Virginia Department of
Emergency Management

E-911 Border Response Workgroup

Session #5: March 24, 2021

Agenda

- Call meeting to order

- Welcome and opening remarks

- Workgroup report

- Wireless call routing and location accuracy

- Next steps

- Adjourn

Welcome and Opening Remarks

Virginia Department of
Emergency Management

Workgroup Report

Finding #1

Virginia residents need visibility into local operations and the statewide 9-1-1 ecosystem to understand current gaps in order to advocate for positive change.

Finding #2

Statewide 9-1-1 planning efforts must be holistic and include stakeholders and disciplines that are representational of the residents served to maximize problem solving, establish strong relationships, and build trust with all Virginia resident groups.

Finding #3

To improve upon 9-1-1 wireless location accuracy, the carrier community must be engaged in stakeholder discussions and involved in the remediation process to have confidence in the accuracy of data provided by carriers.

Finding #4

Telecommunicators must have culturally responsive scripts to build trust with 9-1-1 callers.

Finding #5

In order to provide effective 9-1-1 call handling, telecommunicators must possess personal and professional maturity to handle complex issues, understand applicable technologies, and have knowledge of the geographic area served by the local PSAP.

Finding #6

Telecommunicators need to be able to relate to diverse resident populations (e.g. – culture, language, sex, sexual orientation, generational).

Finding #7

PSAP managers must recruit a diverse work force that is representation of the communities served by their local PSAPs. A method to monitor and evaluate this diversity is critical, as well as a means to measure progress on closing identified gaps.

Finding #8

There is a widespread perception among Virginia residents that telecommunicators have all the knowledge, situational information, and resources needed to do their jobs effectively. Residents do not realize that for some telecommunicators there are training and resource gaps. Oversight agencies often expect telecommunicators to carry out non-9-1-1 operational related tasks.

Finding #9

All emergencies and responses to emergencies start with a 9-1-1 call. A successful emergency response outcome begins with the telecommunicator. Virginia PSAPs process most 9-1-1 calls effectively, but when the processing of a 9-1-1 call is compromised, there is the potential for significant negative outcomes.

Finding #10

Virginia PSAPs should be able to locate all 9-1-1 callers.

Finding #11

DCJS Basic Dispatcher training, by itself, is not sufficient. Virginia telecommunicators require training on additional topics, and levels of training, that supports public safety disciplines other than law enforcement. This training should include procedural safeguards.

Finding #12

Virginia state leadership needs to invest in the 9-1-1 industry to avoid having experienced telecommunicators leave PSAP employment. The focus of this investment must be on reclassification, recruitment, and retention.

Finding #13

A 9-1-1 caller is in crisis when seeking help and may not know where they are. To help the callers orient themselves, water signage and markers with QR codes may be helpful.

Finding #14

All 9-1-1 call systems and processes should be interoperable. For example, if PSAPs could see each other's CAD systems, telecommunicators and responding agencies could share situational awareness related to events at county and state borders.

Recommendation #1

- <u>Cross Border 9-1-1 Call Processing Best Practices</u>

- The NGS Bureau will produce a Cross Border 9-1-1 Call Processing Best Practice with the assistance of Bureau interns. The report will leverage information presented by 9-1-1 professionals in the National Capitol Region (NCR) and Southwest Virginia. The Workgroup will meet on August 24, 2021 to review and accept the best practice. Board members will review and vote on this document during their September 9, 2021 meeting.

Recommendation #2

- <u>Wireless Location Accuracy Improvement Project</u>

- The NGS Bureau will develop a project plan to improve wireless location accuracy in Virginia. This project will involve the carrier community and focus on improving the routing of 9-1-1 calls based on the increased accuracy of caller location data.   The Workgroup will meet on April 20, 2021 to review and accept the project plan. Board members will review and vote on this document during their May 13, 2021 meeting.

Recommendation #3

- <u>NG9-1-1 Telecommunicator Reclassification, Recruitment, and Retentions Initiative</u>

- The NGS Bureau will work with the Board's Regional Advisory Council (RAC) to address comprehensively the reclassification recruitment, and retention of the NG9-1-1 telecommunicator. The Workgroup will meet on June 15, 2021 to review and provide input on the project plan.

Recommendation #4

- NG9-1-1 Leadership Commission

- Establish by July 2022 a NG9-1-1 Leadership Commission to facilitate the transition to NG9-1-1 statewide and identify ways to increase the reliability and accuracy of emergency services to all Virginia residents by utilizing this new infrastructure.

Deployment Phases

- **Phase 0**

   Characterized by the wireless being delivered to the PSAP on a 10-digit telephone line. There is **no location information or callback number**.

- **Phase I**

   Delivers the call to the PSAP based on the cell site and sector receiving the call and **provides the address of the cell site and call back number for the caller**.

