agency that serves Vermont communities can request a 911 ALI to CAD connection.

3.4.2 Interstate Connections – Due in part to wireless coverage challenges, it is not uncommon for wireless 911 calls to be misrouted between the Vermont and New Hampshire statewide 911 systems. In early 2021, Vermont 911 and New Hampshire 911 entered into a MOU that enables both statewide 911 systems to automatically provide wireless 911 caller location information when transferring misrouted 911 calls to the other state. The ability of the call-taker to receive and see the caller’s location with the transfer of the 911 call is of paramount importance and leads to efficiencies in providing a quicker response to the caller.

3.5 BOARD PROGRAMS AND INITIATIVES

3.5.1 Training and Communications (TAC) Program – The TAC staff are responsible for the following programs and initiatives:

3.5.1.1 Training and Certification – TAC staff members are responsible for the development and implementation of the Board’s call-taker certification, recertification, and continuing education programs in accordance with all relevant industry standards and best practices. TAC staff ensure that every Vermont 911 call-taker meets and maintains all of the Board’s training requirements. TAC maintains accurate and complete records to document each call-taker’s training history.

3.5.1.2 Communications Training Officer (CTO) Training – TAC staff currently work with training personnel at partner agencies to provide CTO training and recertification programs to Vermont PSAP personnel and other emergency

⁶ <https://geodata.vermont.gov/>

communications professionals around the state. Each PSAP is required to have at least one certified CTO. CTOs are responsible for the in-house training of 911 call-takers.

3.5.1.3 Quality Assurance/Quality Improvement (QA/QI) – TAC staff are responsible for the development, implementation and maintenance of a QA/QI program designed to ensure 911 call-takers provide a consistent, effective, and efficient level of service to 911 callers regardless of which PSAP answers the call. The program determines whether a call was handled in accordance with all Board-approved policies, procedures and protocols and provides a mechanism for PSAP follow-up and remediation of any deficiencies.

As part of the QA/QI program, the Board has recently partnered with the Vermont Department of Health to support the Vermont Alliance for Critical Heart Resuscitation (VTACH-R) program, an ongoing collaboration to improve out-of-hospital cardiac arrest survival in the state of Vermont. This program assesses certain 911 call-taking benchmarks during calls reporting a cardiac arrest incident, such as time to recognition of the need for CPR, time to initiation of CPR, and time to dispatch responders. This data is then reviewed in relation to the rate of survival and functional status of a patient at discharge.

QA/QI responsibilities also include research of and response to complaints and inquiries from the public and emergency response agencies.

3.5.1.4 Call Handling Standards – TAC staff are responsible for ensuring the development, implementation and maintenance of all call handling requirements, including call handling procedures, training bulletins, and law, fire and EMS-specific call handling protocols. Each of these components must align with all relevant industry standards and best practice. All EMD protocols are approved by the Board’s medical control.

3.5.1.5 Public Education and Outreach – The TAC team has primary responsibility for all public education and outreach programs required by the Board. Initiatives include general 911 public education, special program outreach (CARE, text to 911 program), maintenance of public education sections of the Board’s website and social media outreach.

3.5.1.6 Call-Taker Wellness – TAC staff ensure call-takers receive critical information about stress management, resilience, and wellness during the initial call-taker training. TAC staff also work to identify, and make accessible to call-takers, appropriate wellness resources.

The recent enactment of Act 37 (2021) created an Emergency Service Provider Wellness Commission. The Act includes Vermont 911 call-takers and emergency communications dispatchers in the definition of emergency service provider and identifies the Board’s Executive Director (or designee) as a member of the commission. TAC staff will work closely with the Executive Director to ensure the Commission is informed of wellness issues impacting call-takers and dispatchers in Vermont.

3.5.1.7 Dedicated 911 Call-taker Deployment - As outlined in Section 3.3.4.1, the TAC staff may be deployed as dedicated 911 call-takers at the Board’s Emergency Operations Center to mitigate the impact of severe staffing shortages at any PSAP. While in the 911 call-taking assignment, TAC staff will maintain the most critical of their usual responsibilities.

3.5.2 ECS Program and Rule Implementation – 30 V.S.A §7057 states “any enterprise communications system shall provide to those end users the same level of 911 service that other end users receive and shall provide ANI signaling, station identification data, and updates to Enhanced 911 databases under rules adopted by the Board”. In 2019, the Board adopted the “Rule Governing 911 Requirements for Enterprise Communications Systems”. The Data Integrity Analyst has developed an ECS program to educate and work with entities using an ECS to ensure compliance with the statute and the ECS Rule. The ECS program outreach has focused on Vermont’s schools (see Section 3.5.3) and work has begun - and will be expanded - to other sectors (such as health care facilities, government buildings, banks, etc.) as available resources allow.

