Thank you, Chairman Solomon and Chairman Gillen. Good morning distinguished committee members and guests. Thank you all for allowing Motorola Solutions Inc. (Motorola) the time to testify before you today. My name is Andre Williams, I am the Sr. Director of Product for Emergency Call Handling at Motorola. Here with me today is Jason Ramsay, a Pennsylvania resident and Software Area Sales Manager for Motorola.

Motorola Solutions and its partners have been supporting 9-1-1 public safety customers in the Commonwealth for over 32 years. There are 61 PSAPs in the Commonwealth today, and Motorola call handling solutions currently support 56 of those PSAPs. We are the industry leader in 9-1-1 and public safety. We have developed a strong and collaborative working partnership with Pennsylvania Emergency Management Agency (PEMA), Comtech, and the Counties during the migration and transition from legacy 9-1-1 to the National Emergency Numbers Association's (NENA) i3 standard.

Pennsylvania Call Handling Systems
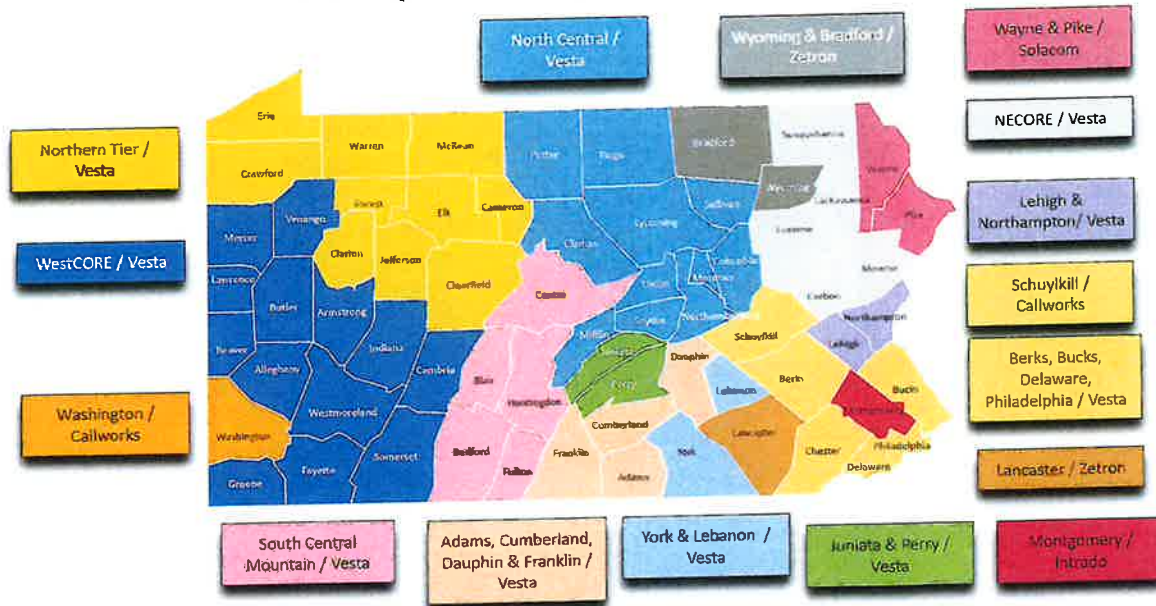
Motorola's call handling solutions (VESTA and CallWorks) were built with the foundation for Next Generation 9-1-1 (NG9-1-1) in mind. We have ensured a forward migration path to NG9-1-1 by providing a platform that utilizes a purpose built 9-1-1 phone system, designed with an open distributed IP architecture with inherent local and geo-redundant capabilities, and includes a native Emergency Services IP Network (ESInet) interface. All of which are required to be NENA i3 compliant with no single point of failure to ensure calls can be delivered and processed by the telecommunicators serving the 61 PSAPs in the Commonwealth. Motorola's call handling solutions support both legacy and NENA i3 call delivery options enabling a migration path as we continue to work with PEMA, Comtech, and the PSAPs during the Commonwealth's transition to the i3 location based call delivery system.
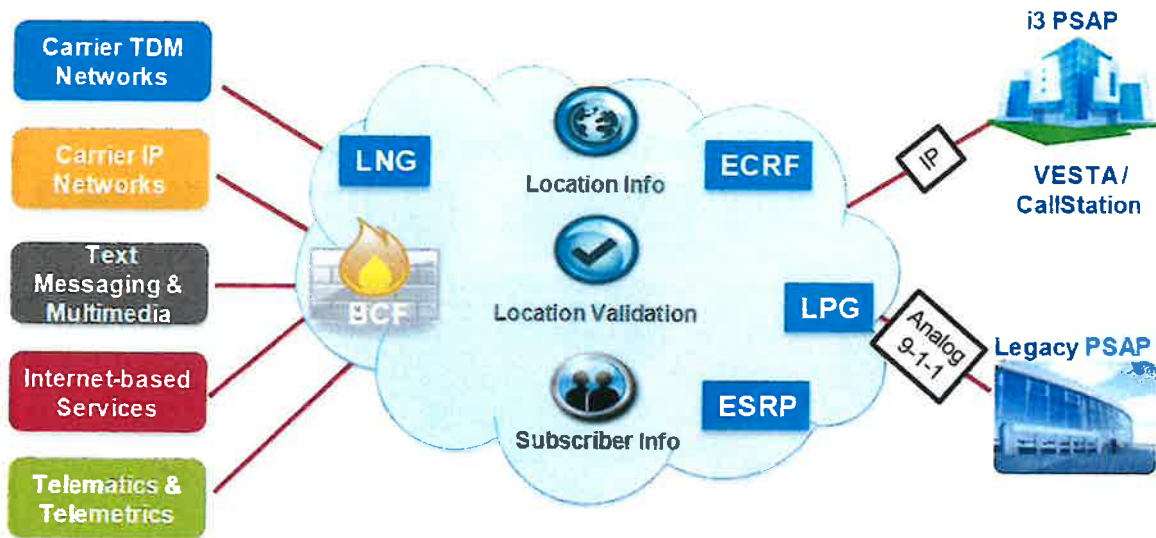
Motorola's Approach To A Successful Next Generation 9-1-1 Migration