- **Phase II**

   Delivered to the PSAP using the same method as Phase I, but the **actual location of the caller is provided as a longitude and latitude**. However, the longitude and latitude may deviate from the caller's actual location by a margin of error.

February 2021 – Virginia 9-1-1 Calls: Class of Service Report

- 246,410 total statewide 9-1-1 calls
- 192,739 total statewide wireless calls (78.2% wireless)
  - Phase 0 - 99 (0.05%)
    - No location data or callback number
  - Phase I – 42,560 (22.1%)
    - Cell site and cell sector along with callback number for the caller
  - Phase II – 150,080 (78.2%)
    - Lat/long provided along with callback number for the caller. However, confidence in the lat/long values can vary. Data on confidence is available, but is very time intensive to analyze.

What the PSAP May See

- Just because it is Phase II doesn't mean it is accurate. Below is an example of an example wireless call that is Phase II (WPH2), but it has a very large confidence factor (COV) which is in meters.

- This call has a 95% confidence of being within 10,502 meters (6 miles) of the lat/long provided. Not helpful…

- COF can either be very low (5-10 meters) or very high (hundreds or thousands of meters).

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540-588-9005 07/13 14:03:17  142
CAUTION:  WIRELESS CALL
WIRELESS-VERIZON(XYP)          WPH2
     220         EAST MAIN STREET