3.5.3 School Compliance and Grant Program – In 2016, the Board renewed its efforts to ensure the telecommunications systems in all Vermont public schools had the ability to meet the requirements that are now formally documented in the ECS Rule (see Section 3.5.2). At that time, less than 20% of public schools had demonstrated the ability to meet the requirements, and in some cases, were not even capable of sending the correct street address and town name when a 911 call was placed. As the Board staff interacted with the schools, it became clear that cost was a significant impediment for many schools, impacting their ability to complete ECS system upgrades or replacements in order to become compliant with the requirements.

Act 160 of 2016 created the Enhanced 911 Compliance Grant Program to provide financial assistance to Vermont public schools as they implemented projects to bring their telecommunications systems into compliance with the 911 requirements. The grant program is authorized to award matching grants of up to \$25,000.00 per project. Since the Fall of 2016, over \$1 million has been awarded to support projects in 125 schools. As of June 2021, nearly 85% of public schools in Vermont have demonstrated compliance with the requirements and it is expected that over 90% will do so by the end of 2021. The final grant application period opened in May 2021 and the legislature intends for program to end on June 30, 2021.

3.5.4 Citizen’s Assistance Registry for Emergencies (CARE) – CARE was created to allow individuals who may need special assistance during a widespread event (such as an evacuation, isolation, or power outage) to self-register with the program so their information can be made available to emergency responders who request it during a large-scale incident. This program was developed in collaboration with Vermont 2-1-1, the United Ways of Vermont, and Vermont Emergency Management. Individuals are encouraged to register online or may submit a paper application to Vermont 2-1-1 for entry into the program. Board staff have recently initiated an outreach program to help ensure the data in the program remains current.

3.5.5 Initiatives for Access to Board GIS data – The 911 Board has developed numerous initiatives to provide tools and access to the 911 maintained GIS data including:

3.5.5.1 Enhanced 911 Viewer/Responder Maps – Board staff developed a web map application, the [Enhanced 911 Viewer](#)⁷ (Viewer), that the public can access from the Board’s website using a desktop, laptop, tablet or smartphone. Data in the Viewer includes the complete Enhanced 911 feature set as well as some additional non-Enhanced 911 features. The Viewer includes supporting layers such as the United States Geological Survey (USGS) topographical maps, elevation contours, and imagery.

E911 Responder, a leaner version of Viewer, is available for use in areas where data speeds are slow. For those data users that need to access the data offline, the Board publishes its data in a commonly used offline software application, ArcGIS Explorer.

3.5.5.2 Municipal Map Books – The Board has created map books of every municipality in Vermont. The map books can be downloaded and printed by the municipality or other entities as needed. The map books are updated bi-annually.

3.5.5.3 GIS Data Partners

3.5.5.3.1 Enterprise GIS Consortium (EGC) Partner – The Board is an active partner in Vermont’s EGC. The [EGC](#) is comprised of state government and partner organizations focused on effective management of the state’s Enterprise Geographic Information System (GIS). The mission of the EGC is to “improve the quality and lower the cost of government services through coordinated investment, management, and application of geospatial data and systems.”⁸ Through this consortium, the State of Vermont developed a GIS strategic plan. One way that we are supporting the goals and visions of the GIS strategic plan is to support collaboration among the various GIS data users, the Board exports all publicly available 911 data to the [Vermont Open Data Portal](#)⁹ hosted by the Vermont Center for Geographic Information (VCGI). Through this EGC initiative, public and private organizations, regional planning commissions (RPCs), and other agencies and organizations can access and use the 911 addressing data for their needs.

3.5.5.3.2 Local Update of Census Addresses (LUCA) 2020 – The Board participated in the [LUCA 2020](#)¹⁰ initiative to ensure the 2020 US Census could acquire a more accurate count of the Vermont population. An accurate census count is critical as the federal government uses this data to allocate billions of dollars across state, local and tribal government programs.

