

Vermont Enhanced 911 Board

OPERATIONAL OVERVIEW JANUARY 2023

Barbara Neal, Executive Director

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Introduction - History and Background

On November 18, 1998, after several years of planning and preparation, Vermont's statewide 911 system became operational 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 Public Safety Answering Point (PSAP). Since that first call, the Vermont 911 system has processed over four million calls for emergency assistance.

The Enhanced 911 Board ("Board" or "911 Board") was created by the legislature in 1994 as the single governmental agency responsible for statewide enhanced 911¹. Prior to this time, most Vermonters did not have access to any level of 911 service. The intent of the legislation was to create a statewide 911 system that would serve all Vermonters and allow emergency responders to locate callers more quickly and efficiently. The 911 Board was made responsible for the design, implementation and operational oversight of the statewide 911 system. To that end, the 911 Board developed and implemented policy, system design, standards and procedures related to the statewide 911 system – and continues to do so today. As required by statute, the 911 Board consults with various state agencies and local community service providers to meet these responsibilities.

The 911 Board itself is defined by statute as consisting of nine members, appointed by the Governor, representing all user constituents in the state. This includes representation from the emergency medical, fire and law enforcement communities, municipalities and the public at large. The diversity of the Board helps ensure the many users of the statewide system – including callers and responders – are equally represented and served by the system. The 911 Board is required to meet at least four times a year and holds special and/or emergency meetings as necessary.

According to internal Board documentation², when the idea of a statewide 911 system was first introduced in the early 1990s, Vermonters voiced some concerns with the concept including:

- Privacy – concerns about having certain personal information available to the law enforcement community.
- Home rule – fear of a loss of local control over local emergency response.
- Change – resistance to a uniform, standard, statewide addressing scheme.

The comprehensive membership of the 911 Board was designed to address these concerns. 911 is a critical service, available to everyone, and dependent upon multiple stakeholders at all levels of government and beyond. A representative Board ensures the appropriate parties have a seat

¹ 30 V.S.A §7051-7061, (1993 Adj. Sess.), <https://legislature.vermont.gov/statutes/chapter/30/087>

² VT E911 System Overview, Updated 2011, David Tucker

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at the table and a voice in the discussion on matters relevant to a system that serves everyone in the state.

Funding

The enabling statute provided funding for the 911 system through the Vermont Universal Service Fund (VUSF) surcharge on telecommunications bills. The statute prohibits the use of the VUSF appropriation for non-911 operations.

The VUSF has experienced significant revenue shortfalls over the past several years which have resulted in the inability to fully support the 911 Board operating costs. General fund appropriations in the last several fiscal years have been needed to supplement the Enhanced 911 Special Fund and are included in the FY24 budget request.

The FY23 budget appropriation is approximately \$4.6 million dollars. A high-level breakdown of the FY23 budget:

- Salaries/Wages/Benefits: \$1.25 million or 27%
- Contracts/3rd Party Services: \$1.8 million or 39%
 (primary contracted system provider costs)
- PSAP Reimbursement \$1.08 million or 24%

The 911 Board anticipates additional funding needs in the next two fiscal years as we prepare for system upgrades in the Fall of 2025.

The Enhanced 911 Board and Board Staff

The Enhanced 911 Board sets policy, adopts standards and rules, enters into contracts and takes all actions necessary to ensure oversight and management of the statewide 911 system.

The policies and directives of the Board are executed by the staff members hired by the 911 Board.

Statute³ authorizes the Board to appoint an Executive Director, subject to the approval of the Governor, to execute the Board's mission. The Executive Director's duties and responsibilities are assigned by the Board and include:

- Providing leadership and direction for all activities associated with the operation of the statewide 911 system and program.
- Day to day direction of Board operations and supervision of a nine member staff, consultants and contractors.
- Establishment of system performance benchmarks, measurements, and compliance.

³ 30 V.S.A §7051-7061, (1993 Adj. Sess.), <https://legislature.vermont.gov/statutes/chapter/30/087>

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- Development and management of the annual budget.
- Serving as 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, subject to the approval of the Board. The Board's staff currently consists of nine full-time employees and one part-time support staff member. In general terms, the 911 Board and its staff ensure:

- All Vermont 911 calls are routed to the appropriate PSAP and answered by a certified call-taker;
- Accurate and complete location and responder data is presented to the 911 call-taker;
- The caller is connected with the dispatch agency for the appropriate responders;
- The caller is asked all appropriate questions and provided with any needed pre-arrival instruction in accordance with Board-approved call handling standards and protocols.