Migrating to NG9-1-1 may require a large investment of each State's critical emergency infrastructure funds, and because of this an industry standards based approach is crucial in making sure that it is interoperable, secure, and reliable, which in turn protects the Commonwealth's investment. In most NG9-1-1 Response for Proposals (RFPs) 99.999% availability is typically called for as a requirement. To achieve this goal, Motorola structures its offers with an end-to-end design. The result is a comprehensive solution that includes software, hardware, cybersecurity, network, services, monitoring, maintenance, and local onsite dispatch services to ensure every component performs and is maintained in a cohesive fashion.

NENA i3 is the standard upon which NG9-1-1 is fundamentally based. Motorola participates in the continued development of the NENA i3 standard as an industry participant in many workgroups. How the standard is implemented within systems and/or components is dependent upon the particular operational and physical characteristics of a specific implementation. While standards are critically important for ensuring core interoperability between components and systems, standards must be flexible enough to accommodate unique implementation requirements. In a Public Safety environment, it is virtually impossible to define a standard in sufficient detail so as to document every possible implementation variation thereby eliminating the need for some degree of standards interpretation. All aspects of a standard are rarely applicable to every system, subsystem, component or element that has been implemented using the standard as a guide. Thus the need for interoperability testing.

Motorola Solutions performs interoperability testing with Comtech to validate interoperability based on specific deployment requirements. Because of the specific implementation nuances, interoperability testing in one state will not necessarily guarantee interoperability for another state that utilizes a different NGCS provider. Motorola Solutions interoperability testing process is based on industry best practice and involves lab to lab testing with any NGCS provider before deploying live at a customer site.

What is Interoperability Testing?

- The testing of the functional and operational interaction of two or more systems, subsystems, components or elements at the point/method of interconnection.
- This effort is usually performed between the respective NGCS and call handling provider lab environments.
- Life-Cycle Testing - interoperability re-testing performed at the point of significant new feature introduction. This on-going testing is performed throughout the life-cycle of the service.

