REPORT TO THE GOVERNOR

AND

VT GENERAL ASSEMBLY

By

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David R. Serra
Executive Director

MEMORANDUM

TO: The Honorable James Douglas, Governor
The Honorable Brian Dubie, Lieutenant Governor
Members, Vermont Senate and House of Representatives
Citizens of Vermont

FROM: Sheriff Roger Marcoux, Chair
David R. Serra, Executive Director

DATE: January 15, 2009

RE: Report on Enhanced 9-1-1

Please find attached to this letter the Annual Report of the Enhanced 9-1-1 Board covering our activities and program for calendar year 2008.

On a per-transaction basis, there is no other service more important that government provides its people than 9-1-1. The E9-1-1 Board continues to provide excellent 9-1-1 service to the citizens of Vermont, as well as to the many millions of visitors to our state every year. The service we provide is also very economically efficient due to our partnership with allied emergency response organizations, and by our management and oversight of technical system contractors. Vermont was the first to adopt a statewide next generation platform for its 9-1-1 system, and it continues to lead every other state in the provision of cost-effective, state-of-the-art 9-1-1 service.

Thank you very much for all your support of the E9-1-1 Board, and for the opportunity to serve.

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EXECUTIVE SUMMARY

Introduction

On a per-transaction basis, 9-1-1 is probably the most important service state government offers its citizens. By any objective standard, Vermont leads the nation with its innovative, next generation E9-1-1 system. A combination of events caused this, including excellently crafted legislation, a clear grant of authority, a brilliant and highly-professional staff, and state-of-the-art systems, training, data management and collection. Vermont's E9-1-1 system is a cross between a telecommunications company and an emergency response agency. Its complex databases, kept current with great effort every day both in our offices and on the road, interact with the human element - 9-1-1 call-takers - to bring vital information to emergency responders in seconds over a highly-technical computer-based system. The E9-1-1 Board endeavors every day to keep Vermont's 9-1-1 system as up-to-date as the communication devices Vermonters use to reach us, and as reliable as the worst emergency can demand. The following is a summary of what we do.

Statewide System Operations

The E9-1-1 Board is charged with designing, installing, and overseeing the operation of statewide Enhanced 9-1-1 service. System performance benchmarks are based on nationally accepted standards. The Board fulfills its responsibilities by maintaining and auditing its technical network, databases, Public Safety Answering Point (PSAP) and 9-1-1 call-taker components of the system; by providing an ongoing training and certification program for 9-1-1 call-takers; by maintaining the statewide Enhanced 9-1-1 GIS database; mapping new coordinates when necessary; and by engaging in a variety of other activities designed to ensure the reliability and integrity of the system.

Network audits demonstrate that the system meets or exceeds established performance parameters. Database audits show acceptable accuracy rates for telephone subscriber information, and we resolve issues daily with the Board's service provider, telecommunications companies and Vermont's cities and towns. Many private and central office-based multi-line telephone systems (PBX/CENTREX) are still not providing the level of service to their end users required by law. Many individual Vermonters and Vermont businesses are eliminating their land line telephone service and switching to wireless or Voice over Internet Protocol (VoIP). This trend impacts the Enhanced 9-1-1 system. Our PSAPs received 185,382 9-1-1 calls in the past twelve months, answered them on average within 7 seconds, and concluded the transaction after pre-arrival instructions by transferring the caller to an appropriate dispatch point in just over 2 minutes. Approximately 51% of these calls originated from cell phones, a 5% increase from last year. We expect this percentage to increase as wireless service becomes more available in Vermont.

Status of PSAPs

As a cost-saving measure, the E9-1-1 Board reduced its operations in 2008 and now oversees eight 9-1-1 PSAPs. The PSAPs are currently located at the Hartford Police Department, the Lamoille County Sheriff's Office, the Saint Albans Police Department, the Shelburne Police Department, and the State Police Barracks at Williston, Rutland, Rockingham and Derby. The PSAPs are geographically dispersed and represent the wish of the legislature at the inception of E9-1-1 in Vermont for a state/local partnership. Because it is spread out, the E9-1-1 system is able to pull its highly trained employees from the Vermont workforce in most every geographic area of the state. The system also will never be compromised by natural or human-caused disasters, including weather events and pandemics that could effectively negate PSAP operations at concentrated points during critical times of emergency response.

Changes to the System

The E9-1-1 Board is re-engineering the way calls are fed into the system. The Board expects to realize savings on trunk lines and circuit costs, both of which must be purchased from the owners of telecommunications infrastructure. The Board also reduced its complement of PSAPs, while retaining the critical mass of available call-taker seats that is a function of our State's population, as well as population fluctuations caused by the millions of tourists who travel through our State every year. The Board will maintain readiness while seeking to reduce costs wherever possible.

Estimated Cost to Operate the System

The General Assembly appropriated to the Enhanced 9-1-1 Board the amount of $5,484,695 for FY09. This sum appears higher than past years because what was always previously a pass-through appropriation to the Department of Public Safety has now become a line item in the E9-1-1 budget. Further, the legislature increased this appropriation by an additional $1 million for a total of $1,823,443. The additional $1M in appropriation was not for 9-1-1 operations, but rather for dispatch center activities. Generally, the Vermont Universal Service Fund (USF) charge on telecommunications bills funds E9-1-1 service in Vermont that consists of the provisioning of the statewide network, databases, PSAP equipment and maintenance, training of all 9-1-1 call-takers at the designated PSAPs in Vermont, and the staff necessary to administer all aspects of the statewide system.

Operating expenditures reflect debt servicing for the new system, as well as costs for trunks and circuits which are obtained from FairPoint, which owns the infrastructure over which our system receives calls. FairPoint's predecessor Verizon attempted to impose charges never previously seen or levied for certain database obligations, but those charges were denied in an action before the Vermont Public Service Board (PSB). The E9-1-1 Board continues to closely monitor these developments and to strenuously advocate against excessive and unnecessary charges.

As previously mentioned, the E9-1-1 Board subsidizes PSAPs hosted by the Department of Public Safety (DPS) with a grant from the Vermont Universal Service Fund (USF). This grant is a partial subsidy to help defray costs associated with DPS's 9-1-1 call-taking activities that are conducted in tandem with its dispatch services. The Board also offers a partial subsidy to its PSAPs that are not affiliated with DPS in recognition of expanded call-taking duties they have assumed. This extra duty has leveled the demand on DPS-hosted PSAPs that have historically taken the majority of system calls. This balancing of the E9-1-1 system ensures more equitable distribution of 9-1-1 calls among the various PSAPs, and makes the system truly statewide in its scope and coverage.

Emerging Issues

We continue to monitor the effects of regulatory change and new technologies on Enhanced 9-1-1. By participating in dockets before the Vermont Public Service Board (PSB) and the Federal Communications Commission (FCC), we educate regulators and telecommunications carriers and help establish policies and processes that both facilitate competition and preserve the reliability of our Enhanced 9-1-1 service.

The emergence and rapid development of Voice over Internet Protocol (VoIP) communications and the abandonment of wire line communications for wireless communications are market realities that impact our system more and more. While wireless providers are required to pay into the USF, VoIP providers are not. We are monitoring these developments closely and working proactively to ensure that the public continues to have access to Enhanced 9-1-1 service no matter what type of telecommunications service they use. We also continue to monitor the erosion of the USF as more subscribers abandon land lines for VoIP solutions.

In addition, compliance with state statutes, Board rules, and federal guidelines continues to concern the E9-1-1

Board. As noted above, one great challenge is ensuring that anyone using a multi-line telephone system (PBX or CENTREX), particularly large multi-structure businesses, to make a 9-1-1 call is doing so on a 9-1-1-compliant phone system. Just as telephone companies must constantly update their technology and databases so that subscribers can be located quickly when they make a 9-1-1 call, so must multi-line telephone system hosts ensure the same level of safety. Maintaining vigilance on these issues is a major undertaking for the E9-1-1 Board.

We must also engage in rulemaking at the Public Service Board level. One such effort is to ensure that there exists some redundant pathway out of a given calling area in the event a natural or manmade disaster isolates that area. In some areas that could include a technological option; in other more remote areas it could include public information. When isolation happens, oftentimes a caller hears a dial tone that enables them to dial within their calling area, yet they cannot dial into the 9-1-1 system. The confusion that results from obtaining a dial tone, yet being unable to access 9-1-1 trunks & circuits, can cost a life where seconds count.

