



Vermont Language Assistance Services for Emergency Communications (LASEC) Working Group Emergency Communications Language Accessibility Report

Submitted To:

House Committee on Government Operations and Military Affairs

Senate Committee on Government Operations

Submitted By:

Vermont Language Assistance Services for Emergency Communications

(LASEC) Working Group

Published:

December 15, 2024



Contact Information

From:

Eric Forand, Director
Vermont Emergency Management
Eric.Forand@vermont.gov, 802-585-0633

To receive this information in an alternative format or for other accessibility requests, please contact:

Mark Bosma, Public Information Officer
Vermont Emergency Management
Mark.Bosma@vermont.gov, 802-839-6717

Table of Contents

Vermont Language Assistance Services for Emergency Communications (LASEC) Working Group - Emergency Communications Language Accessibility Report

Contact Information	2
Executive Summary	3
Report Section 1 - Emergency Communications Best Practices	8
Report Section 2 - Areas of Greatest Need	12
Report Section 3 - Technologies for Improving Emergency Communications	14
Conclusion	28

Executive Summary

ACT 143 passed during the 2023-24 legislative session with the following requirements.

§ 4. LANGUAGE ASSISTANCE SERVICES FOR STATE EMERGENCY COMMUNICATIONS

(a) If an all-hazards event occurs, the Vermont Emergency Management Division shall ensure that language assistance services are available for all State communications regarding the all-hazards event, including relevant press conferences and emergency alerts, as soon as practicable. Language assistance services shall be provided for:

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

(1) individuals who are Deaf, Hard of Hearing, and DeafBlind; and

(2) individuals with limited English proficiency.

(b) As used in this section, an “individual with limited English proficiency” means a person who does not speak English as the person’s primary language and who has a limited ability to read, write, speak, or understand English.

Sec. 23. LANGUAGE ASSISTANCE SERVICES FOR EMERGENCY

COMMUNICATIONS WORKING GROUP; REPORT

(a) Creation. There is created the Language Assistance Services for Emergency Communications Working Group, consisting of staff at the Vermont Emergency Management (VEM) Division and the Office of Racial Equity, who will collaborate with the Vermont Association of Broadcasters; the Vermont Deaf, Hard of Hearing, and DeafBlind Advisory Council; organizations that represent language service providers; and other relevant stakeholders.

(b) Duties. The Working Group shall:

(1) develop best practices for the provision of language assistance services in emergency communications during and after all-hazards events, as defined in 2 V.S.A. § 2;

(2) identify geographical areas within the State with the greatest needs for language assistance services during and after all-hazards events; and

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

(3) analyze and make recommendations on the appropriate uses of technologies for providing these services, including tools such as Communication Access Realtime Translation (CART) and Picture-in-Picture (PIP) techniques and automated language translation services or machine translation.

(c) Report. On or before December 15, 2024, the Working Group shall submit a written report to the House Committee on Government Operations and Military Affairs and the Senate Committee on Government Operations with its findings and any recommendations for legislative action.

(d) Prospective repeal. The Working Group shall cease to exist on June 30, 2025.

Timeline

The working group first met on July 2, 2024 to begin discussing drafting this report. The working group has met every other week since then to discuss how the objectives of Act 143 could be met by the December deadline. The report will be submitted on December 15th with suggestions to complete some tasks before the group ceases to exist on June 30, 2025.

Working Group

The working group consisted of representatives from the following organizations:

Vermont Emergency Management

Office of Racial Equity

Vermont Association of Broadcasters

Deaf, Hard-of-Hearing, and DeafBlind Services

Vermont Deaf, Hard of Hearing, and DeafBlind Advisory Council

Vermont Language Justice Project

Vermont Department of Health

Vermont Public

WCAX-TV

Report structure

The structure of this report will follow the outline created by Act 143. The working group has examined best practices concerning emergency communications, developed a plan to ascertain the specific language needs throughout the state, and made recommendations regarding technologies to enhance emergency communication efforts.

Section 1 - Emergency Communications Best Practices: The working group recommends that AI - large language models like Google Translate not be

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

used to translate emergency communications. The working group recommends the development of an Emergency Communications Operations Manual, which any organization could utilize during disaster scenarios. The working group recommends the hiring of language interpreters by the State to ensure their availability during and after emergencies and to ensure timely and accurate translation of emergency communications. The working group also recommends appropriations to produce preparedness and response videos in multiple languages. The working group advocates that VEM continues to work with vendors to include multiple languages in VT Alerts and increase the number of towns using the service and the number of Vermonters signed up to receive alerts.