SALEM                          VA
(540) 511-8611  NW SECTOR  DOWNT
OWN SALEM        CELL220 3
LAT:+037.293187  LON:-080.054926
ELV:      COF:  10502    COP:95.
MTN:540-511-8611        CPF:
                        ESN:00594
```

What Callers Expect in an Emergency

- Using the percentages from February, let's look at an example emergency with five (5) callers who call 9-1-1 about an emergency located in PSAP B.

- They are all located in PSAP B (and expect their calls to go to PSAP B), but their calls are made via three (3) different wireless providers.
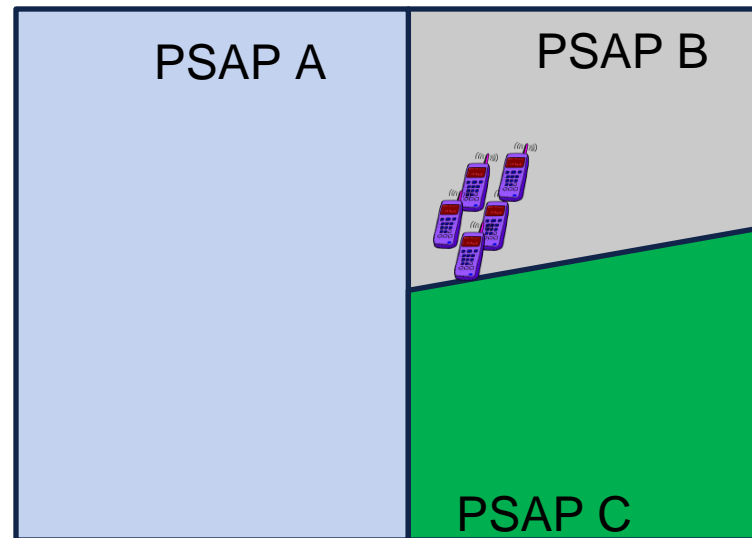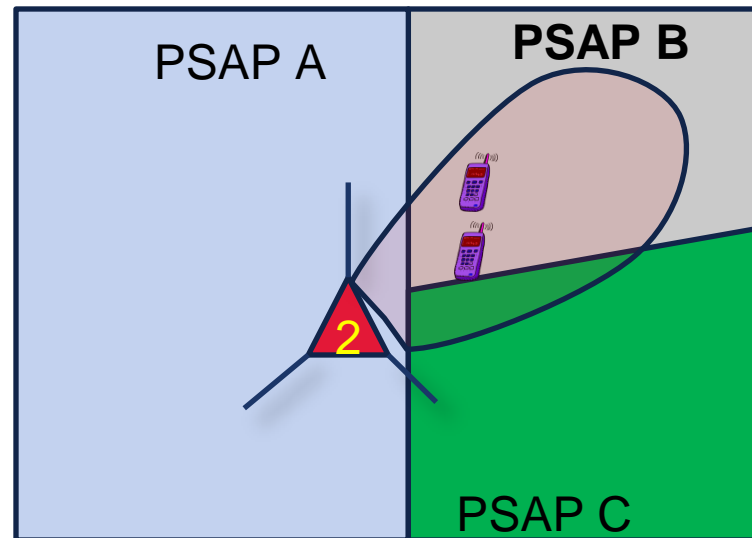
What Happens – Wireless Provider 1 Calls are Sent to PSAP A

- Two (2) of the callers have phones with Wireless Provider 1 that operate cell tower #1.

- The PSAPs and the provider determine that the SW sector for tower #1 covers a large part of PSAP A and small parts of PSAP B and C.
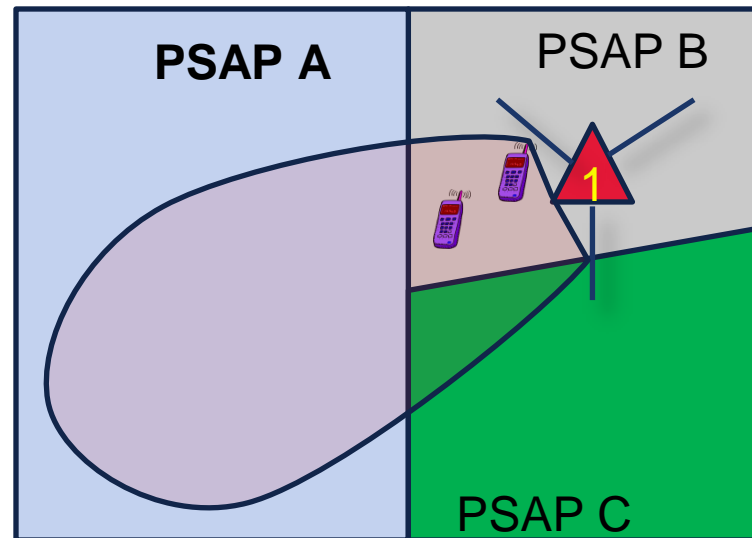
What Happens – Wireless Provider 2 Calls are Sent to PSAP B

- Two (2) of the callers have phones with Wireless Provider 2 that operate cell tower #2.

- The PSAPs and the provider have determined that the NE sector for tower #2 is primarily in PSAP B so ALL calls within that sector go to PSAP B.

PSAP A

PSAP B

2

PSAP C

What Happens – Wireless Provider 3 Calls are Sent to PSAP C

- The last caller has a phone with Wireless Provider 3 that operates cell tower #3.

- This cell tower is omnidirectional so all calls hitting this tower go to the same place (in this case PSAP C).
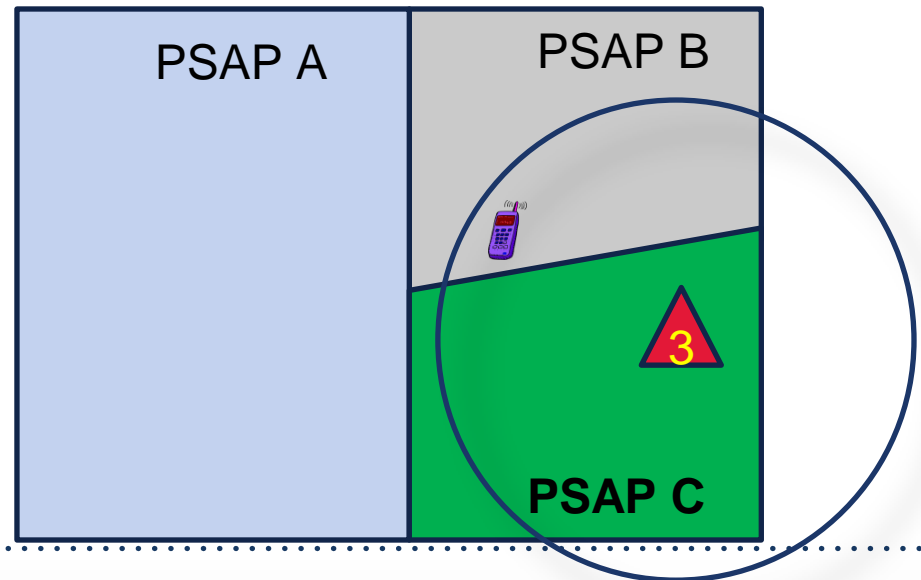
Impact to 9-1-1 Today
What do we see across Virginia?

- Telecommunicators often see **significant volumes of calls that are either Phase I or Phase II with low-confidence or questionable location data** (42,000 calls last month in Virginia were Phase I)

- In life/death situations, it is **essential for PSAPs to have access to available resources that can help to refine the caller's location**.

- **Seconds matter… Minutes are heart wrenching for all involved…** Providing PSAPs with timely and accurate information can eliminate seconds or minutes from the call flow resulting lives saved.

- **Virginia Successes:** As presented in previous calls, examples of mitigation measures include implementation of projects such as **GIS data sharing, CAD2CAD, RapidSOS**, etc).

What is Required for Improved Call Routing and Call Processing?

Accurate Caller Location (Wireless Carrier Responsibility)

The ACTUAL location of the caller is needed (with a high degree of confidence) and that location must be able to be communicated from the handset to the various servers and companies who are involved in providing that location to the PSAP.