Another issue of great importance involves the accuracy of wireless devices for 9-1-1 purposes. The FCC mandates minimum standards for location accuracy of cell phones so that when a wireless caller accesses 9-1-1, they can be located in the same way as if they used a landline. This is especially important in light of the fact that 51% of our system calls in 2008 originated on wireless devices. Vermont lags behind other states with regard to accuracy standards. This is due in part to the limitations of cell phone coverage in a mountainous state like Vermont. Even so, it is the E9-1-1 Board's responsibility to measure this type of accuracy, and to maintain an action at the FCC if the standards are not met.

The Vermont E9-1-1 Board must continually keep abreast of new technologies and be vigilant with regard to emerging issues that impact its operations. We must be as good as the technology citizens employ to reach us. We must ensure that policies are in place to meet the challenges of the 21st century. Citizens demand and deserve a higher level of service in an age of ever changing technology. We have a robust system capable of meeting the challenge, but the challenges will only be met with the continued attention & diligence of a highly-competent staff and an adequately funded & maintained revenue source.

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2008 OVERVIEW

IT/Network Performance

The following statistics are for the period 1 January 2008 to 31 December 2008:

- Total 9-1-1 Calls Received 185,382
- Total Cellular 9-1-1 Calls Received 94,508 (approximately 51% of total)
- Total Abandoned 9-1-1 Calls 25,234 (approximately 13.6% of total)
- Average Time to Answer 07 (seconds)
- Average Call Time 02:22 (minutes; seconds)

This represents a modest increase in overall call volume from last year. Analysis of the system's performance shows that the Enhanced 9-1-1 system continues to perform within established benchmarks.

Detailed statistics per town are included on the following pages. Please note: There is a row at the bottom of the following table titled "No ALI - Out of State". These are calls that could not be associated with any town for a variety of reasons:

- The call transferred in over the 800 number from out of state (MA, NH, NY, PQ,) or from an organization that accessed our 800 number (OnStar, etc.);
- The call was a wireless call that did not include any ALI information;
- The call was from an uninitialized cell phone (TracFone, etc.);
- The call was from a landline that was not found in the database.

A breakdown of calls per PSAP and Class of Service is included in Appendix B.

Due primarily to the use of cell phones, the town-by-town statistics do not provide an accurate count of the 9-1-1 calls made in any given town. This is because of the technology used to locate wireless callers. A wireless call is seen by the 9-1-1 system as either a Phase 1 call or a Phase 2 call. In a Phase 1 call, only the location of the cellular tower that received the call is known. In a Phase 2 call, the cellular system attempts to determine the exact location of the caller but the accuracy varies.

Many factors determine whether a call appears as Phase 1 or Phase 2. There are two technologies used to locate a cell phone. One method requires a Global Positioning System (GPS) circuit in the caller's phone. The other relies on triangulation between two or more cellular towers. Each method has its advantages and disadvantages. While a GPS based system can provide a high degree of accuracy, it generally requires a clear view of the sky. The condition of the phone used by the caller also plays a role.

The triangulation method, also known as the network method, requires that a call reach three or more towers to determine the location. This can be problematic in fringe areas that do not have robust service. However, the ability to receive GPS satellite signals or the capabilities of the phone are not factors.

In 2008, 51% of 9-1-1 calls were made with a non-landline phone. Nearly half of those were Phase 1 wireless calls. This means that for 22% of the total calls, or approximately 40,000 calls, the town location listed in the call record is that of the tower that received the call and not necessarily the town from where the call was made. An

example will make this clearer: Robbins Mt. is located in Bolton. Its summit is the location of several communication antennas, including some used for cellular communications. The cellular antennas are situated to receive calls from I-89 in Richmond. If a Phase 1 9-1-1 call made from I-89 in Richmond is picked up by a cell tower atop Robbins Mt., the call will show up in the totals for Bolton although the caller actually made the call in Richmond.

There are many places in Vermont where similar situations exist. This is a limitation of the current technology. To get an exact town-by-town count of 9-1-1 calls would require listening to the recordings of tens of thousands of calls to determine their exact location. As cellular usage increases, the accuracy of town-by-town statistics will continue to be negatively impacted, although there is the possibility that as technology improves an increase in Phase 2 calls could reverse the trend and improve the statistics over time.

9-1-1 Call Statistics by Town

Town	# of Calls
Addison	91
Albany	71
Alburgh	966
Andover	44
Arlington	653
Athens	42
Averill	3
Bakersfield	153
Baltimore	14
Barnard	98
Barnet	577
Barre City	3133
Barre Town	2333
Barton	762
Belvidere	41
Bennington	5012
Benson	132
Berkshire	182
Berlin	2212
Bethel	228
Bloomfield	21
Bolton	2391
Bradford	507
Braintree	144
Brandon	1267
Brattleboro	5964
Bridgewater	166
Bridport	58
Brighton	350
Bristol	449

Town	# of Calls
Brookfield	492
Brookline	45
Brownington	126
Brunswick	6
Buel's Gore	6
Burke	985
Burlington	14751
Cabot	238
Calais	157
Cambridge	726
Canaan	117
Castleton	2132
Cavendish	179
Charleston	113
Charlotte	835
Chelsea	156
Chester	677
Chittenden	98
Clarendon	1894
Colchester	4663
Concord	145
Corinth	194
Cornwall	73
Coventry	361
Craftsbury	108
Danby	157
Danville	340
Derby	1193
Dorset	573
Dover	815

Town	# of Calls
Dummerston	157
Duxbury	95
East Haven	14
East Montpelier	289
Eden	179
Elmore	106
Enosburgh	768
Essex	4289
Fair Haven	523
Fairfax	678
Fairfield	121
Fairlee	982
Fayston	288
Ferdinand	6
Ferrisburgh	533
Fletcher	87
Franklin	181
Georgia	1199
Glover	136
Goshen	32
Grafton	115
Granby	7
Grand Isle	267
Granville	46
Greensboro	104
Groton	187
Guildhall	29
Guilford	193
Halifax	85
Hancock	92

Town	# of Calls
Hardwick	672
Hartford	4279
Hartland	374
Highgate	510
Hinesburg	410
Holland	58
Hubbardton	87
Huntington	136
Hyde Park	317
Ira	25
Irasburg	138
Isle La Motte	71
Jamaica	157
Jay	493
Jericho	558
Johnson	759
Killington	1991
Kirby	32
Landgrove	21
Leicester	143
Lemington	9
Lincoln	120
Londonderry	603
Lowell	117
Ludlow	1119
Lunenburg	218
Lyndon	1212
Maidstone	28
Manchester	1462
Marlboro	121
Marshfield	216
Mendon	127
Middlebury	2411
Middlesex	754
Middletown Springs	51
Milton	3324
Monkton	528
Montgomery	221
Montpelier	3164
Moretown	1672
Morgan	76
Morristown	2171
Mount Holly	213

Town	# of Calls
Mount Tabor	102
New Haven	421
Newark	49
Newbury	939
Newfane	224
Newport City	1539
Newport Town	154
North Hero	142
Northfield	1042
Norton	22
Norwich	516
Orange	120
Orleans	152
Orwell	297
Panton	78
Pawlet	189
Peacham	71
Peru	445
Pittsfield	46
Pittsford	322
Plainfield	177
Plymouth	120
Pomfret	85
Poultney	761
Pownal	595
Proctor	174
Putney	498
Randolph	1512
Reading	104
Readsboro	178
Richford	669
Richmond	367
Ripton	82
Rochester	195
Rockingham	856
Roxbury	72
Royalton	1677
Rupert	79
Rutland City	7282
Rutland Town	642
Ryegate	417
Saint Albans City	2349
Saint Albans Town	3396

Town	# of Calls
Saint George	321
Saint Johnsbury	2016
Salisbury	158
Sandgate	25
Searsburg	17
Shaftsbury	737
Sharon	1258
Sheffield	63
Shelburne	1104
Sheldon	232
Shoreham	106
Shrewsbury	107
South Burlington	7600
South Hero	422
Springfield	2738
Stamford	75
Stannard	23
Starksboro	309
Stockbridge	99
Stowe	2421
Strafford	109
Stratton	398
Sudbury	39
Sunderland	161
Sutton	74
Swanton	1638
Thetford	478
Tinmouth	76
Topsham	108
Townshend	230
Troy	233
Tunbridge	111
Underhill	243
Vergennes	1001
Vernon	348
Vershire	146
Victory	4
Waitsfield	353
Walden	121
Wallingford	416
Waltham	35
Wardsboro	146
Warren	575