The staff at the Board office do not take 911 calls. Rather they provide support functions for the program, including information technology management, training, development of geographic information services and ensuring the accuracy of addresses throughout Vermont.

Staff member responsibilities fall into four categories as outlined below:

1. **IT Management** (2 staff members): Close supervision and management of the 911 system and system provider is critical to ensuring the 24 x 7 x 365 availability of the statewide 911 system. The Board's IT staff have the technical expertise to understand and evaluate the work and actions taken by the contractor to ensure the State's citizens and visitors have access to emergency services. The consequence of mismanagement of the system provider is potential system downtime which could result in 911 callers being unable to reach help in an emergency.

Additionally, the Next Generation 911 (NG911) industry is rapidly evolving. Vermont's 911 system must be able to accommodate new technologies. An important part of the Board's IT Management responsibilities is to keep a keen eye on a quickly changing industry to ensure Vermont's 911 system remains relevant and meets the ever-changing needs of 911 callers and call-takers.

The Board's IT responsibilities are met by the following personnel:

- **IT Manager** – Responsibilities include management and oversight of the contracted 911 system and system provider; strategic planning and oversight of multiple 911 Board programs and projects; responsible for development of all technical reports, requests for proposals, and coordination with system provider during upgrades and implementations of new systems. Shares duty of carrying a

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pager during off hours, so incidents that occur in the PSAPs off hours are addressed. Oversees work of IT Specialist.

- **IT Specialist** – manages and coordinates office technology. Troubleshoots system problems and works with service providers to resolve system issues. Shares duty of carrying a pager during off hours, so incidents that occur in the PSAPs off hours are addressed.

2. GIS /Database Administration (3 staff members): The GIS/Database staff members are responsible for development and maintenance of multiple databases critical to the operation of the NG911 system. GIS/database staff work closely on a daily basis with town officials and telecommunications entities in Vermont to ensure the validity of the databases, and the accuracy of its mapping system. The GIS/database department maintains the following key databases:

- Geographic Information Systems (GIS)
- Telephone or Automatic Location Database (ALI)
- ALI Discrepancy Database
- Master Street Address Guide (MSAG)
- Emergency Service Zone Boundaries (ESZ)
- Emergency Service Agencies (ESA)
- Citizen Assistance Registration for Emergencies (CARE) data.

Accurate GIS data enables responders to more quickly locate someone in an emergency. Vermont is nationally recognized for the extent and quality of its GIS data. Over four dozen entities in Vermont utilize the data collected and managed by the 911 Board including towns, regional planning commissions, and other public entities. Having quality data has enabled the Board to develop and launch the “Responder” map system now in use by multiple emergency responders around the state.

The three GIS/Database staff members are:

- **GIS/Database Administrator** – Oversees the GIS program and works with vendors to develop new GIS tools used by the program. Coordinates work on the Automatic Location Information (ALI) database (landline telephones with fixed addresses). Works with wireless carriers to ensure that new installations of cell towers are set up so as to result in routing of 911 calls to the appropriate PSAP. Oversees work of two GIS Technicians.
- **GIS Technicians (2)** – One GIS technician works in the field using a specially-equipped vehicle to map coordinates for new roads, developments and structures. This work helps ensure GIS data is kept up to date. The second GIS technician works with the Town Coordinators to resolve location discrepancies reported by 911 call-takers to keep GIS data up to date and also works with Town Coordinators to ensure mapping data is accurate and up-to-date - resulting in

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approximately 2900 edits per month statewide; complete the annual audit done on GIS data, and helps resolve questions that these municipal volunteers have.

- 3. Training and Communications** (2 staff members): The Board's training and communications team is responsible for training, certification, recertification, and continuing education of approximately 100 911 call-takers employed by the six PSAPs. This team is also responsible for the Board's quality control program, public education and outreach initiatives, and development of a new call-taker wellness program.