Section 2 - Areas of Greatest Need: The working group proposes conducting regional focus groups statewide. These groups will engage with community leaders in all regions to engage with communities that are currently underserved by existing emergency communication systems.

Section 3 - Technologies for improving emergency communications. The working group has provided several options for the Committees to evaluate.

Recommendations

Section 1

Emergency Communications Best Practices.

The working group recommends that AI-large language models like Google Translate not be used to translate emergency communications. Language advocates and experts acknowledge that in their current form, translation technologies are inadequate to accurately translate English into other languages. Using these can potentially have negative effects by misinforming certain sectors of the public. A memo from the Office of Racial Equity (Racial Equity, Economic Justice, and the Use of Artificial Intelligence/Large Language Models for the Provision of Public Services - Oliver Plavin, State of Vermont Office of Racial Equity Intern Jay Greene, State of Vermont Office of Racial Equity Policy and Research Analyst, September 2024) clearly outlines deficiencies in using Large Language Model (LLM) translator-

"With many LLM systems being able to translate text across multiple languages almost instantaneously, developers market LLMs as the future of global communication. However, LLMs fall short of being sufficiently accurate and culturally sensitive to replace human translators. Current LLMs' translations are consistently less accurate than human translators. A 2024 comprehensive study by Yan et al. that directly compared the translation capabilities of ChatGPT with human translators revealed that human translators consistently produced translations of much higher accuracy than the LLM. The study found that nuanced understanding of context, culture, and specialized language domains are still beyond the capabilities of current

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

LLMs. While ChatGPT could produce literal translations, it often failed to convey the deeper meaning or tone that human translators naturally capture. The lack of nuance was especially true in fields like literature or marketing, where the emotional or cultural undertones of a message are critical (Yan et al., 2024). Human translators, on the other hand, are capable of understanding cultural nuance and communicating sensitive topics with compassion. Human translators are able to adapt their translations based on audience and cultural context, skills that LLMs are not designed to perform. Cultural competence is a skill that has been proven to be critical in the administration of public services (Wilson, 2015). When people feel that their language and culture are respected and understood, they are more likely to engage with public services and participate in civic processes (Hitlin & Shutava, 2022). Use of LLMs in place of human translators could therefore diminish the effectiveness of communications. Decision makers must keep these limitations in mind as Vermont considers using automated translation tools, including LLMs, to produce emergency translations.”

The working group recommends the development of an Emergency Communications Operations Manual which could be utilized by any organization during disaster scenarios. This manual would be drafted by the working group early next year and shared with state agency Public Information Officers by the termination of the working group in June 2025. It would include best practices for ensuring all communities receive relevant disaster information. This will include guidance on conducting press conferences, setting up a website specific to the event, sending messages

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

out to larger distribution networks, and contacts for interpretation and translation services.

The working group recommends codifying how existing communications channels can be linked together to ensure messaging is reaching all communities. Several state agencies have already built a list of community leaders that can be asked to share important disaster information. This working group recommends those agencies continue to foster relationships with these community leaders. Many state agencies and private/public advocacy groups have previous relationships with communities that are underserved due to language access issues. These agencies have built trust with community leaders and are looked upon to help in times of crisis. Vermont Emergency Management should identify these agencies, strengthen relationships, and then utilize the agencies and advocates during disasters to share disaster information with community leaders, who may then share the emergency information with those in their community. These partners and potential communication channels would be identified and codified through the proposed focus groups and included in the Emergency Communications Manual.

The working group recommends the hiring of language translators and ASL interpreters by the State to ensure their availability before, during, and after emergencies. As outlined in the Office of Racial Equity Language Access Report 2023 finding 6D -" all public service announcements and emergency communications should be translated into ASL". The state is currently reliant on contracted language translators and ASL interpretive services that could be unavailable during a disaster, or any other given time. Given the importance of communicating to all Vermonters, this required service should

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

be brought in-house to ensure the state determines the best use of interpreters, prioritizing times of emergency. These services would be available to state agencies during non-disasters for press conferences, public meetings, or other occasions in which translation is needed. It is proposed that these resources be housed under the Agency of Administration.