Town	# of Calls
Warren's Gore	1
Washington	97
Waterbury	1547
Waterford	540
Waterville	76
Weathersfield	416
Wells	197
West Fairlee	105
West Haven	40
West Rutland	1146
West Windsor	105
Westfield	632

Town	# of Calls
Westford	104
Westminster	504
Westmore	93
Weston	127
Weybridge	49
Wheelock	202
Whiting	30
Whitingham	214
Williamstown	1325
Williston	3359
Wilmington	947
Windham	46

Town	# of Calls
Windsor	2284
Winhall	163
Winooski	1896
Wolcott	170
Woodbury	110
Woodford	249
Woodstock	872
Worcester	84
No ALI – Out of State	8246
Grand Total	**185382**

Database Performance

All towns have completed address notification. Municipal database performance is measured by the percentage of telephone records that match to a locatable address on their municipal map. Two hundred and fifty-six (256) towns have a match rate that is 98% or higher. Only the town of Norton has a match rate that is under 98%. There are four (4) towns that do not have telephone access lines, but have completed address notification (Avery's Gore, Lewis, Somerset and Warner's Grant).

There are 317 records in the ALI Database that have been designated as Private Citizen. This means that when a 9-1-1 call is received from that telephone number the call-taker will see the customer name as "Private Citizen".

The Board offers all telephone customers the ability to have a special code in the Enhanced 9-1-1 database for certain permanent disabilities. The ALI database has 1,579 records that have a disability designation. Some telephone records contain more than one code:

• LSS	Life Support System	85
• MI	Mobility Impaired	537
• B	Blind	314
• DHH	Deaf & Hard of Hearing	452
• TTY	Teletypewriter	39
• SI	Speech Impaired	127
• DD	Developmentally Disabled	309
	Total	*1,863*

Most ALI discrepancies (database errors that become evident when a 9-1-1 call-taker attempts to verify the location information on his/her screen) continue to be caused by the telephone companies' internal service order processes or by a town's failure to fulfill its database responsibilities.

GIS/Mapping Performance

During 2008, the GIS department readdressed the Town of Woodstock to the recommended 5.28' increment. Currently we are waiting for the Town to notify residents of their new addresses.

The following numbers reflect GIS updates & fieldwork for 2008:

- 46,311 site edits completed;
- 613 road name edits completed;
- 17,154 road segments added or updated;
- All municipalities were visited for GPS verification fieldwork (including cities, villages, townships);
- 8,160 sites were verified and assigned x,y coordinates using GPS.

GIS discrepancies are disparities between 9-1-1 database information and telephone records. In 2008, 151 GIS discrepancies were reported to the Board. Of those, 102 GIS discrepancies have been resolved. We are working toward reconciling all outstanding discrepancies.

PSAP and 9-1-1 Call-taker Performance

The Enhanced 9-1-1 Board oversees eight PSAPs. As previously noted, they are located at the Hartford Police Department, the Lamoille County Sheriff's Office, the Saint Albans Police Department, the Shelburne Police Department, and the State Police Barracks at Williston, Rutland, Rockingham, and Derby.

Board oversight includes monitoring PSAP operations and 9-1-1 call-taker performance. The Board must ensure that the public receives the same level of service no matter which PSAP answers their call. To that end, the Board's staff reviews a random sample of 9-1-1 calls for each PSAP weekly. Feedback is provided to the PSAPs as appropriate. In addition to the informal Board review, call-takers are required to evaluate several of their own calls each year. This more formal Quality Control approach includes feedback from the PSAP Administrator, a working Supervisor and the Board's training staff. This approach has had a positive impact on how call-takers meet or exceed the call handling standards. We continue to work closely with all PSAPs to ensure that the 9-1-1 services provided to the public meet national professional standards and are delivered in a consistent and uniform manner statewide.

Fourteen new emergency communications professionals became certified call-takers in 2008. Eighty percent of these new call-takers are filling newly created positions in the Regional PSAPs (Hartford, Shelburne, Saint Albans, & Lamoille). The balance were hired to fill vacancies left by retiring or departing call-takers. Retention of dispatchers and 9-1-1 call-takers far exceeds the national trend, which is 2 to 3 years. For every call-taker who has been on the job for less than three years in Vermont, there is one who has been in emergency communications for over 10 years.

Our new IP-based 9-1-1 system enables us greater flexibility with Disaster Recovery Contingency Plans (DRCP), which are required by the E9-1-1 Board's regulations. Since September 11th, 2001, it is more important than ever that each PSAP have and routinely test a DRCP. Having a DRCP is a basic legal requirement incumbent upon all PSAPs. Each PSAP committed to meeting this requirement in a formal Memorandum of Agreement with the E9-1-1 Board. Every professional emergency communications center in the nation has a DRCP and routinely exercises it. The DRCP for the statewide E9-1-1 system is inherent in its design, which ensures that all 9-1-1 calls that make it into the system get answered. The Board needs to do its part to ensure short- and long-term PSAP operations in the event they must evacuate their facilities. PSAPs must meet these basic obligations, a challenge the Board takes very seriously. The new IP-based system enables a for more rapid turn-up or turn-down of PSAPs, including the relocation of PSAP capability, and the more efficient back-up of any PSAPs affected by disasters.

9-1-1 Call-taker Training and Certification

Board oversight includes administering an ongoing 9-1-1 call-taker training and certification program. A

complete overview of the curriculum may be found in Appendix A. The Board's staff provides all training except emergency medical pre-arrival care and some of the continuing education classes. In calendar year 2008, nineteen classes were held to train new call-takers and enhance the skills of veteran communications staff. In 2008, the Board eliminated the requirement to attend a three-day Re-certification class every three years. We replaced that standard with a requirement to attend one eight-hour Re-certification class each year. Our intent is to have the opportunity to update the curriculum each year to address current issues. A valuable byproduct of this change is the savings of both time and money for the PSAPs. It was very costly and disruptive to take multiple call-takers out of the PSAP for a three day period and pay mileage, meals, and fill their shifts with overtime staff. Most departments have seen a significant cost savings with the new one-day format. The Re-certification classes are held at or near various PSAPs throughout the state. The training schedule for 2008 is listed below.

- February 29 Vermont Domestic Violence
- April 18 Under the Headset
- May 8 CTO Recertification
- May 16 First Contact-Building Blocks
- June 23 Recert # 2
- June 24 Recert # 3
- July 11 Telecommunicator Liability
- July 22 Recert # 2
- August 11 School Violence
- August 20 Recert # 2
- September 26 Recert # 2
- September 27 Recert # 3
- October 20 Hostage Negotiation
- October 27 - 31 40 Hour Call-Taker Certification
- November 4 - 5 Equipment Training
- November 6 - 7 Equipment Training
- November 15 Recert # 2
- November 19 Recert # 3
- December 4 Recert # 2

ONGOING ISSUES

Addressing

For citizens to receive the full benefits of Enhanced 9-1-1 service, continued attention must be given to certain details at the local level. Staff is currently working with communities to reconcile discrepancies between the addresses in the ALI database and the GIS database. Addresses in both these databases need to be in synch in order for the map display to work effectively. Some communities need to follow the established procedures for maintaining the data. In some areas, citizens still have not posted their house numbers, making it harder for police, fire, and emergency medical service providers to locate them in an emergency. Some neighborhoods still have a confusing mixture of old and new numbers. Towns should enforce their local ordinances. Local emergency responders need to inform the Board immediately of changes to their service jurisdictions or dispatching arrangements because those changes have an impact on the 9-1-1 system and 9-1-1 call processing. PSAPs that become aware of addressing or database issues need to follow the established procedures diligently so the Board can correct the problems.

Multi-Line Telephone Systems

As previously noted, many PBX and CENTREX telephone systems are not providing the level of service to their end users required by law. Although we are a small staff, we continue to work proactively with multi-line telephone system owners, telecommunications carriers, and vendors. The cost of retrofitting some older private telephone system equipment is prohibitive for many smaller businesses, making it difficult for them to comply. However, that is not the case for most large enterprises. We have much work to do to ensure that these types of systems conform to statutory requirements. This past year the State of Vermont's telephone system has become compliant by implementing internal processes to update the database necessary to pinpoint the location of 9-1-1 calls made from a State office, particularly the Waterbury Complex. Also, recent outreach to Vermont school superintendents has heightened awareness of the necessity for schools to comply as part of their emergency plans.