The Training and Communications (TAC) staff includes:

- **911 Training and Communications Program Manager** – responsible for development, management, oversight and/or implementation of all training and continuing education for Vermont's 911 call-takers, all public education and outreach initiatives, quality control and call-taker wellness programs. The TAC Program Manager supervises the work of an Emergency Communications Training Coordinator:
- **Emergency Communications Training Coordinator** - This staff member supports and assist the TAC Program Manager in the implementation of the various TAC programs including classroom instruction, training records maintenance, quality control activities and other related tasks.

- 4. Administration and Compliance** (3 staff members -2 full-time, 1 part-time):

- **Administrative Services Coordinator** – Provides office administrative functions and support for all other departments and the Executive Director. Administers the 911 Compliance Grant Program, coordinates and provides general office functions, including invoice processing, payroll, and procuring supplies. Receives, researches and responds to legal subpoenas for 911 call recordings (average 18 requests a week). Serves as Clerk to the E911 Board. Supervises the Program Technician 1.
- **Program Technician 1** – provides programmatic support to all Board departments to include assistance with class preparation and follow-up, front office support, GIS data quality control checks, assistance with annual database audits and other tasks as needed.
- **Data Integrity Analyst** – Administers the Enterprise Communications System (ECS) Compliance Program and has recently been assigned the task of developing and implementing a standard procedure for all process documentation at the Board office. This position is also responsible for continuous improvement projects to include a review of the measures currently in use for programmatic performance reports.

The 911 Board staff is a small and effective team. The Board IT, GIS and Executive staff are frequently asked to provide guidance and information to other jurisdictions in various stages of

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NG911 implementation. The commitment of the 911 Board, and its staff, to a standards-based approach to the statewide 911 program helps ensure a reliable, resilient system capable of serving Vermonters and our visitors in times of crisis.

Statewide 911 System Operations

System Statistics

In 2022, the statewide 911 system processed approximately 238,000 calls and text messages for assistance. Complaints regarding the manner in which a 911 call was handled are rare, typically fewer than five per year.

Vermont's Next Generation 911 System

Next Generation 911, or NG911, is the term used to describe the initiative to update 911 systems around the nation. Vermont was an early adopter of NG911 technology and has been moving along the NG911 path for many years. The State of Vermont implemented its first Emergency Services IP network (ESInet) in 2007.

Improved Call Flow Reduces Risk

With the 2007 ESInet implementation came opportunities for more efficient call distribution which allowed calls to flow seamlessly from one PSAP to another if the primary PSAP was unable to answer a call for any reason. This design has been improved upon over the years and has continued to minimize the possibility of calls waiting in “queue” to be answered during times of high call volume.

Weathering the Storms

This call distribution design served the state well during Tropical Storm Irene when the Rutland PSAP, then the second busiest PSAP in terms of call volume, had to be evacuated due to flooding. All calls destined for Rutland were immediately delivered to available call-takers in the remaining PSAPs with no human intervention required. Had this call routing not been in place, the Rutland calls would have been delivered to just two back-up positions located in one PSAP which would have resulted in call answering delays.

The call flow design was also significant during the “Halloween Storm” of October 31 – November 1, 2019. While call volume on November 1 were nearly three times higher than average, emergency calls were distributed seamlessly to available call-takers with no delays for the 911 callers.

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Improving Accessibility

The State of Vermont was among the first to implement statewide “text to 911” service in 2012. Text to 911 provides life-saving access to 911 when callers are unable to make a voice call – including access for the deaf/hard of hearing community; domestic violence victims and others who may find themselves in situations where a voice call to 911 is not possible or would cause them to be in more danger.

As we look to the future, and as standards continue to be developed, the 911 Board’s commitment to NG911 systems positions the State well to adapt to changes in the way people communicate (for example, by sending video and/or images). Other potential benefits include the possibility for improved connections with responders and other partners.

Fully Hosted NG911 Solution

The 911 Board currently contracts with INdigital for a fully hosted NG911 system that facilitates the delivery of 911 calls and text messages, and associated location data, to certified call-takers at the six PSAPs. The INdigital system was implemented in October 2020 and provides the following benefits to Vermont:

- Meets all of the more than 200 technical requirements outlined in the 911 Board’s Request for Proposal (RFP);
- Meets all the Board’s requirements for robust service level agreements that align with industry best practice and will better serve Vermont than previous agreements;
- Results in a partnership with a proven system provider focused solely on NG911 solutions, including statewide deployments in Indiana, Alabama and New Hampshire;
- Keeps Vermont at the forefront of NG911 technology – critical as NG911 deployments continue nationwide;
- Is expected to save Vermont \$1.6 million in operating costs over the life of the contract (through 2025) as compared to the previous system provider..