The working group recommends that resources be allocated to produce preparedness and response videos in multiple languages. Contractors like the Vermont Language Justice Project (VLJP) have the ability to prepare these videos given adequate notice. Videos about how to prepare for certain disasters could be produced in multiple languages and then disseminated throughout the community by way of state agency websites and social media channels and through the community leaders mentioned above. These videos fill a unique need as not all non-English speakers and signers can process written information in their own language. It is also recommended that emergency communications be produced in video format. As outlined in the Office of Racial Equity Language Access Report 2023 finding 4-E, “emergency communications and public service announcements should be produced in video format to improve access for people who are not literate in their native languages”. Producing videos that translate important emergency information into different languages will significantly increase the number of Vermonters who will be able to understand and act on it. The working group proposes that \$25,000 be allocated to VEM annually to support the creation of preparedness videos and the creation of a system to produce emergency communications videos during a disaster.

VT-Alert is a tool used by the state and local responders to notify the public of emergency situations. Those include, but are not limited to, evacuation

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

information; chemical spills; shelter-in-place alerts; severe weather advisories; boil water advisories, and roadway interruptions. Residents can tailor the alerts to specific locations, types of alerts and on which devices they will be notified. VT-Alert is a robust communication tool, however, the working group understands that it currently does not have the capacity to send messages in multiple languages (without using AI - models) but it advocates for VEM to continue to work with its vendor, Everbridge, to work on a solution. The group also encourages VEM to work to increase the number of municipalities with the ability to utilize Vermont Alert, via marketing and training support. The group also encourages VEM to increase the number of Vermonters who have signed up for and use the VT Alert system. The working group proposes that \$10,000 be allocated to VEM annually to support the increased capabilities of the VT-Alert system and the marketing of VT-Alert to municipalities and Vermonters.

Section 2

Areas of Greatest Need:

Currently the Office of Racial Equity and the Vermont language Justice Project estimate upwards of 20 languages are spoken in Vermont. Some of these include ASL, Arabic, Bosnian, Burmese, Dari, French, Haitian Creole,

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

Kirundi, Nepali, Maay Maay, Pashto, Simplified Chinese, Somali, Spanish, Swahili, Tigrinya, Ukrainian and Vietnamese. To address the need to identify geographical areas within the State with the greatest needs for language assistance services, the working group proposes that focus groups be held around the State to gather information on which languages are spoken in different areas of the state, and who the community leaders are in these non-English speaking communities. The focus groups will also be an opportunity to strengthen existing relationships between state agencies and community leaders. These focus groups will also explore the various communication tools that these communities use, including phone apps and social media. The working group is proposing focus groups, in the northwest, northeast, central, southeast and southwest areas of Vermont. The working groups would expect to hold these focus groups during the months of 2025 so all information obtained can be included in the emergency communications manual by June 2025. The working group proposes that \$5,000 be allocated to the Office of Racial Equity to facilitate this effort.

The following, as well as others local and state agencies would be involved in these focus groups – Office of Racial Equity, Agency of Education, U.S. Committee on Refugees and Immigrants (USCRI), Ethiopian Community Development Council (ECDC), Association of Africans Living in Vermont (AALV), Migrant Justice, Bridges to Health, Deaf Hard Hearing DeafBlind Advisory Council, Deaf Hard of Hearing DeafBlind Services.

Section 3

Technologies for improving emergency communications

Captioning Discussion

Captioning exists for three main purposes: to deliver information to people who are deaf or hard of hearing, provide information to assist people with processing disorders or learning disabilities, or to provide translation to people for whom English is not their primary language.

Captioning in English can largely be broken into two processes: "Communication Access Realtime Translation" (CART) and "Automatic Speech Recognition" (ASR). CART provides a word-for-word transcription of spoken language in real time and requires a live human captioner using a phonetic keyboard or stenography. ASR on the other hand is a speech-to-text process that is computerized, and versions of it can today be found everywhere from a virtual assistant on a cell phone to data automatically generated in a videoconference application or caption generation in certain online video players. In simple terms, the internet connected device sends the audio recording to remote servers which create the text captioning algorithmically.

For the purposes of this working group, it is also important to understand some of the basic expectations and rules followed by the local broadcasting community as they relate emergency information to the viewing audience, and how that may deviate from the expectations and rules of Act 143 with regard to the expectations of communication by VEM.