Wireless Carriers

Wireless carrier interconnection with the Enhanced 9-1-1 system has a variety of tasks, issues, technical requirements and challenges. For example, every cell tower has to be "addressed," assigned one or more pseudo ANIs (pANIs), incorporated into the ALI and GIS databases, and its Radio Frequency (RF) footprint analyzed and mapped so that each sector can be programmed to route calls to the appropriate PSAP. This process occurs on an ongoing basis each time a carrier builds and activates a new tower, or changes its technology. Since each wireless carrier uses different technology, close coordination between the Board's staff, the wireless carrier, and its various vendors is essential to a successful outcome.

All six wireless carriers (AT & T Mobility, Verizon Wireless, Sprint/Nextel, T-Mobile, Unicel, & US Cellular) have completed implementation of wireless Phase 2 Enhanced 9-1-1. This means that wireless calls are capable of providing a call back number, the address of the tower that processed the wireless 9-1-1 call, as well as the latitude and longitude coordinate location of the caller. It is important to note that the accuracy of the coordinate is based on several factors: type of wireless handset used by the wireless caller, the type of wireless location technology used by the wireless carrier, the number of towers located within the proximity of the wireless 9-1-1 call, and environmental conditions. The Board must ensure that wireless companies meet minimum FCC accuracy standards for the sake of public safety.

Since 51% of 9-1-1 calls originate from a wireless phone, it is imperative the coordinate information provided with the call meets or exceeds FCC accuracy requirements. We are focusing on the carriers that utilize a network-

based location determination solution, as this solution has not always provided coordinate information within FCC accuracy requirements.

More and more customers are abandoning their wire line telephone service for wireless service. As wireless phones are by nature mobile, they are not associated with one fixed location or address; a 9-1-1 caller using a wireless phone could be calling from anywhere. Customers need to be aware that while switching from a wire line phone to a wireless phone may be more convenient and economical, they will have sacrificed the provision of a reliable fixed address during a 9-1-1 call for location information that may only provide a general direction that is not always specific enough for delivery of emergency services.

Local Number Portability (LNP)

LNP allows phone subscribers to maintain the same phone number when they change carriers. LNP is designed to conserve a dwindling supply of available telephone numbers and area codes. LNP poses ongoing challenges for most of the Competitive Local Exchange Carriers (CLECs). The majority of service order fallout errors are due to local number portability. These errors are generated when the donor company does not unlock the telephone record so the recipient company can port it. The Enhanced 9-1-1 Board requires ported telephone customer records to be unlocked and successfully migrated before they can be inserted or deleted from the ALI database. Failure on the part of the incumbent telephone companies, CLECs, and VoIP service providers to resolve this problem constitutes a major compliance issue that affects the quality of service, i.e., has public safety ramifications.

Wireless Number Portability (WNP)

WNP enables customers to migrate from their wire line service to a wireless service and vice versa, or to switch from one wireless carrier to another without changing their phone number. WNP became available in Vermont in May 2004. As with LNP, improper porting could hinder the delivery of Enhanced 9-1-1 service to someone who calls for help. In addition, customers that give up their wire line telephone service and "go wireless," may in some cases have given up access to reliable Enhanced 9-1-1 service.

Voice over the Internet (VoIP)

VoIP, which stands for Voice over Internet Protocol, is a technology that allows customers to make telephone calls using a broadband Internet connection instead of a regular (or analog) phone line. Some services using VoIP may only allow calls to other people using the same service, but others may allow calls to anyone who has a telephone number - including local, long distance, mobile, and international numbers. Also, while some services only work over a computer or a special VoIP phone, other services allow use of a traditional phone through an adaptor.

Unlike regular telephone service, VoIP customers did not have Enhanced 9-1-1 service until the FCC ordered VoIP providers to provide Enhanced 9-1-1 service in orders issued in May 2005. As the number of VoIP providers in the United States able to comply with the order increases, the Board contractually requires any VoIP providers doing business in Vermont to provide a very high standard of service within the requirements of the FCC order. We are continuing to work closely with the VoIP service providers to implement solutions that provide VoIP customers in Vermont with the same level of Enhanced 9-1-1 service that the rest of the public receives. The Board requires all VoIP carriers wishing to do business in Vermont to execute a contract with the Board that obligates them to recognize the highest standards for VoIP, in recognition of the FCC Order. VoIP carriers are still not required to pay into the USF, which means less money available to do the work of the E9-1-1 Board in a time when that work has become increasingly complex. As high speed internet access is extended to more and more Vermonters, VoIP subscriptions also increase, diminishing the USF.

Stand-Alone and Redundant/Alternative Pathway

"Stand-alone" occurs when a calling area is isolated for any reason, e.g., digging up a phone line, a tree falling, vehicle hitting a pole, or any other number of potential accidents. Sometimes when this happens a particular town cannot call outside of its calling area, but can still hear a dial tone when trying to make a call. This impacts that town's ability to dial 9-1-1. If someone needs to call 9-1-1 during a stand-alone situation they will hear a dial tone, dial 9-1-1, but get a fast-busy signal. This is not an unusual occurrence. In 2008, there were numerous instances of stand-alone caused by phone company central office (CO) isolation of varying duration. In most cases, although 9-1-1 service is interrupted, a caller is still able to dial a local seven-digit number in order to reach a local responder. In many rural areas, however, those responders may not be available 24/7.

The problem involves the way calls are routed through central switching offices (CO) controlled by telephone companies. Some CO calling areas have a 24-hour dispatch point directly connected to it, but where this is not the case things are more problematic. In those cases, there is nowhere to send the 9-1-1 calls without an alternative to the phone system.

There are solutions to this problem. A cellular connection could be used. Johnson is an example of an area where this would work. There are areas in Johnson that are serviced by the Johnson CO switch that have a clear view of cellular antennas serviced by the Morrisville CO. An alternate route could be directed through a cellular connection to a number not served by the Johnson CO, which would then route to the Lamoille County Sheriff's Office PSAP.

Similarly, this could be accomplished with cable or other non-telco based broadband connection. A CO with access to a cable provider could establish a broadband cable connection and run VoIP over the connection. The alternate route would then be configured to use this connection. Calls from the isolated CO would take the fourth route over the cable infrastructure out of the isolated area where they could be routed to a PSAP.

The Board must re-engage in the rulemaking process with the Public Service Board (PSB) in asking for a redundant or alternative pathway for calls in isolated situations, where a technology solution is feasible. In the case of places where technology is not feasible, the solution could be as simple as some kind of requirement whereby the subscribers in a given area are instructed as to the availability of some local seven-digit number in the event that area is isolated from the 9-1-1 system. Another possible solution is a different type of busy signal during stand-alone, or a message that would inform the caller of the situation when the system sensed a stand-alone, isolating event. Any kind of solution requires the cooperation of every telecommunications carrier and necessitates a PSB Rule to force participation and compliance.

ADA Compliance

We have established a good working relationship with advocates from the deaf and hard-of-hearing communities. A deaf advocate teaches the deaf awareness and communication segment of our basic training course and helps coordinate the volunteer network that makes TTY test calls to the PSAPs. Use of the TTY has greatly diminished as the deaf community embraces technologies like Instant Messaging, Blackberry devices and video conferencing. The Next Generation 9-1-1 system currently in place gives us a greater opportunity to accept additional types of communications. The goal is to ensure that 9-1-1 call-takers can communicate effectively with deaf and hard-of-hearing callers, which is a requirement of the Americans with Disabilities Act (ADA).

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NEXT GENERATION E9-1-1

Highlights of the Vermont E9-1-1 System

Vermont is still the only statewide, IP-based E9-1-1 system in the nation. It is what is known in the industry as a "next generation" (NG) E9-1-1 system, being based on the same protocol that drives the internet (internet protocol – "IP"), where telephone signals are changed into computer language at the gateway into the E9-1-1 system. Such NG9-1-1 systems can better merge the voice, data, and graphics streams that are often brought to bear on emergency responders via the communications devices commonly in use by people today. When the term "NG9-1-1" is used, one can be sure that Vermont is in the lead.