Accurate and Complete PSAP Boundaries (PSAP / VDEM Responsibility)

When high confidence location data for the caller is available, accurate and complete PSAP boundaries can be used to assist the PSAP in more effectively processing the call.

Status of PSAP Boundaries in Virginia
Link to NG9-1-1 Dashboard

- Over the past year, each PSAP has met with each of their neighbors to develop a GIS layer depicting their agreed upon PSAP boundaries.

- Most of the boundaries are complete, and the final handful of boundaries are being finalized.
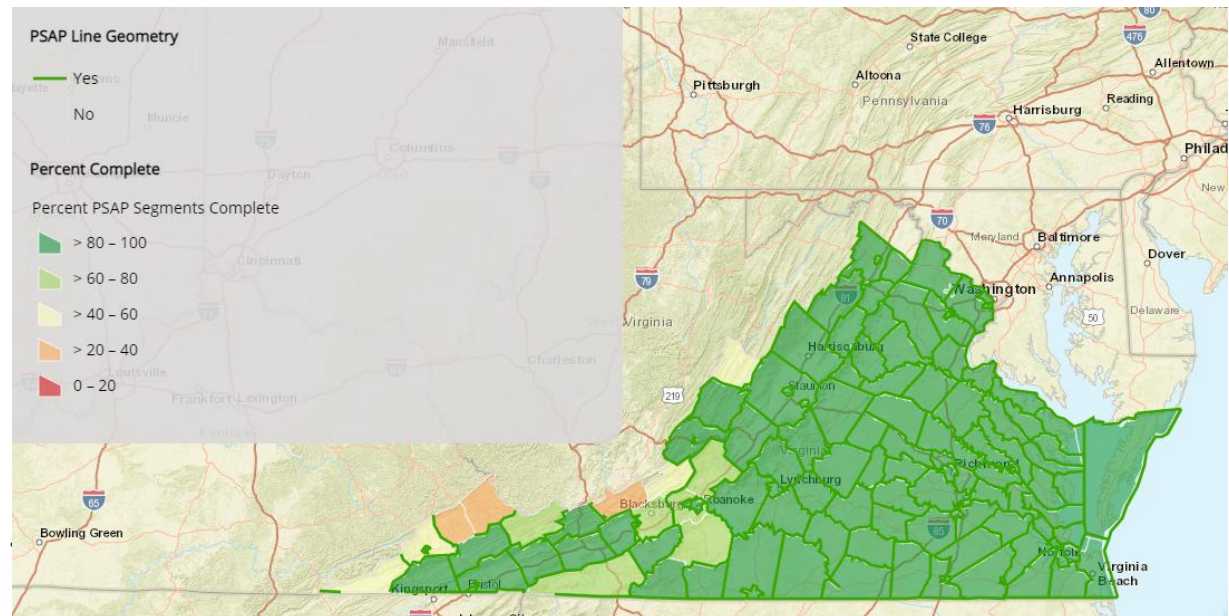
Emerging Solutions that can Greatly Assist with 9-1-1 Call Processing

Device Based Hybrid Location

Google has enabled features in 99% of Android devices and Apple has enabled features with IPhone 6+. When a caller calls 9-1-1, their phone:

Automatically turns on GPS, Bluetooth, and Wi-Fi and sends that location information to Google or Apple

Google and Apple then are able to push that data to third-party 9-1-1 integrators who develop tools and capabilities for use by the PSAPs

Next Generation 9-1-1

Moves 9-1-1 network to an IP-based system.

Enables GIS data to be used to route 9-1-1 calls (wireless, wireline, VOIP, text, etc) based on the geospatial routing.

Increases the amount of data available to PSAPs including Additional Data Repositories that provide additional data to the PSAPs about the caller, the location, or the incident.

Short and Mid-Term Opportunities Examples of Low Hanging Fruit

Rapid SOS

Provides PSAPs the ability to access the related device-based hybrid location and other additional data in the PSAP. Does NOT solve the routing problem, but **does provide the device based hybrid location to the PSAP**, so the PSAP can more easily visualize the location based on the information that the handset communicates to Apple or Google.

T-Mobile – Location Based Routing

Uses the device-based hybrid location and PSAP Boundaries to provide recommended routing of the 9-1-1 call, essentially bypassing the challenges faced with cell sectors / routing sheets. **T-Mobile is looking to implement this nationwide** and is designed to work with both legacy 9-1-1 providers and NG9-1-1 providers, and it was recently presented to DC area PSAPs. PSAPs and NGS staff are performing due-diligence to gather more information.

Additional Consumer and Industry Driven Innovation

Tools and resources that leverage **handset language, crash detection, fall detection, and sharing critical health data.** Innovative approaches will continue to increase with the deployment of 5G, additional sensors, and IP-connected devices.

In Conclusion

- Next steps

- Adjourn