Summary of Broadcast Rules and Practical Applications Regarding Captioning

Captioning is regulated in the broadcast realm by the Federal Communications Commission. Any video content aired on a television feed that is available over the air or on pay TV systems must be captioned in English or Spanish, depending upon the prevailing language of the programming. There is no such requirement for streaming content, unless that content airs simultaneously or has previously aired on television. All captioning included with streamed video content which has not also been broadcast on television is entirely optional and there is no legal requirement

for captioning to be included in streamed content. In short, when broadcast on TV in Vermont, there is a legal requirement for English captioning; any content not broadcast on TV carries no legal expectation for captioning of any kind, regardless of the source.

Live programming, including news and emergency communications when broadcast on television, are required to be captioned as fully as possible. In the case of unplanned events, like a VEM press conference broadcast on television live as it occurs, until recently traditional CART captioning would be the only option to employ, with a live captioner transcribing the contents of emergency communications as they happen. For regularly scheduled live programming, like a nightly local newscast, the FCC captioning requirement has resulted in the development of what is now the most commonly used captioning process for local live television broadcasting, the “Enhanced Newsroom Technique” (ENT). In this process, the scripts written by newsroom staff and entered into the teleprompter to be read as part of a live newscast are simultaneously converted into the captioning feed as the newscast is produced. Certain portions of newscasts which have commonly been ad-libbed, like weather forecasts and sports reports, were therefore captioned with less accuracy. In most cases, those news personnel who ad-lib much of their on air content, especially since additional FCC rulemaking in 2014, have been required to script the information they plan to relate in their presentations as part of a live newscast so that the captioning would include the vital information for viewers.

Technical Application in Broadcast

Broadcast television captioning is part of one-to-many infrastructure which defines mass communications. The manner in which captioning is added to the video feed of a television station can vary based on the technology of the broadcaster’s physical plant, but the captioning data is typically inserted in the final step immediately before the programming is sent to the audience. While it is technically possible to create more than one captioning stream embedded within the current ATSC broadcast standard, the FCC only requires one captioning stream in one language, and in Vermont that language is English.

Additionally, there are a range of output options broadcasters cannot control based on the reception devices of the audience. The capacity to decode closed captioning in a TV signal varies based on the date of manufacture of the TV monitor, or the service providing the signal. For instance, cable and

satellite providers have their own technology inside of their tuning devices that decode the caption data, while streaming services use other bespoke software for the same purpose. Some TVs, based on their date of manufacture or brand, may only be able to decode the primary captioning data, regardless of what is encoded in the signal. There are many other examples of the reception device having a variation on captioning decoding, but the outcome of many difficult-to-control factors is the legal requirement for only the primary captioning data feed to be universally available in television programming, and therefore most broadcast providers are equipped only to pass one primary captioning stream.

English ASR in Broadcast Captioning

Since at least 2021, EEG, the most common vendor for television captioning devices, has offered an ASR-style live captioning option in the form of an AI-based speech-to-text system called Lexi, which has had tremendous success regarding the live captioning of English-language programming. Some local broadcasters in Vermont currently use the EEG Lexi system to caption live weather reports, sports content, and live press conferences, which has proven to be a significant improvement over prior speech-to-text solutions. The improvement of this specific ASR option from EEG, which is owned by a company called AI-Media, has resulted in a workflow in which the ENT captioning process now can alternate between the news scripts written by local broadcast staff and the EEG Lexi speech-to-text automation to create more robust captioning results in English.

Broadcast Captioning Summary

The broadcast television system in Vermont is equipped to caption virtually all content in English, as required by the FCC, but is not required or equipped for additional layers of captioning data, as would be necessary for non-English caption feeds to be included in a broadcast feed. Further, the myriad viewing devices, software protocols and systems used by audiences are more apt to create failures rather than success in any captioning beyond the primary caption data, which would be in English only. English language captioning for broadcast currently has the most reliable options for closed captioning in the history of the technology, integrating options for CART, ASR, and the unique-to-broadcast ENT for captioning. The nature of FCC regulation has created an English centered captioning workflow for Vermont broadcasters which requires that all emergency communication, whether live or previously recorded, be captioned if it airs on a broadcast television

station. This captioning standard is not required for any streaming content that did not air on broadcast television or cable/satellite, so any captioning provided in digital streaming content is entirely optional, regardless of its source, as long as it did not also air on a television station.