⁷ <https://maps.vermont.gov/e911/Html5Viewer/?viewer=e911viewer>

⁸ <https://vcgi.vermont.gov/partners/enterprise-gis-consortium>

⁹ <https://geodata.vermont.gov/>

¹⁰ <http://maps.vcgi.vermont.gov/HighCostLowCount/index.html>

3.5.5.3.3 Footprints Acquisition and Maintenance – In partnership with VCGI, the EGC, RPCs, and the University of Vermont Spatial Analyst Lab (SAL), the database staff acquired a statewide footprints data set based on the state acquired Light Detection and Ranging Technology (LiDAR). The LiDAR data captured rooftops of every building in Vermont and SAL converted the LiDAR data to the building polygon footprints. The footprints data also includes ski trails, golf courses, recreational fields, etc. The footprint data provides for greater situational awareness for 911 call-takers and responders.

3.5.5.3.4 Trail Data Acquisition – The Board has partnered with the Vermont Association of Snow Travelers (VAST) to acquire and annually update the statewide snowmobile trail networks. The database staff also work proactively with the Department of Public Safety Search and Rescue Coordinator, United States Department of Agriculture Forest Service, and the Catamount Trail Association to improve trail data for search and rescue purposes.

3.6 ECONOMICS

3.6.1 Current Funding Mechanism – The Vermont 911 program is funded by the Vermont Universal Service Fund (VUSF) which is currently a 2.4% surcharge on retail telecommunications sales in Vermont. As of 2019, 0.4% of the surcharge is committed to the Connectivity Fund and is not available for appropriation to the Enhanced 911 Special Fund. Statute specifies the order in which disbursements will be made from the VUSF as follows:

- Costs payable to the fiscal agent managing the fund under contract with the Public Service Department
- Vermont Telecommunications Relay Service and the Vermont Equipment Distribution Program
- Vermont Lifeline program
- Enhanced 911
- Connectivity Fund – see note above regarding 0.4% dedicated revenue
- The Board’s Executive Director prepares an annual budget for approval by the legislature. The 911 program typically receives no general funds (see exception outlined in section 3.6.2).

3.6.2 Immediate Funding Challenges – The VUSF is currently unable to support all the programs it is required to fund due to ongoing and unresolved revenue shortfalls. These shortfalls resulted in a projected deficit of nearly \$1.4 million in the Enhanced 911 Special Fund between FY 20 and 21. The immediate deficit issue was addressed by the legislature with an additional appropriation of \$1.8 million from the General Fund in FY21. The legislature has required a report from the Administration in early 2022 outlining recommendations for a sustainable 911 funding mechanism moving forward.

3.6.3 Current Revenues and Costs – The Board’s Fiscal Year 2022 appropriation is \$4,468,213, down approximately 7% from the FY21 appropriation due in large part to the

elimination of reserve funds for future system upgrades as the Board attempts to operate within the special fund limitations caused by the VUSF revenue shortfall. Some system operations savings resulting from the implementation of the INdigital system are also reflected in the lower budget request.

The FY22 budget request includes:

Salaries/Wages/Benefits (Board Staff)	\$1.14 million	26%
System Provider Costs	\$1.79 million	40%
PSAP Reimbursement	\$1.08 million	24%

Since the inception of 911 in Vermont, regulated telephone service providers have had a mechanism for cost recovery. Each company has on file with the PUC a tariff outlining the costs for delivery of 911 calls to the 911 system provider and costs for the required database management. Currently, the Board remits approximately \$145,000 annually (3.2% of FY22 budget) to the wireline carriers for these tariffed services.

3.6.4 Next Generation Considerations – As the statewide system has progressed through the NG911 evolution, any additional costs have been incorporated into the yearly budget process and the expectation is that will continue in the future. Consideration of future costs will include costs related to multimedia storage and the operational and wellness impacts of any NG911 initiatives.

3.6.5 Allocation/Distribution of State and Federal Funding for Equipment and Operations – The Vermont 911 program receives no federal funding at this time; however, we continue to monitor national initiatives that could result in future grant opportunities.

4. FUTURE ENVIRONMENT

The Board’s mission is to provide a statewide emergency telecommunications system, accessible to everyone, and to oversee its operation. The Board staff is responsible for executing the Board’s policies and directives and is guided by its own mission statement to:

- **Facilitate**...access to the 911 system
- **Locate**...the caller, the incident, the responder
- **Assist**...the caller and responder with questions and instructions
- **Connect**...the caller to help

Industry standards, best practices and a commitment to the mission statement will guide the work of all Board programs and initiatives. The future environment for the statewide 911 program includes the following high-level goals to support all stakeholders in providing the best level of service possible to 911 callers:

4.1 LEGISLATIVE, REGULATORY AND GOVERNANCE STRUCTURE

The Board will develop and implement appropriate mechanisms to ensure an effective legislative and regulatory environment and a sound and stable governance model for the statewide 911 program.