Vermont's new 9-1-1 system is both flexible and scalable. A blizzard may be raging in the Southern part of the state while the skies are clear in the North. An inflexible 9-1-1 system impedes the ability to balance the load among the available call-takers. Population growth is not even throughout the state. PSAPs need to be able to grow or shrink easily. We currently have a purpose-built, dedicated IP network, which is the best way to accommodate both current and future needs. A network based on IP can provide the resiliency that a 9-1-1 system requires.

In the IP environment, our new system is now located in E9-1-1 Board controlled space. We have two data centers, geographically located in the eastern part of the state and in the central part of the state. Each emergency calling data center, or ECDC, houses one cabinet of equipment that forms the core of the system. This equipment is co-located with other systems having similar security requirements in a larger facility, with card-swipe security access limited to Board personnel. The data centers have the appropriate auxiliary power and environmental infrastructure to support "five-nines" (99.999) or better up-time. The data centers include the equipment to translate incoming 9-1-1 calls into VoIP calls, and then route them to the appropriate PSAP. They also include the ALI database, mapping, management information system, call logging, and system administration equipment.

Either data center has the ability to support the entire 9-1-1 system. In the event of a catastrophic failure in one data center, all PSAPs remain functional. Redundant communication links between the two centers allow them to function as a single entity. Each PSAP contains redundant equipment and utilizes redundant communication links to connect it to each data center. PSAPs are able to remain operational in the event of a failure to any data center. This is a fundamental fail-safe feature of an IP-based system.

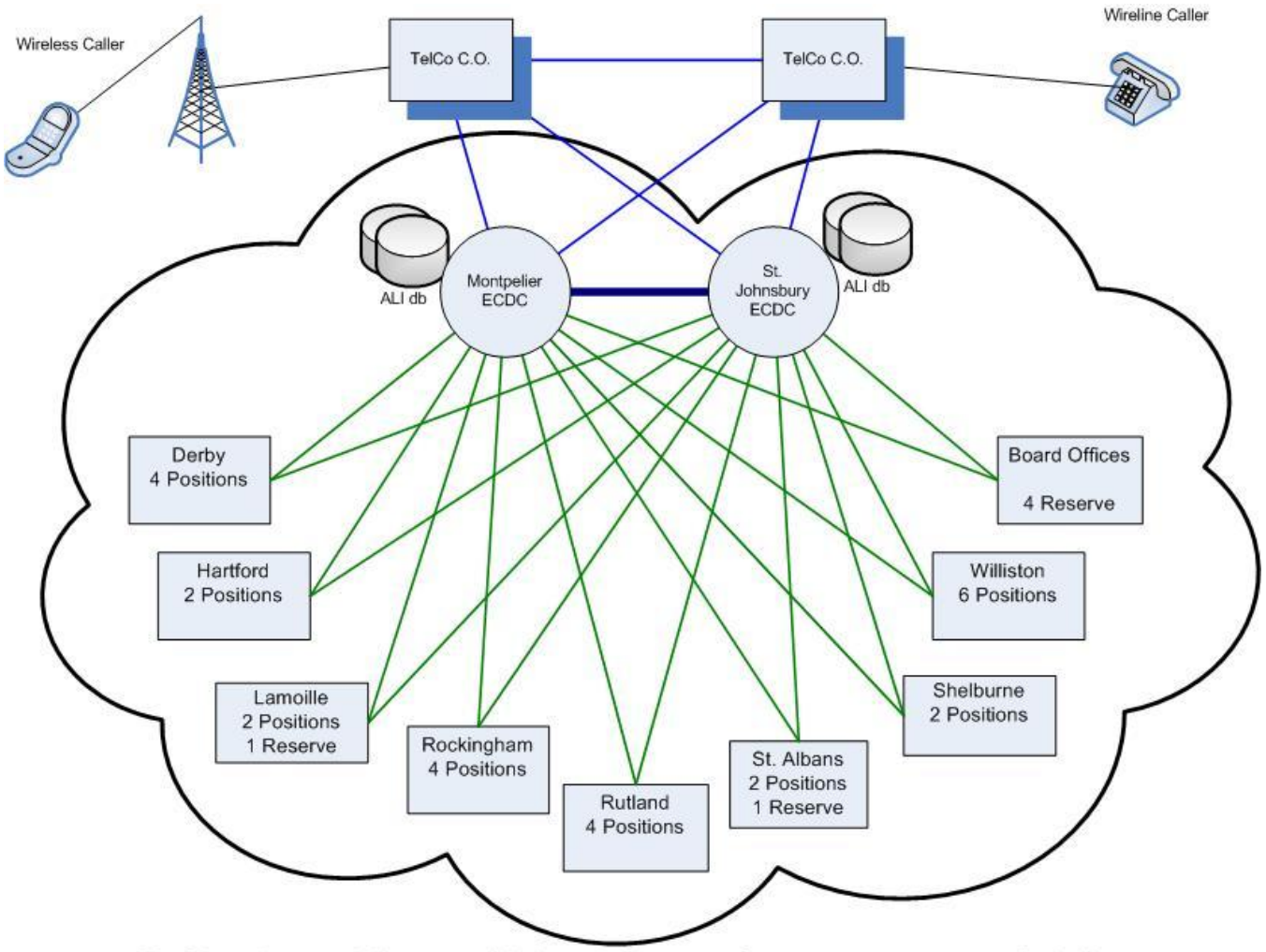
The network can use diverse facilities for data communication. This may include landline, dark fiber, State-owned microwave, cable, satellite or wireless. The failure of any single entity will not result in the failure of the 9-1-1 system. All aspects of the system are designed so that there is no downtime for scheduled maintenance.

Security is built into every layer of the network. Network access control restricts use of the 9-1-1 network to authorized devices. Authentication and access controls are centralized in some form of AAA (Authentication, Authorization, Accounting) server. The network access controls are able to control access based on conditions such as current anti-virus signatures. All data is encrypted while in transit and in storage. A firewall allows for highly controlled VPN access into the system from the internet. In the future it may allow VoIP 9-1-1 calls into the system, bypassing the traditional PSTN. It could also be configured to allow outbound access to a limited number of internet sites, such as a poison control center.

We were able to reduce our PSAPs in 2008 very quickly from ten to eight, with the number of fully staffed call-taker positions reduced from 2007 by 8 to 26. We continue to have 34 total positions, with four held at PSAPs as reserve, and four held at the Board's offices for training purposes and tactical emergencies. The total number of

34 is per national standards of call-takers per capita, with additional positions factored in to account for population fluctuations. Again, in reducing to 26 active positions from 34, our system did not lose eight positions. As mentioned, they were redeployed to the Board's offices and as reserve components at PSAPs to provide both a realistic training environment, as well as the capability of adding call-takers during extreme emergencies.

The new system design is depicted below. It is important to note that everything within the IP "Cloud" belongs to the State of VT. The State controls the selective routing of its 9-1-1 calls and can adjust call flow to any of its PSAPs at will.



IP Cloud providing multiple pathways for emergency call delivery

Flexibility in call routing with an IP-based system allows the Board to configure the network to permit each PSAP to work independently, be dedicated to a single area, or be part of a larger "virtual PSAP" where a single PSAP extends beyond the physical boundaries of a single building. A virtual PSAP is therefore one which may not have to recognize physical boundaries, as the need may dictate. There could be one or many virtual PSAPs. Virtual PSAPs could co-exist with dedicated PSAPs, and would eliminate the need for the current scenario of having one default PSAP. Reconfiguration will be easily accomplished, for example, to dedicate additional call-takers to handle cellular calls during a snowstorm. Scenarios can be pre-configured to allow for easy implementation.

In any next generation 9-1-1 environment, PSAPs should never be consolidated in one or two locations. Katrina and 9-11 demonstrated the value in dispersing 9-1-1 call-taking functions. A major snowstorm on top of one consolidated PSAP could mean zero 9-1-1 capability, and the same scenario in a two-PSAP environment could mean half the capability at a time when the system is inundated with calls. The IP environment allows for cost-effective physical dispersal, which means disaster survivability, yet appears consolidated in function.