Captioning In Non-English Languages

For captioning services involving languages other than English, both primary types of captioning can be employed. In the case of CART, that means hiring a captioner with the requisite translation ability, and the costs associated with that effort, usually billed in an hourly rate for live captioning; in the case of ASR, there are automated services which may be employed, but many of the lower cost or “free” translation databases have been found to be unreliable for translating many common idiomatic expressions into other languages. Google Translate, while not specifically an ASR service, is a good example of a free technology which can grossly misunderstand the meaning of common phrases because the system often translates specific words literally but is less capable of translating the ideas behind many common phrases. Since 2023, there have been more services brought online using artificial intelligence or machine learning algorithms coupled with large language models, and those systems have shown marked improvements over the initial generation of speech-to-text ASR systems. English continues to be the primary language for those systems, but there are now many “AI” based software options that purport to offer improved translation ability to caption other languages. As noted, this working group’s assessment of AI-based ASR captioning in non-English languages is that current options in the marketplace are insufficient for the requirements of this effort, therefore CART translation is the preferred method.

Discussion: Inclusion of ASL Sign Interpreter in emergency communication

With regard to the inclusion of an easily observed and understood sign interpreter during emergency communications, which may take the form of press conferences or other communications from Vermont Emergency Management, the lowest-hanging fruit is simply to stage the physical presentation with a defined area for the ASL interpreter.

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

When local video media such as local television stations are involved in reporting such an event, since 2022 the accepted practice has been for camera shots in news coverage to be framed to include the sign interpreter, whether that video is being streamed over the internet or delivered via broadcast or cable television. For local media, sharing video in a live stream is often treated differently from live carriage on television due to the time constraints around the experiences and expectations of the audience. When streamed over the internet, the audience is understood to have actively sought out the information and therefore the practice by local media is to stream the event in its entirety. When aired on a television outlet, the audience is often much larger but also less affirmatively engaged with the content, so there is no guarantee of how much of the event will be included, which is an editorial decision by each outlet individually. So, while the practice by local media is to include ASL interpreters in emergency communication by actively framing them in the camera shot without the need for additional technical infrastructure, and while local media participants are already in broad terms providing this service when they elect to cover emergency events, there is no specific guarantee of the amount of the total communication is shared or the method in which each outlet may choose to share it.

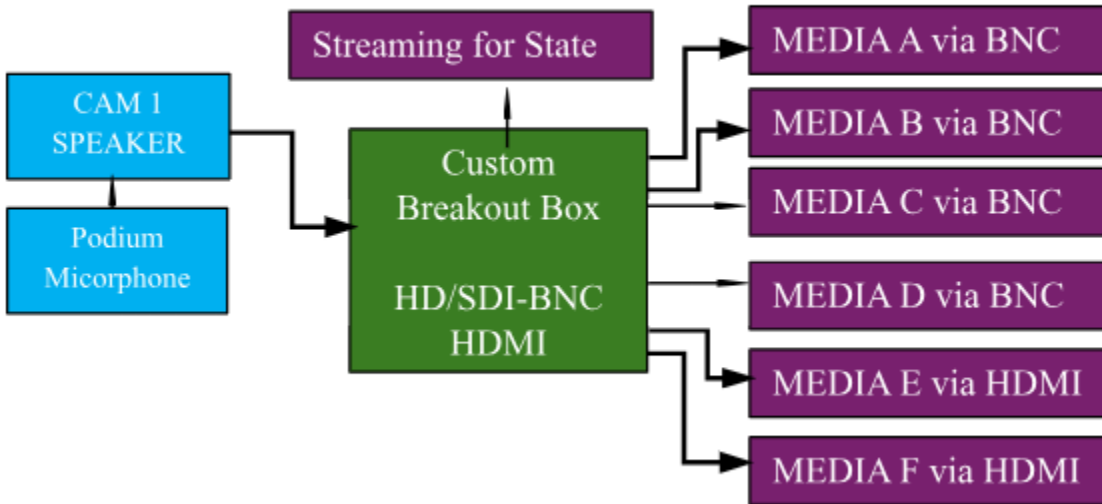
For the state to be able to guarantee that the entire communication is shared with an ASL interpreter included in the most simple fashion, the state would need to take certain steps:

1. Provide a camera and microphone owned and operated by the state to record and stream emergency communication.
 - a. This entails the purchase of a camera, tripod microphone, and the connecting cables for each.
2. The camera would need to be set up, operated and maintained by state personnel.
3. To stream the video online, the state would need to provide an interface capable of taking the live video and audio from the event and delivering to an internet platform capable of livestreaming, and that is embedded in a state-maintained webpage.
4. Potentially the state may need to offer the ability for local media to connect to this feed during the event as well.