Current PSAP Configuration

As noted earlier, the staff at the Board office do not take 911 calls, but rather perform critical support functions for the 911 program. The 911 Board partners with five law enforcement agencies in Vermont for 911 call handling services. These five agencies operate a total of six PSAPs.

Each PSAP is responsible for answering calls from a primary catchment area⁴ and is also responsible for handling overflow calls from all other PSAPs. The call handling services

⁴ Enhanced 911 Board, *PSAP Configuration Map*, updated May 1, 2019, <https://e911.vermont.gov/sites/nineoneone/files/graphics/PSAPconfiguration%209.16.19.1.jpg>

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agreement, and associated reimbursement terms, are detailed in a formal Memorandum of Understanding with each agency.

The Department of Public Safety operates two PSAPs in Williston and Westminster. These PSAPs have historically answered nearly 68% of the total 911 call volume, however critical staffing shortages since mid-2021 resulted in DPS answering just over 50% of call volume for a period of time. While improvements have occurred, DPS currently answers approximately 60% of statewide call volume.

In addition, there are four regional PSAPs operated by the Hartford, Shelburne, and St Albans Police Departments and the Lamoille County Sheriff's Department. These PSAPs answer about 40% of total 911 call volume .

Risk Reduction

The geographic diversity of multiple PSAPs operated by distinct agencies is wise. Not only does it lessen the impact of human or natural caused events that could significantly impair call-taking capability within the state, it also aligns with the intent of the enabling legislation that the 911 system be a state and local partnership.

Technology allows 911 calls to be answered at any of the six PSAPs regardless of where the call originated and allows all call-takers access to the same technical resources and equipment. Because the Board has developed standards-based training requirements and call handling protocols, 911 callers receive the same level of service regardless of where their 911 call is answered.

A System of Systems

Multiple Networks – Both Public and Private

The 911 Board is an independent board, but that does not mean it operates in isolation. The reality is, a call to 911, and the ensuing emergency response, involve multiple networks and agencies – both public and private.

It is important to understand that when an individual picks up a phone and dials (or texts) the digits “911”, a “system of systems” is required to connect the caller with the emergency help they need:

- First, the call traverses the telephone service provider network – whether that is landline, wireless or VoIP. The telephone service provider network, in accordance with federal and state laws and regulations, delivers their customer's 911 call to the appropriate 911 system. In Vermont, that 911 system is managed and overseen by the 911 Board.

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- Once in the 911 system, the call is delivered to a certified Vermont 911 call-taker employed at one of the six Vermont PSAPs.
- Depending on the location of the emergency, the call may be dispatched by the same PSAP that answered it or it may be transferred to one of approximately 35 other dispatch centers serving Vermont. Each dispatch center has its own governance, equipment, and training requirements. In Vermont, dispatch operations are not under the purview of the 911 Board.
- The dispatch agency, in turn, notifies the emergency response agency. Emergency responders also have varying governance structures and may be public or private organizations. Emergency response agencies and their operations are not governed by the 911 Board.
- And finally, the emergency response agency responds to the location of the emergency and determines the needed next steps which may involve a trip to the emergency room, the suppression of a fire, or the investigation of a crime.

Accountability for Failures

If a breakdown occurs at any point in this “system of systems”, it is critical to understand what happened, where it happened, why it happened, and what steps are needed to prevent a recurrence. The 911 Board takes all appropriate actions whenever we become aware of a failure anywhere in the “system of systems”.

Isolated Events/Complaints or Concerns

When the 911 Board becomes aware of a complaint or concern related in any way to a 911 call, it initiates an investigation into the circumstances of the event, identifies and engages with all responsible parties, and works to ensure answers are found regardless of where the failure occurred. The 911 Board investigation into an individual complaint or concern includes:

- a thorough review of the 911 call, including a determination of when and how the call was delivered to 911 and the actions of the 911 call-taker.
- engagement with the responsible parties may include discussion with:
 - the contracted 911 system provider to identify when (or if) the 911 call entered the system
 - any and all involved telephone service providers, dispatch agencies and/or the emergency responder organizations..