The Board has the option to bring maintenance of the ALI database in-house. To streamline the administration of the database and mapping, the ALI database is map-centered. Changes to the ALI database are reflected in the mapping and vice versa. A map-centered call-handling solution presents call-takers with much more information, in an easily-usable format. The system is able to easily incorporate new technologies as they become available

Our next generation system is built from the ground up with interoperability in mind. Strict adherence to national standards could allow the 9-1-1 system to participate in a larger system, if needed. For example, in the event of a Katrina-like event in the Northeast, the Vermont Enhanced 9-1-1 system could be able to interact and support emergency services in neighboring states. In addition, the system is capable of pushing vital information out to responder vehicles if they are properly equipped with mobile computers. Today, this is becoming increasingly common among local and state law enforcement, and other emergency responders in Vermont.

The system supports an emergency notification system (ENS); also sometimes referred to as "reverse 9-1-1". An area can be defined on a map and all phone numbers in the area can be exported to a list of a pre-recorded message sent to them via a phone call. The ENS system should be able to differentiate between fax, data and voice lines, dropping the data lines and delivering the message as a fax for fax lines. Call-prompting and automatic response capability will be supported. The ENS feature is available but only used by agreement with the E9-1-1 Board in order to protect the privacy of telecommunications subscribers, per our enabling legislation. The Board currently has a Memorandum of Understanding executed with Vermont Emergency Management for the use of ENS, as well as the capability to execute the ENS feature at the Board's offices and, soon, any of its PSAPs.

Efficiencies

The Board has maintained a generally level funded budget for many years. We do not impact the General Fund, as all our operating cost, including salaries, comes from the USF. We believe we run the Vermont E9-1-1 system in the most cost-effective manner by using third-party agreements to obtain the services we need at a fraction of the cost we would normally bear if our staff included personnel, space, and equipment for each and every vital function of the system.

By using a system contractor, we have been able to accommodate a complex, statewide system without commensurately growing our level of staffing. Notwithstanding this, we continue reviewing system components to determine whether it would ever be economically feasible to bring certain functions in-house, such as database management. We are also currently reconfiguring our trunk and circuit architecture, as well as our PSAP footprint, in order to achieve greater efficiencies. We seek to more equitably distribute call load among fewer PSAPs over fewer trunk lines, thereby maximizing the benefit of our improved technology and lessening the call-taking burden on specific PSAPs.

As previously noted, the Board currently subsidizes the call-taking operations at some of its PSAPs. These subsidized PSAPs bear the burden of the majority of 9-1-1 calls. The Board wants to balance the call "catchment" areas of all the PSAPs comprising the system, requiring the unsubsidized PSAPs to bear more of the call load than they traditionally have. This increased local responsibility requires Board subsidy. We can make this happen, thereby achieving a truly statewide E9-1-1 system with participation commensurate with the number of call-taker seats at a given PSAP. The agreements we have in place with our PSAPs for 9-1-1 call-taking represent the best value for obtaining necessary coverage, without actually hiring personnel ourselves. All 9-1-1

call-taking personnel are also trained dispatchers at the agencies hosting our PSAPs. Although dispatch represents the bulk of their daily workload, they are ready to respond immediately when the 9-1-1 line rings.

Proper sizing of the system is like obtaining sufficient insurance, and the E9-1-1 system is effectively the only universal health, life and property insurance we have. System capacity is a function of population, fluctuations thereof, risk, and technical capability. Vermont has 26 active call-taker positions serving the needs of 620,000 Vermonters, and multiple millions of visitors each year traversing its roads and interstates, and crossing its international boundary. We are appropriately sized for a state with our population and tourist impact, and we can maintain readiness while realizing cost savings by reconfiguring PSAPs and call flow.

APPENDIX A

Enhanced 9-1-1 Program Overview

Every aspect of Vermont's Enhanced 9-1-1 service is governed by a comprehensive set of standards and best practices. System design and performance standards are based on nationally accepted standards and best practices for E9-1-1 systems, including those established by the FCC's Network Reliability Council, SIA, ASTM and ANSI standards.

The Board is the sole governmental authority responsible for statewide Enhanced 9-1-1. This responsibility includes ensuring compliance with Enhanced 9-1-1 laws, regulations, standards, policies and procedures. The goal is to ensure that people who call 9-1-1 receive the same level of service no matter which PSAP answers their call, and no matter whether they receive service from a LEC, CLEC, privately owned multi-line telephone service, wireless carrier, or Voice over Internet Protocol (VoIP) provider. Thus, the Board's oversight includes every aspect of Enhanced 9-1-1 service and involves numerous stakeholders.

System Configuration

The major components of the statewide system design are redundant, fault tolerant and geographically diverse. The telephone network in and out of the state-operated PSAP in Williston is further diversified to protect it from failure. An automatic sequence for default routing ensures that every 9-1-1 call is answered. The overall program is designed to ensure system reliability and service quality.

Disaster Recovery Contingency Plan

Vermont's Enhanced 9-1-1 system design includes a Disaster Recovery Contingency Plan. Elements of that Plan include:

- A pre-programmed, automatic sequence for alternate and default routing to ensure that every 9-1-1 call is answered;
- Assignment of federal Telecommunications Service Restoration Priority (TSP) identification numbers to each Enhanced 9-1-1 circuit to ensure priority restoration of service in the event of a service interruption;
- A statewide Wide Area Network (WAN) that links all PSAPs to a central hub where PSAP data are archived and where the PSAP portion of the E9-1-1 network is administered;
- Individual PSAP Disaster Recovery Contingency Plans, including back up communications.

Network Performance

System reliability and service quality require daily, active surveillance of network performance. The E9-1-1 system has the capability for real-time tracking of 9-1-1 call processing statewide. The Board, and its system provider, can generate custom reports to facilitate historical and statistical analysis of the system's operation.

Database Performance

System reliability and service quality require ongoing maintenance, auditing, and improvement to the system databases. There are five different databases in the Vermont Enhanced 9-1-1 system:

1. Master Street Address Guide database (MSAG)

2. Emergency Service Zone/Emergency Service Number database (ESZ/ESN)
3. Selective Routing database (SR)
4. Automatic Location Identification database (ALI)
5. Geographic Information System database (GIS)

Proper oversight of database quality includes:

- Coordination with one LEC;
- Coordination with seven incumbent LECs;
- Coordination with eight active CLECs;
- Coordination with six active wireless carriers;
- Coordination with six VoIP service providers;
- Coordination with 540+ large multi-line telephone system owners;
- Coordination with eight PSAPs;
- Coordination with over 400 emergency response agencies and their respective dispatching services;
- Coordination with 261 participating municipalities;
- Mapping new roads and structures;
- Routine auditing of system data to ensure data integrity and quality;
- An internal, automated system for auditing the processes that affect database quality.

Changes to the Existing System Configuration

System reliability is always considered in developing procedures for making any change to the system:

- The Board must review and approve any major changes to the system recommended by its staff.
- A detailed Method of Procedure (MOP) must be approved by the Board's system provider and the Board's staff before any change to the system, no matter how small, can be made.

9-1-1 Call-taker Training

System reliability and service quality include 9-1-1 training. The Board's comprehensive Enhanced 9-1-1 Training Program includes:

- Basic call-handling skills and pre-arrival instructions for Police, Fire and Medical Emergencies;
- Annual CPR Certification;
- Hazardous Materials Level I awareness;
- A continuing education requirement of sixteen hours each year;
- A Mentor Certification program for internal PSAP peer support (additional training and certification is required for Mentors);
- Annual 9-1-1 call-taker re-certification;
- Equipment operations, including the call-handling hardware and software, Mapped ALI and ancillary equipment such as printers and logging recorders;
- Specialized training for PSAP Administrators and Supervisors;
- Training Bulletins as needed.

PSAP Accountability

System reliability and service quality include oversight of PSAP operations and 9-1-1 call-taker performance. The program includes:

- A PSAP Operating Manual governing call-handling procedures;
- Periodic review of the PSAP Operating Procedures Manual with input from PSAP personnel and Board members;
- Enforcement of relevant Enhanced 9-1-1 laws, the Technical and Operational Standards for Vermont Enhanced 9-1-1, the PSAP Operating Procedures Manual, and other rules, policies and procedures;
- Ongoing call reviews for each PSAP;
- Remedial training administered as needed;
- De-certification as needed;
- Operation of a Help Desk for reporting troubles with call-answering equipment;
- Ongoing training on equipment;
- Monitoring of PSAP performance (real time and historical).