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

- a. This entails providing the type and amount of connections, as well as at least two video standards, high definition 1080 interlaced scanning at 29.97 frames per second (1080i) or high definition 720 progressive scanning at 29.97 frames per second (720p).
 - i.WCAX, WPTZ and Vermont Public use 1080i as a video standard for high definition.
 - ii.WFFF and WVNY use 720p as a video standard for high definition.
 - iii.All network affiliated stations use identical BNC connectors on video cables in the HDSDI video standard, regardless of scan type, but it is important that the correct video standard go to the correct media outlet.
 - iv.Other media outlets may use different standards for video but if their video format is ever distributed on a cable system, they will also likely use either 1080i or 720p.
 - v.HDMI video connectors are a less robust but useful option for network affiliate and unaffiliated media alike to connect to video feeds, but is not preferred by most local newsrooms.
 - vi.Streaming directly to the internet does not require a specific video standard.

A possible simple workflow for this option might appear like this:



“Picture-In-Picture” Function

Picture-In-Picture

A more sophisticated option is a “Picture-in-picture” (PIP) function. The following discussion breaks out technical and operational concerns that could be involved in such an effort. PIP is deceptively simple; we are used to this feature thanks to the function on some TVs and in recent years interfaces in videoconferencing platforms. Importantly these experiences rely on a layer of technology and infrastructure that is largely invisible to the user, and in the simplest terms would need to be assembled for state emergency messaging events on an ad hoc basis so that it might be portable to the emergency management locations, which may not always be the same physical site.

Standing up a PIP-enhanced video production requires:

- Two or more video sources
- A switcher or other integration process that can create one output with two or more image sources

- An output format that can be used agnostically across multiple platforms
 - broadcast video standards
 - streaming standards
 - local or remote recording standards
- Technical personnel to focus on the device setup and output in advance of an emergency messaging event

Workflow Philosophies

Generally the local media participants in emergency management press conferences have adopted a process which includes framing the presenter along with the ASL interpreter at events in a single camera frame, but there is no guarantee that some or all of that event will be broadcast or republished online after the fact other than excerpted as a portion of news coverage. To offer alternatives, there are three basic paths to creating a picture-in-picture workflow to include live ASL interpreters during a messaging event:

1. Decentralized: all participants sharing video (TV stations, public access as examples) must create individually their own solution for including the ASL interpreter, which could mean many additional cameras (one would expect two cameras per participant for PIP), and potentially additional switching or data feed devices on site per participant. The participants then would be expected to provide their own infrastructure to produce the content live.
2. Pool: one participant, for instance a TV station, would provide the infrastructure to produce a live feed with PIP and also provide a method to allow all other participants to connect to the video feed; this would likely be similar to the process used by local media currently when covering court cases.
3. Centralized: the state would bear the responsibility of providing acceptable infrastructure and output connections to produce the PIP production described above and enough physical connections for all

needs including live broadcast, live streaming, etc. Local Media and other participants in need of a connection would bring their own equipment for backhaul to their studios, websites, etc.

In any workflow, these basic needs would be addressed by a buildout:

1. Camera focused on the primary speaker/primary speaking position
2. Camera focused on the ASL interpreter
3. Integration device to create the PIP output, which could be a purpose-built “switcher” or a software/virtual interface, as long as it has the capacity to output video for local distribution as well as digital/virtual distribution.
4. Shared workflows, as in the “Pool” or “Centralized” items above also require physical connections to be available at the local site so that multiple participants can connect simultaneously. In the case of interfacing with local media, this would currently necessitate providing multiple HD/SDI connections using a BNC-type adapter, and possibly HDMI connectors for other participants, all carrying the same video output from the integration device/switcher.
5. Connections would need to support at least two video standards, high definition 1080 interlaced scanning at 29.97 frames per second (1080i) or high definition 720 progressive scanning at 29.97 frames per second (720p) to accommodate the needs of any local media connections to the feed.
6. At least one trained personnel who can assemble the equipment, set up and focus the cameras, connect all devices, ensure clean output at the common connection point, and importantly troubleshoot any technical issues on site.