NGCS Providers and NENA i3 Compliance

- NGCS providers determine what degree of NENA i3 standard alignment will be supported in their solution(s). The degree of alignment is then defined in their i3 Network to Network Interface (NNI), User Network Interface (UNI) and/or Application Programming Interface (API) documentation.
- The NNI is the interface between NGCS network and peer NGCS networks, Originating Service Providers (OSP), location services and/or Additional Data Repository (ADR) systems.
- The UNI is the interface requirement that defines the interactions between NGCS and call handling systems.

Motorola Solutions dedication to Public Safety customers dictates that we establish lab-to-lab connectivity relationships with all of the leading NGCS suppliers. The benefit to customers and the industry is that Motorola has integrated and tested a broad array of i3 interpretations that have helped established expertise. To date, Motorola has cut over more than 400 PSAPs into NGCS environments across North America, 41 of which are in the Commonwealth.

A significant part of Motorola's commitment to helping ensure successful migrations to NG9-1-1 in the Commonwealth of Pennsylvania is the establishment of a Comtech-Motorola lab-to-lab test environment. This environment has been critical in assuring interoperability between the Comtech routing solution and Motorola's call handling solutions. The Comtech Motorola lab-to-lab relationship along with the development of an Acceptance Test Plan (ATP) for cutting over PSAPs has led to very successful migrations in Pennsylvania over the past year. In fact, over 1,000,000 9-1-1 calls have been processed to date on the Commonwealth's new NGCS delivery network, and we are pleased to say that Motorola's call handling systems have processed the majority of those calls. This was all possible due to PEMA's leadership and engagement and the great partnerships created between PEMA, Comtech, the PSAPs, and Motorola. Additionally, this testing relationship will continue to play a critical role as the NENA i3 standard evolves and new capabilities are defined for NG9-1-1.

The Future of 9-1-1

Motorola continuously evolves our solutions through our investment of over $40 million dollars annually in research and development every year. The next evolution of call handling is the addition of cloud based solutions to assist with addressing key challenges facing Telecommunicators and 9-1-1 Administrators. Motorola is actively developing and deploying its cloud call handling solutions. Telecommunicators face additional challenges when it comes to interacting with technology to process the sheer amount of data they encounter every day. This is where NG9-1-1 and technology like Artificial Intelligence can help. At Motorola, we are very focused on experience outcomes enabling users to focus on changing priorities by automating repetitive tasks, surfacing relevant insights, reducing workload and increasing accuracy. Our process involves gaining a deep understanding of our customers' and users' needs and challenges, working with them to co-create & design ideal experiences to meet those needs and challenges, and measuring the outcome for continuous improvement.

While cloud call handling is an exciting evolution in the market it is critical to continue to invest in and improve on premise and regional hosted solution infrastructure. Motorola is deeply committed to maintaining and further innovating its current on premise and hosted platforms while at the same time aggressively developing and launching its cloud call handling solutions. Motorola has a NG9-1-1 call handling solution for each PSAP in the Commonwealth no matter where they are in their journey to NG9-1-1 adoption. Motorola's call handling solutions encompass;