4.2 PROGRAM STRUCTURE

The Board will maintain appropriate staffing levels and/or supporting resources to efficiently achieve program goals and objectives, will support the professional development and wellness of staff members and 911 call-takers, and will continue to support mutually beneficial partnerships with PSAPs, municipalities, state, local and county governmental agencies, industry and national partners.

4.3 NG911 TECHNOLOGY

The Board will continue to advance NG911 technology in collaboration with the system provider and will support furtherance of the TFOPA NG911 maturity model in alignment with industry standards and best practice. NG911 system technology and operations will be delivered in an efficient manner that best serves the public.

4.4 PSAP INTEGRATION

The Board will identify opportunities for improved data sharing and interoperability with Vermont's dispatch centers and emergency response community while also expanding interstate and regional NG911 system interconnections where appropriate.

4.5 BOARD PROGRAMS AND INITIATIVES

The Board will ensure all programs and initiatives align with relevant industry standards, best practice and the mission statements outlined in Section 4. The focus of the Board program and initiatives will be on solutions that benefit the 911 caller and call-taker.

4.6 ECONOMICS

The Board will work collaboratively with legislative and administration officials to ensure dedicated and reliable funding exists for the statewide 911 program. The Board will regularly evaluate the cost and benefits of all aspects of the program to ensure effective use of the public funds entrusted to it.

5. GOALS, OBJECTIVES AND MEASURES

To advance the goals envisioned in Section 4 the Board has identified objectives and measures related to each component of the future environment. These objectives will be reviewed on a regular basis and updated as necessary.

5.1 LEGISLATIVE/REGULATORY/GOVERNANCE

Goal: *Develop and implement appropriate mechanisms to ensure an effective legislative and regulatory environment and a sound and stable governance model for the statewide 911 program.*

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.1.1	Review existing rules and MOUs to determine need for updates and establish process for regular reviews moving forward.	Create proposed rulemaking priorities and document process for ongoing review of rules/MOUs.	Rule Priority and Process: Q4 2021 MOU Revisions: Ongoing	In Progress	High
5.1.2	Ensure program integrity as governance changes are contemplated.	Develop effective testimony and information sharing process for legislative and administration decision makers.	Ongoing	In Progress	High
5.1.3	Monitor compliance with FCC and state rules and participate in rulemaking or regulatory processes when appropriate	Engage with the FCC and state regulatory authorities as needed for compliance issues and Vermont-specific input on proposed rules	Ongoing	In Progress	High
5.1.4	Review existing statute for needed updates	Present recommendations to Board	Ongoing	Not Started	Medium

5.2 PROGRAM STRUCTURE

Goal: *Maintain appropriate staffing levels to efficiently achieve program goals and objectives and support the professional development and wellness of staff members and 911 call-takers. Industry standards, best practices and a commitment to the mission statement will guide the work of all Board programs and initiatives. The Board will continue to support mutually beneficial partnerships with PSAPs, municipalities, state, local and county governmental agencies, industry and national partners.*

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.2.1	Support staff professional development	Identify opportunities and budget for Board staff training and professional development	Ongoing	In Progress	High
5.2.2	Support 911 personnel and Board staff wellness initiatives	Participate in Emergency Service Provider Wellness Commission. EAP – ensure staff including those working remotely are aware of programs available to them	TBD Ongoing	Pending Call of First Meeting – Summer 2021 In progress	High High
5.2.3	Cross train staff to support continuity of operations	Documentation of processes and procedures to include peer review where appropriate	Ongoing	In Progress	High
5.2.4	Support staff engagement in partnerships that benefit the Board’s mission	Schedule flexibility to allow time for participation in state, regional and national programs	Ongoing	In Progress	Medium
5.2.5	Assess programs and staffing needs	Review of department program requirements and available resources to ensure success of Board’s mission	Ongoing	Not Started	Medium

5.3 NG911 TECHNOLOGY

Goal: Continue to advance NG911 technology in collaboration with system provider and support furtherance of the TFOPA NG911 maturity model in alignment with industry standards and best practice. NG911 system technology and operations will be delivered in an efficient manner that best serves the public.