Example equipment profile

In each of the workflow philosophies, there are a wide range of potential equipment solutions. In cases involving local media, as in the “Decentralized” and “Pool” options, local media already works with a number of conventional standards including the types of cables, connectors, return

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

path technologies, and camera gear that may be needed to create the PIP output, which is in many ways helpful because there is a basic set of expectations that all local media participants have already invested in by virtue of the nature of broadcast engineering. These expectations include greater durability than consumer equipment, interoperability between brands, and common image formats. In the case of the “Centralized” workflow, the state would by necessity have to provide access to the PIP output using those same expectations in order to interface with local media. Each workflow requires a similar equipment profile, all scenarios assume easy access to electrical power, and the expectation regarding what party is responsible for providing equipment changes:

“Decentralized”

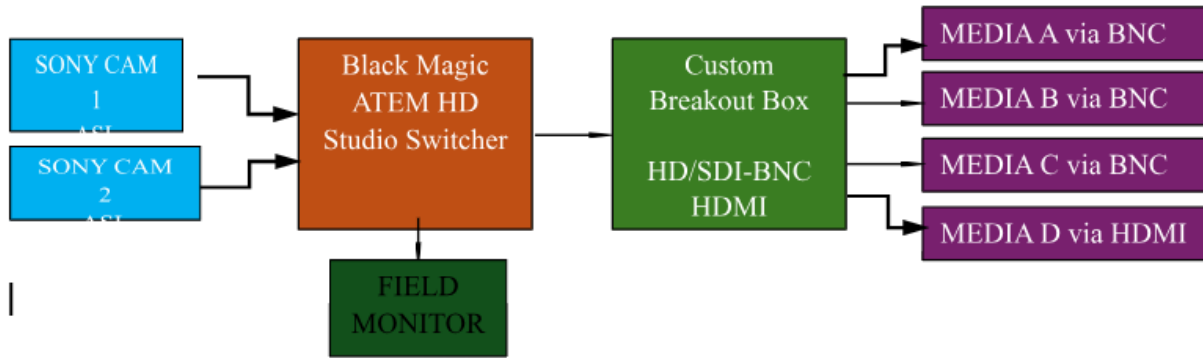
Because of the expectation in the Decentralized workflow that each participant provides their own solution, they would also be expected to craft the equipment profile individually. If all participants bring their equipment to create PIP on an individual basis, it will likely double the personnel on site and occupy more than double the floorspace per participant from the current conference experience.

EQUIPMENT	RESPONSIBLE PARTY
2 cameras/tripods	Individual participants
Switcher or integration software	Individual participants
Streaming device	Individual participants
On-site personnel	Individual participants

Vermont Language Assistance Services for Emergency Communications (LASEC)
 Working Group
 Emergency Communications Language Accessibility Report

“Pool”

In a Pool workflow, one local media group would provide the equipment profile and the only concerns would be the connectivity to the shared output. Local media already collaborate in a similar fashion around court coverage. In those instances around court coverage, local media only provide for other local media with known connection types, largely HD/SDI video signals over a BNC connection, but sometimes also HDMI. Using WCAX as an example, the basic schematic for a pool environment on site would look something like this:



EQUIPMENT	RESPONSIBLE PARTY
SONY PXW-Z90/Z280/X400 Camera/Tripod	WCAX
SONY PXW-Z90/Z280/X400 Camera/Tripod	WCAX
TVU One TM1000/Dejero EnGo Cell Multiplex	WCAX
BlackMagic ATEM HD Studio Switcher	WCAX
Marshall Electronics Field Monitor	WCAX
“Court Kit” Breakout box for BNC/HDMI	WCAX
Other Media streaming/feed devices	Respective parties

In this scenario, WCAX would provide all of the equipment and would utilize standard BNC cable to hardwire connections from the cameras to the switcher, switcher to the Breakout Box, and to the Cell Multiplex box that

allows us to feed video back to the main studio live. The onsite operator, usually one of our newsroom photographers, would bring in the equipment, set it up and then configure the switcher for picture in picture. With no issues, this rigging would take 20-30 minutes to complete because the equipment operation is known to the operator. This environment assumes only one camera would have a photographer, and the ASL camera would be on a fixed area, so ASL interpreters would have to stand in a specific position in order to be in frame.