- On premise and regional shared
- On premise and regional shared with cloud connectivity
- On premise / private cloud (can be located in state within the Commonwealth's data centers thus keeping call traffic in-state, this is being implemented by our large enterprise customers such as New York City)
- Full cloud using AWS cloud services NG9-1-1 call handling systems.
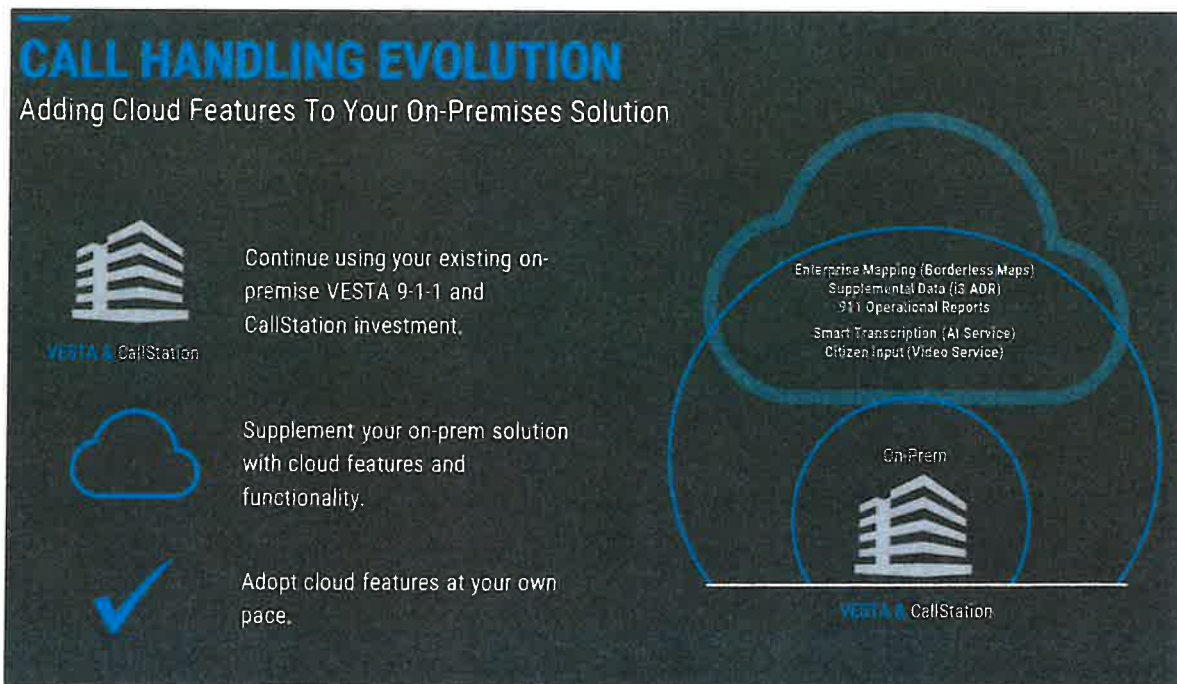
Motorola's Vesta 9-1-1 and Callworks call handling solutions are deployed throughout the nation. These products support additional NG9-1-1 features that allow for further efficiencies for telecommunicators to help them perform their daily duties better. We are working to achieve this with features like Automatic Abandon Callback, Smart Transcription and answering your inbound calls and having human-like conversations with customers, assisting telecommunicators with actual call processing functions.

There are several points within a typical public safety workflow where artificial intelligence can be applied responsibly to help agencies be more efficient, more effective, and safer. It helps find the needles in the digital haystacks and brings them to a telecommunicators attention, while managing the information that may be of lower priority. Smart Transcription is the first step in using Voice Analytics, where we use speech recognition engines modeled and enhanced specifically for 9-1-1. With Smart Transcription we are working on the next step to enable Appearance Search. Imagine taking the key works identified from the transcription log and automatically running a license plate lookup for an Amber Alert or Automatically pulling up all video cameras on our CommandCentral Aware Map based on the confirmed location of the emergency. Another feature is Motorola's Citizen Input which allows PSAPs to ingest Video and Images from citizens in a secure way to assist telecommunicators and first responders to better service the incident. All of our systems support the NENA text to 9-1-1 standards, to accept 9-1-1 text messaging into the PSAPs. With Motorola's Rave solution, PSAPs can send direct outbound text messages during the call flow. Rave also allows for emergency buttons and mass notification enabling different ways for citizens to interact with 9-1-1 and emergency management. Some Counties today within the Commonwealth and education institutions such as Pennsylvania State University currently utilize our Rave solution.

Motorola wants to make sure our products and services align with the Commonwealth's technical and legislative requirements as they evolve in order to make sure the PSAPs we serve have solutions that meet their needs and the needs of the Commonwealth. PEMA has carefully adhered to industry and statewide standards and legislation, while allowing the Counties to continue to choose the call handling supplier that best meets their needs during this transition to NGCS. Motorola is available to collaboratively support the Commonwealth and PEMA by participating on any technical advisory or other committees that may be developing statewide standards and requirements and to assist in the analysis of critical emergency call handling solutions in an end to end holistic manner. Having standards identified is the best way to ensure the taxpayers' investment throughout the Commonwealth are protected while providing the highest quality level of service and reliability for the citizens.