Telecommunications Industry Accountability (LECs, CLECs, Wireless Carriers and VoIP Service Providers)

System reliability and service quality require the Board to work closely with each telecommunications company operating in Vermont to ensure compliance with relevant Enhanced 9-1-1 statutes, regulations, policies and procedures. The program includes:

- Staying informed of PSB activities that authorize new telecommunications service providers;
- Intervening in PSB dockets to ensure that Enhanced 9-1-1 issues are addressed;
- Staying current with FCC Orders and regulatory activities that impact 9-1-1;
- Intervening in FCC dockets to ensure that Enhanced 9-1-1 issues are addressed;
- Establishing formal liaisons with each telecommunications carrier;
- Managing CLEC interconnections;
- Managing wireless carriers' Enhanced 9-1-1 implementations as mandated by the 1996 Federal Telecommunications Act and associated FCC Orders and Regulations;
- Managing ALI database development and maintenance;
- Managing Central Office upgrades and conversions;
- Auditing network and database performance against established benchmarks;
- Enforcing performance standards;
- Participating in the development of Enhanced 9-1-1 tariffs.

Privately Owned Telephone Systems (PBX, Centrex and other private multi-line telephone systems)

System reliability and service quality require the Board to ensure that approximately 540 private telephone system owners comply with relevant Enhanced 9-1-1 statutes, regulations, policies and procedures. This is necessary because these systems pose challenges for Enhanced 9-1-1. The law requires privately owned telephone systems to provide their users with the same level of Enhanced 9-1-1 service as regular telephone users have. The oversight program includes:

- Ongoing review of individual PBX switches and Centrex systems for compliance;
- Technical assistance, consultation and education;
- Coordination with telephone companies that provide PBX and Centrex systems to their customers.

Vermont's Emergency Response Agencies

System reliability and service quality require the Board to maintain close working relationships with over 400 law enforcement, fire and emergency medical response and dispatching agencies serving Vermont. This includes:

- Making reasonable efforts to meet their technological needs;
- Responding to their feedback regarding how PSAPs handle 9-1-1 calls;
- Maintaining the Emergency Service Zone and Emergency Service Number databases to reflect the constant changes in emergency service provider geographic jurisdictions, telephone numbers, dispatching arrangements, etc.;
- Educating them on the need to notify the Board of ESZ and ESN changes immediately.

ADA Compliance

System reliability and service quality extend to people who use TTY devices to get access to the service:

- The system's technical design is compliant with ADA requirements for the deaf;
- The system accommodates Hearing Carry Over (HCO) and Voice Carry Over (VCO) for people with those particular communication needs;
- Procedures for ongoing TTY practice with PSAP personnel have been implemented in conjunction with the deaf and hard of hearing communities. This helps 9-1-1 call-takers to maintain fluency in the written form of American Sign Language (ASL) and thereby provide the same level of service to deaf callers as to hearing callers.

Medical Quality of Care

System reliability and service quality include meeting the standard of pre-arrival care established by Vermont's emergency medical community. To meet this need, the Board utilizes the services of an emergency medical physician to advise on these standards.

- The physician serves as Medical Advisor to the Enhanced 9-1-1 Board on medical policy, medical call-handling procedures and pre-arrival instructions;
- The physician helps the Board ensure proper 9-1-1 call-taker performance on calls for emergency medical assistance;
- The physician is available to mentor and guide PSAP personnel on matters relating to calls for emergency medical assistance.

Conclusion

The Vermont Enhanced 9-1-1 Board's ongoing program includes oversight of every aspect of Enhanced 9-1-1 service and involves numerous stakeholders. The Board is responsible for ensuring compliance with Enhanced 9-1-1 laws, regulations, standards, policies and procedures. The Board is responsible for ensuring that people who call 9-1-1 receive the same level of service no matter which PSAP answers their call, and whether they receive service from a LEC, CLEC, privately owned telephone service, wireless carrier or VoIP provider.

Oversight covers:

- The statewide Enhanced 9-1-1 network, including components located out-of-state;
- Five Enhanced 9-1-1 system databases;
- Eight PSAPs and affiliated personnel;
- Seven Local Exchange Carriers (LEC, wire line telephone companies);
- Approximately twenty-two Competitive Local Exchange Carriers (CLEC; six of them are active);
- Six wireless/cellular providers;
- Six VoIP providers;
- Over 540 large multi-line telephone systems (PBX and Centrex);

- Over 400 emergency response agencies and affiliated personnel (local police, sheriffs, Vermont State Police, fire and emergency medical departments);
- Administration of the Vermont Enhanced 9-1-1 Call-taker Training and Certification Program;
- Coordination with Vermont's deaf and hard of hearing communities;
- Administration of the Enhanced 9-1-1 Mentor Training and Certification Program;
- Conformance with Enhanced 9-1-1 law, regulations, policies and procedures;
- Administration of the Medical Quality Assurance Program;
- Administration of a comprehensive Public Education Program;
- 261 participating municipalities and their affiliated Enhanced 9-1-1 committees.

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APPENDIX B

9-1-1 System Statistics – 2008

This report breaks down the operational statistics, by PSAP*, for the period 1 January – 31 December 2008. For each PSAP this report shows the total calls for the PSAP and the percentage of the system total. It then displays the breakdown between wire line and wireless, and between residential, business, cellular, and abandoned. The average length of a 9-1-1 call and the average time to answer a call are displayed at the end of the row for each PSAP.

The stacked bar graph graphically portrays the call distribution between PSAPs and between wireless and wire line call types.

The pie chart shows the breakdown of calls by class of service for the entire period.

*Note: Montpelier & Springfield PSAPs were decommissioned in early 2008; therefore the numbers listed do not represent a full year of calls. Use of the Board Office for system testing in 2008 also affects these statistics.