“Centralized”

In this scenario, the state takes on the responsibility of providing cameras, cabling, switchers or other options to integrate images into a PIP, and would provide the breakout box for connectivity. While there are many consumer-grade cameras and switching options, a recommendation for the development and reliable, consistent operation of a toolkit for the state is to ensure robust durability, ease of setup and use, and as much as possible to default to the settings needed automatically, especially for the switcher. At least one state employee, but in a best-case several employees should be familiar with the components and their set up to ensure consistency.

Cameras can use HDMI or SDI/BNC cable outputs. SDI tends to be more expensive, but connections are more secure with the bayonet-style BNC connector allowing operators to lock the cables in at each connection. Special cables are needed for each, HDMI is a simple connection, but cable lengths tend to be short, while SDI allows for long cable runs, but requires the BNC connector on each end, making BNC cable more of a specialty item. Two cameras with SDI outputs and pro audio XLR inputs can be purchased as of this writing for \$2,798 each. Tripods for each camera can be had in a wide range of prices, but for cost versus durability, the Manfrotto MVH502 is a good fit at \$549.95 each. BNC cables will be needed to connect cameras to switcher, switcher to breakout box and possibly to an external monitor, 25' SDI BNC video cable is \$19.95 per cable, shorter 6' cables are available for \$11.95 per cable, so a series of two 25' and two 6', with two extras for each cable in the event of a cable failure is a good plan. Two cameras and two tripods, plus six 25' BNC and six 6' BNC cables total \$6,887.30 before tax and shipping.

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

Centralized workflow also introduces the fact that the state needs to also provide quality audio, so a microphone and XLR cabling into one of the cameras is the easiest solution. More than one microphone will require a more significant solution. A Shure PGA48 microphone offers XLR connection and a mic stand adapter for \$45, which can be paired with a small tabletop mic stand for \$20, and a 50' XLR cable for \$32, totaling \$97 before taxes and shipping.

The switcher can be a physical device or a computer-based piece of software. The Blackmagic ATEM line allows the user to do a bit of both, with the physical control device capable of operating on its own, but additional features and the ability to stream from the switcher can be added with a computer connection. A Blackmagic Design ATEM SDI Switcher is an incredible value at \$345. Paired with a dedicated laptop computer, for instance a Lenovo Thinkpad 14" X1 Carbon Notebook for \$1,299, this switcher can create video output and stream simultaneously. Add a small TV as a video monitor to be sure all is working correctly for \$150. Total \$1,794 before tax and shipping.

The breakout box point is vital, because this is where the signal is shared to other recipients. This will need to be created using distribution amplifiers or splitters to allow the PIP output with sound to be available a multiple connection points. There is a wide range for these types of products, and without knowing how many connections will be needed other than local media will need at minimum four SDI connections for the local TV stations, and likely HDMI for other media like public access, the number and range of splitters and converters could vary. It would be wise to budget at least \$2000 for these adapters.

Total equipment commitment for this project would be \$10,778.30 before taxes and shipping.

The real need is for there to be an owner of this equipment who master it and be able to set it up, operate it, and importantly to fix it if something fails. This may mean tasking existing staff, but given the nature of VEM staff responsibilities during an emergency, the recommendation is to have a dedicated staff member whose role can include responsibility for this equipment in the event of an emergency.

Workflow Concerns

Decentralized

- Too much equipment on site for press conference
- Too many people in the press conference space
- Participant concerns would include allocation of personnel and equipment resources
- Access to electrical power – much of the necessary equipment does not run on batteries
- Increased time commitment by participants and host location, state (earlier arrival to set up, state personnel needing to be engaged earlier and for longer periods to manage participants).

Pool

- Equal access by all participants
- Too much responsibility placed on one private entity
- All sources appearing the same in their individual productions

Centralized

- Who will be tasked with owning the project, and operating/maintaining the equipment within the state
- Equal access by all participants
- Too much responsibility placed on state departments already in a time-sensitive environment
- All sources appearing the same in their individual productions
- Concern over state-run media versus free press/access to government

Vermont Language Assistance Services for Emergency Communications (LASEC)
Working Group
Emergency Communications Language Accessibility Report

- What happens if a technical failure cannot be overcome by state staff
- Cost of acquisition
- Cost of operation/maintenance/staff time
- Cost of replacement

Conclusion

There are currently segments of Vermont communities that are not getting emergency communications before, during and after incidents due to language accessibility issues. Act 143 required this working group to propose solutions to this issue and those possible solutions are outlined above. With the support of legislators this working group would like to begin implementation of some of these solutions immediately to ensure emergency messaging is getting to as much of the population as possible.