Motorola is the leading provider of public safety solutions and is the only manufacturer in the world that provides a full end to end suite from call delivery, through Next Gen Core Services (NGCS), Next Generation 9-1-1 (Next Gen 9-1-1) call handling, Computer Aided Dispatch (CAD), Project 25 (P25) Radio systems and video with analytics.
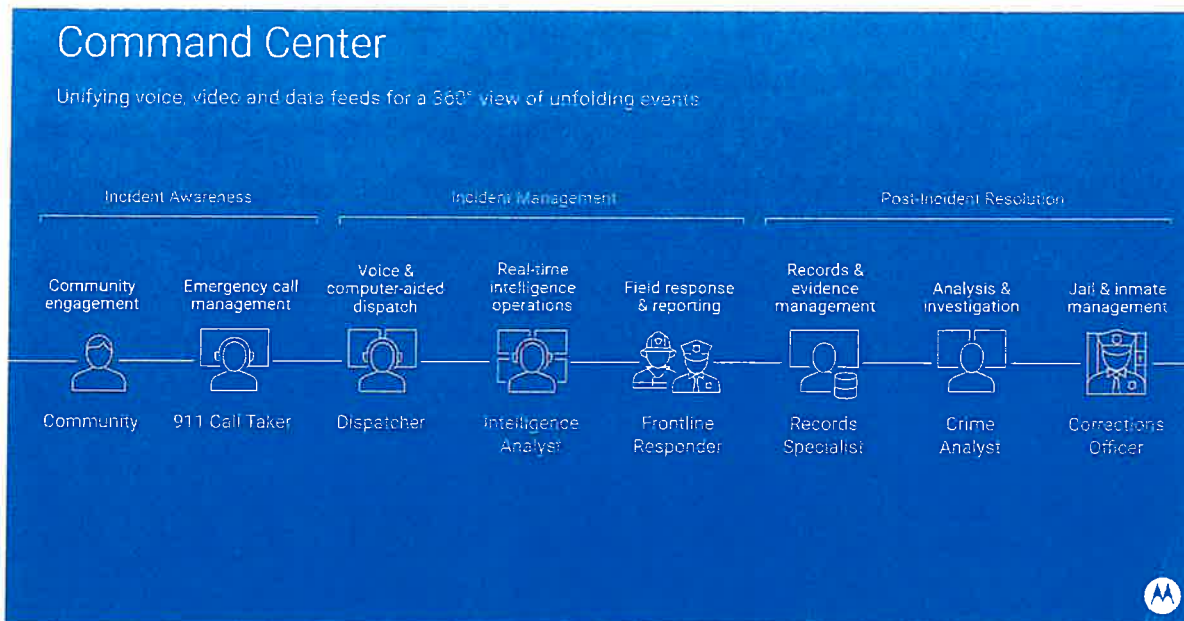
Motorola's vision of "Solving for Safer" is strongly illustrated here in the Commonwealth as we deliver a public safety solution to each of the 67 Counties in the Commonwealth through at least one or more Motorola's public safety products.

Significant costs are involved in the support of Motorola's comprehensive portfolio of public safety products and services. To that end, Motorola and its regional and locally owned Service Shops employ over 200 professional staff and technicians with 112 of those being directly employed by Motorola, who reside in the Commonwealth to support our public safety customers throughout Pennsylvania. This complement of staffing enables Motorola like no other company to provide the 24/7/365 services and support throughout the Commonwealth which the PSAPs and the agencies have come to rely upon to support their critical communications infrastructure.

My team and I, as well as Motorola Solutions at large, are very passionate about public safety, and making sure it's held to the highest standards to protect that very important call when a Citizen dials 9-1-1 here in the Commonwealth and across the nation. We here at Motorola Solutions are committed to continuing our partnerships with PEMA, Comtech, and the PSAPs, in order to ensure the Commonwealth's emergency call delivery system remains reliable, highly available, and a system that all Pennsylvanian's can depend upon. Thank you again for the opportunity to speak today.