Telephone service providers, dispatch agencies and emergency response organizations are not under the operational control or purview of the 911 Board. However, the Board routinely interacts with these organizations and ensures any complaint or concern that is outside the Board’s authority is directed to the appropriate personnel at these organizations. The Board will facilitate any communications between the responsible organization and an individual complainant, as needed.

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For large scale events, such as telephone service provider outages, the 911 Board will identify and engage with additional partners as needed to understand the event and/or determine any required additional steps. These partners may include the Vermont Public Service Department, the Vermont Public Utility Commission and/or the Federal Communications Commissions (FCC).

Key Partnerships

In addition to the partnerships with the six PSAPs in Vermont, the 911 Board routinely interacts, consults, or collaborates with:

- **Agency of Digital Services (ADS)** – the 911 system procurement process aligns with all technical, cybersecurity, and project management requirements established by the Agency of Digital Services. The 911 Board IT staff may request assistance from ADS subject matter experts as needed.
- **Public Service Department (PSD)** – the 911 Board and its staff routinely interact with Public Service Department staff to ensure the interests of Vermonters and the 911 Board are met in interactions with regulated telephone service providers in Vermont.
- **Public Utility Commission (PUC)** – the 911 Board stays informed about Public Utility Commission dockets that impact 911 and participates in various proceedings as necessary.
- **Department of Health (VDH)** – the 911 Board partners with the Vermont Department of Health for medical oversight of the 911 call handling protocols for medical emergencies.
- **Federal Communications Commission (FCC)** – the 911 Board stays current with FCC orders and regulatory activities that impact 911 and intervenes in FCC dockets to ensure that 911 issues are addressed.
- **Telecommunications and Voice Service Providers** – the 911 Board has established formal liaisons with each telecommunications carrier to ensure accountability, manage network interconnections and ensure database development and maintenance.
- **Enterprise Communications Systems (ECS)** – the 911 Board works closely with privately owned telephone system providers to ensure they are in compliance with all 911 statutes, rules, policies and procedures related to these systems.
- **Emergency Response Agencies** – the 911 Board works with Vermont’s emergency response community to maintain critical databases related to geographic jurisdictions, telephone numbers, and dispatching arrangements.
- **Municipal 911 Coordinators** – statute requires that every municipality appoint a 911 coordinator to ensure each town meets the 911 Board -established addressing standards. Board staff train the 911 coordinators on their responsibilities and interact with them daily to resolve addressing questions or discrepancies.
- **CARE Program Partners** – 911 Board staff work collaboratively with Vermont Emergency Management, Vermont 211, the United Ways of Vermont and other relevant organizations to manage the Citizens Assistance Registry for Emergencies – a program designed to connect local emergency responders with citizens in their communities who may need specialized assistance during a wide-scale emergency.

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- **National Partners** – since the 1990s, 911 Board staff have been engaged at the national level on NG911 and GIS standards development, training initiatives, and information sharing. We routinely work with the National 911 program, the National Association of State 911 Administrators, and industry groups such as NENA and APCO.

In addition to these examples of effective partnerships, the 911 Board actively participated in the 2023 Regional Dispatch Working Group and continues to participate in the Governor’s Emergency Preparedness Advisory Council, the Emergency Service Provider Wellness Commission, the 988 Planning Coalition and various other state and national working groups.

Reliable Service for Nearly 25 Years

The 911 Board has provided Vermonters and our visitors with a reliable, efficient, and effective statewide 911 system for nearly 25 years. The 911 Board, represented by primary stakeholders in Vermont’s emergency communications and responder communities, municipalities and the public, correctly established its commitment to a standards-based program built on industry best practice at all levels. This commitment from the Board, executed by an experienced, highly qualified staff, in cooperation and collaboration with partners across multiple agencies and organizations, is the reason Vermont has a nationally recognized, state of the art, NG911 system in place serving our communities.

Moving Forward

The continued success of Vermont’s statewide 911 system is reliant upon several factors. Maintaining program integrity, authority, independence and funding is essential. Any changes to the program’s governance and/or mission must be carefully considered, must take into account the success the program has achieved with its long-standing, representative and independent governance structure, and must include a commitment to prevent the introduction of problems that do not currently exist in the management of this critical program.

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