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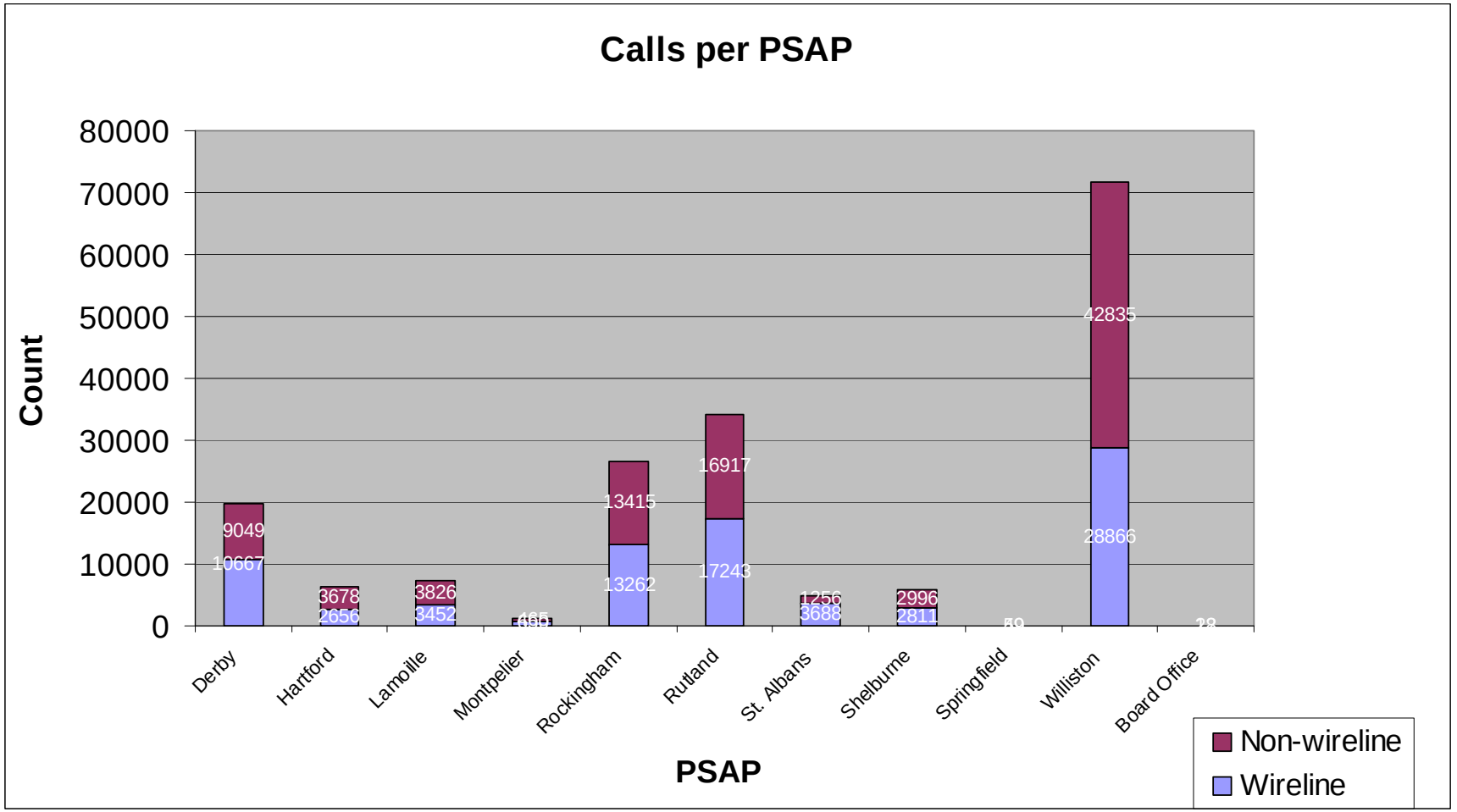
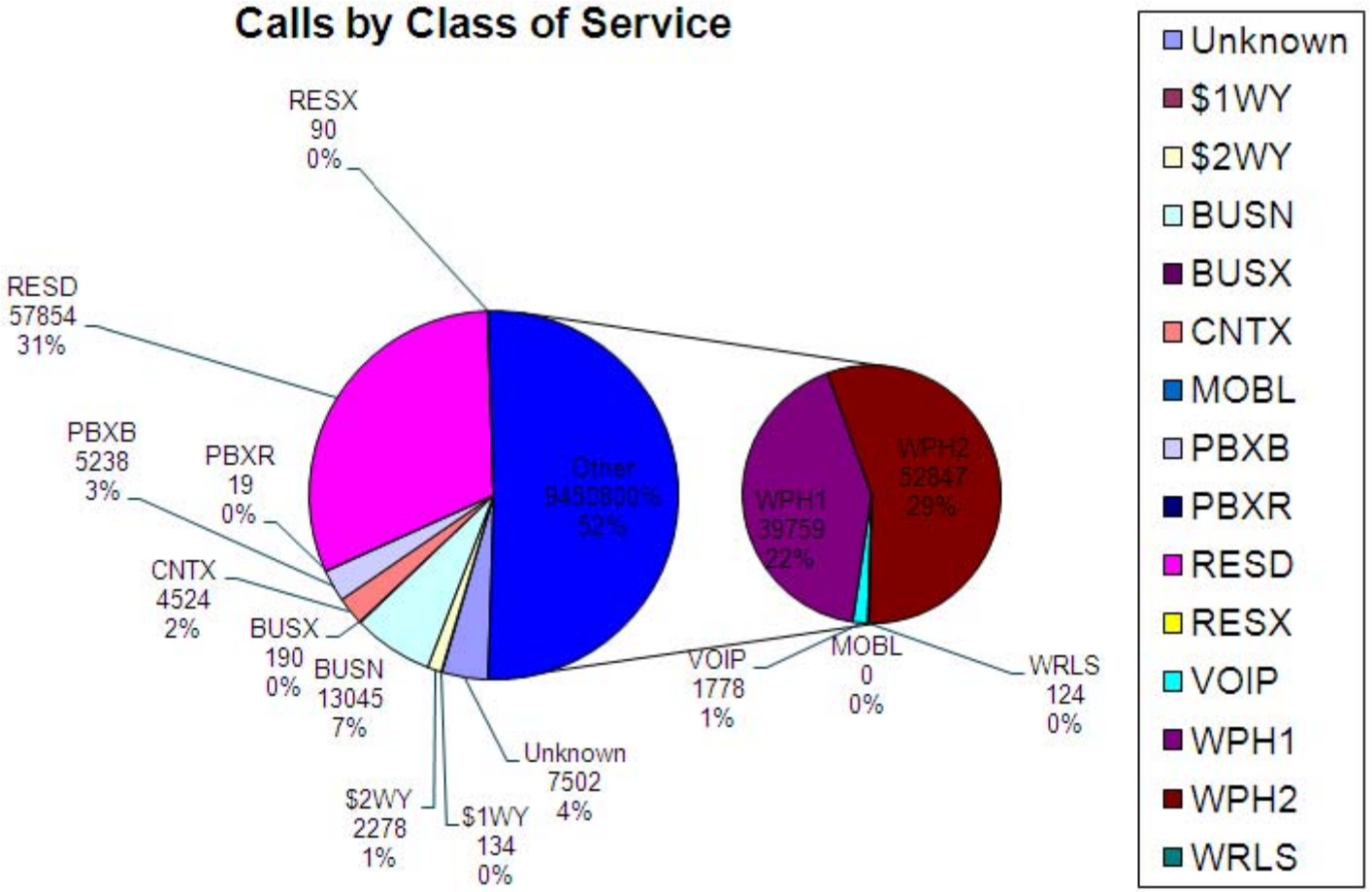
Vermont Enhanced 9-1-1 System Operations Report – 2008 Totals

Calls																
PSAP	Total		Wireline		Non-Wireline		Residential		Business		Cellular		Abandoned		Average times	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Duration	Answer
Derby	19867	10.72%	10667	53.7%	9049	45.5%	8048	40.5%	2619	13.2%	9049	45.5%	2626	13.2%	02:55.0	00:07.0
Hartford	6363	3.43%	2656	41.7%	3678	57.8%	1820	28.6%	836	13.1%	3678	57.8%	767	12.1%	01:57.0	00:09.0
Lamoille	7382	3.98%	3452	46.8%	3826	51.8%	2387	32.3%	1065	14.4%	3826	51.8%	1253	17.0%	02:02.0	00:08.0
Montpelier	1117	0.60%	650	58.2%	465	41.6%	424	38.0%	226	20.2%	465	41.6%	170	15.2%	01:54.0	00:09.0
Rockingham	26843	14.48%	13262	49.4%	13415	50.0%	9577	35.7%	3685	13.7%	13415	50.0%	3680	13.7%	02:25.0	00:08.0
Rutland	34344	18.53%	17243	50.2%	16917	49.3%	12298	35.8%	4945	14.4%	16917	49.3%	5220	15.2%	01:48.0	00:08.0
St. Albans	5003	2.70%	3688	73.7%	1256	25.1%	2643	52.8%	1045	20.9%	1256	25.1%	661	13.2%	02:59.0	00:09.0
Shelburne	5864	3.16%	2811	47.9%	2996	51.1%	1994	34.0%	817	13.9%	2996	51.1%	801	13.7%	02:41.0	00:08.0
Springfield	108	0.06%	59	54.6%	49	45.4%	43	39.8%	16	14.8%	49	45.4%	15	13.9%	02:26.0	00:08.0
Williston	78444	42.31%	28866	36.8%	42835	54.6%	18703	23.8%	10163	13.0%	42835	54.6%	10041	12.8%	02:29.0	00:05.0
Board Office	47	0.03%	18	38.3%	22	46.8%	7	14.9%	11	23.4%	22	46.8%	0	0.0%	02:12.0	00:07.0
System	**185382**	**100.00%**	**83372**	**45.0%**	**94508**	**51.0%**	**57944**	**31.3%**	**25428**	**13.7%**	**94508**	**51.0%**	**25234**	**13.6%**	**02:22.0**	**00:07.0**


Calls per PSAP
Count
80000
70000
60000
50000
40000
30000
20000
10000
0
9049
10667
3678
2656
3826
3452
13415
13262
16917
17243
1256
3688
2996
2811
42835
28866
Derby
Hartford
Lamoille
Montpelier
Rockingham
Rutland
St. Albans
Shelburne
Springfield
Williston
Board Office
PSAP
Non-wireline
Wireline


Calls by Class of Service
RESX
90
0%
RESD
57854
31%
PBXB
5238
3%
PBXR
19
0%
CNTX
4524
2%
BUSX
190
0%
BUSN
13045
7%
$2WY
2278
1%
$1WY
134
0%
Unknown
7502
4%
Other
9430800%
52%
WPH1
39759
22%
WPH2
52847
29%
VOIP
1778
1%
MOBL
0
0%
WRLS
124
0%
Unknown
$1WY
$2WY
BUSN
BUSX
CNTX
MOBL
PBXB
PBXR
RESD
RESX
VOIP
WPH1
WPH2
WRLS