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.3.1	Ensure adequate call-taking staff in Vermont PSAPs	Develop plan to address immediate staffing shortages and work with partners to identify long term solutions	Immediate solutions are in place Identify long-term solutions – Q1 2022	Complete In Progress	High High
5.3.2	Transition wireless and VoIP providers from TDM to SIP connections	Engage with NASNA to assess organizational interest in advancing this at national level (FCC). If no consensus, then add requirements into a rulemaking process.	TBD	Not Started	High
5.3.3	Encourage VoIP providers to develop Location Information Server (LIS)	Engage with NASNA to assess organizational interest in advancing this at national level (FCC). If no consensus, then add requirements into a rulemaking process.	TBD	Not Started	High
5.3.4	GIS/Database - Schema Updates	Review and update current schema needs using approved NENA, FGDC and state standards.	Q2 2022	In Progress	Medium - High
5.3.5	Implement Real Time Text (RTT)	Engage with wireless carriers to ensure their readiness and implement with available carriers	TBD	Not Started	Medium
5.3.6	Recommend system provider contract extension or issuance of RFP	Monitor service levels and performance of current system provider and provide recommendation to Board	Q1 2023	In Progress	Medium
5.3.7	Integrate PSAP Credential Authority (PCA) with our system.	Monitor the progress of the awarded contractor for NG911	TBD	In Progress	Medium

		Interoperability Oversight Commission (NIOC). Determine the cost of the service and the potential impact on the Vermont 911 system.			
5.3.8	Forest Guide	Monitor the progress of the Forest Guide for the awarded contractor for NIOC. Determine the cost of the service and the potential impact on the Vermont 911 system.	TBD	In Progress	Medium
5.3.9	PSAP catchment area reconfiguration to maximize one-stage call-taking	Complete a data analysis of current 911 catchment area and the alignment of PSAP dispatch coverage areas.	Q1 2022	Not started	Medium-low
5.3.10	Review of deployment of PSAP positions	Complete an analysis of staffing, PSAP positions, and incorporate the findings of the PSAP catchment area reconfiguration analysis.	Q2 2022	Not started	Medium-low
5.3.11	Assess impact and value of implementing multimedia from the caller	Begin researching viability and provide findings for Board consideration.	TBD	Not started	Low

5.4 PSAP INTEGRATION

Goal: Identify opportunities for improved data sharing and interoperability with Vermont's dispatch centers and emergency response community while also expanding interstate and regional NG911 system interconnections where appropriate.

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.4.1	Improve acquisition and ongoing management of supplemental information	Research efficiencies in existing platforms and new solutions that allow citizen registrations to provide additional data to call-taker (for example, premise info).	TBD	Not Started	High
5.4.2	Additional Data Repository (ADR) – automatic pull of ADR from the NG911 clearinghouse to provide data about the caller.	Determine when the vendors call-handling or mapping product will have this feature available and then implement it in the Vermont 911 system.	TBD	In Progress	Medium – High
5.4.3	GeoLynx Server (GLS) Access for dispatch agencies	Partner with multiple agencies to conduct a BETA test of the solution to determine if this is of benefit to agencies.	Q3 2021	In Progress	Medium
5.4.4	Bordering States Connections	Reach out to other bordering states and countries (NY/MA/QC) to determine their system capabilities for transferring caller location with the call.	Ongoing	Not Started	Medium
5.4.5	Regional Connections	Explore partnerships with other statewide 911 systems to examine the potential of backing each other up to address continuity of operations and/or high call volumes.	Ongoing	Not Started	Medium
5.4.6	CAD to Emergency Incident Data Document (EIDD) transition	Monitor progress of adoption of standards for the Emergency Incident Data Object (EIDO) Management and Conveyance working groups.	Ongoing	In Progress	Medium

5.5 BOARD PROGRAMS AND INITIATIVES

Goal: Ensure all programs and initiatives align with relevant industry standards, best practice and the mission statements outlined in Section 4. The focus of all Board program and initiatives will be on solutions that benefit the 911 caller and call-taker.

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.5.1	Evaluate call handling requirements and training programs for compliance with relevant industry standards and best practice	Establish regular internal review process for call handling procedures and training program content to include input from medical control and other experts	Q2 2022 and ongoing	Pending new TAC staff member	High
5.5.2	Reinstitute a structured public education program	Develop training and outreach programs for the public, Vermont Municipal 911 Coordinators and other constituents	Q3 2022 and ongoing	Pending New TAC staff member	High
5.5.3	Identify ECS Program Outreach Priorities	Provide various outreach approaches for Board discussion	Q1 2022	In Progress	High
5.5.4	CARE: Program Review, Outreach and Process Development	Review effectiveness of current program and provide recommendations to the Board	Q1 2022	Not Started – pending completion of 2021 outreach	High
5.5.5	GIS Data - Continued QA/QC	Periodic verification of GIS data for accuracy	Ongoing	In Progress	High
5.5.6	Provide effective call-taking tools, resources and programs to improve service	Review EMD program to include options for in-house EMD program and/or electronic EMD protocol system.	Q4 2021	Not Started	Medium
5.5.7	Monitor and assess call-taker role in improving outcomes for out of hospital cardiac arrest patients.	Continued participation in the VTACH-R program with Dept of Health	Ongoing	In Progress	Medium

5.5.8	Effective training records management	Research the budgetary and operational impacts of a new training database to track call-taker training records	Ongoing	In Progress	Medium
5.5.9	Maintain publicly available online/offline mapping applications	Review and update as needed	Ongoing	In Progress	Medium
5.5.10	Continued sharing of authoritative GIS data with constituents	Educate data users on the available data. Review and update Metadata	Ongoing	In Progress	Medium
5.5.11	Review of advanced GIS for 911 (for example, Z-axis)	Analyze benefit to caller and call-taker of advanced GIS mapping functionality	Ongoing	In Progress	Medium - Low

5.6 ECONOMICS

***Goal:** The Board will work collaboratively with legislative and administration officials to ensure dedicated and reliable funding exists for the statewide 911 program. The Board will regularly evaluate the cost and benefits of all aspects of the program to ensure effective use of the public funds entrusted to it.*

	OBJECTIVE	MEASURE	EXPECTED COMPLETION	STATUS	PRIORITY
5.6.1	Funding Studies – Optimization of Current VUSF Structure	Provide Recommendation to Administration	Q4 2021	In Progress	High
5.6.2	Funding Model Review	Prepare recommendations and input for Administration re: H.439 study requirements	Q4 2021	In Progress	High
5.6.3	Review of 911 Program Costs and Benefits	Implement Cost Savings Measures as appropriate	Ongoing	In Progress	High
5.6.4	Tariff Review	Review 2011 tariff study for relevance; develop recommendations for Board discussion	TBD	Not Started	Medium

6. TRACKING PROGRESS

The purpose of the strategic plan is to provide guidance and direction to the Board's staff as they execute the Board's mission, policies and directives. The Executive Director, in collaboration with the department heads, will develop plans to achieve the prioritized and approved objectives within the specified timelines. Projects and tasks associated with each objective will be identified and monitored through departmental and all-staff meetings. Progress will be documented for all projects and any new projects will be assessed for alignment with the Board's mission and strategic plan. The Executive Director will provide quarterly updates to the Board.

7. RESOURCE ALLOCATION

The goals, timelines, and priorities identified in this strategic plan were developed with the assumption that staffing would remain at existing levels. The plan includes an objective to assess program and staffing needs. The results of this assessment may include recommendations for organizational restructuring, changes to staffing levels, engagement with outside consultants, and/or budget modifications to ensure adequate resources are available to meet the Board's mission.

8. UPDATING THE PLAN

The strategic plan identifies the Boards goals and priorities for the next five years. Progress on specific goals and objectives will be monitored in departmental and all-staff meetings. The Executive Director will establish bi-annual strategic planning meetings with department heads to assess progress on the plan. Input from various stakeholders will be solicited on a regular basis, to include:

- State and Regional PSAP Administrators
- Emergency Service Responders and Dispatch Agencies
- Municipal Coordinators
- Vermont Public Service Department
- Vermont Department of Health
- Vermont Agency of Digital Services

The entire plan will be formally reviewed every two years to ensure all information is current and relevant.

9. MECHANISM FOR INITIATING AND MONITORING AN IMPLEMENTATION PROJECT

Major implementation projects such as system replacements are initiated and monitored in accordance with the State of Vermont Agency of Digital Services project management requirements.

10. MECHANISM(S) FOR OVERSEEING AND MANAGING THE STATE'S 911 SYSTEM

The Enhanced 911 Board is the single governmental agency responsible for the statewide 911 system. Mechanisms for overseeing and managing the statewide system are defined in statute, rules, contracts, and memoranda of understanding with appropriate stakeholders. The Board works closely with multiple state, county and local agencies to ensure the system is operating effectively and serving the needs of Vermonters and our visitors.

– END –