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October 4, 2022

Re: P25 Migration and Radio Upgrades for Public Safety, Details about Public Works System Participation, and Other Important Communications from UCA

Dear UCA Stakeholders:

UCA has typically put forth a quarterly newsletter filled with valuable information about the current state of public safety communications. I hope it is okay, but I have commandeered the newsletter for the third quarter (a few days late) to bring you some really important information.

As most of you know, UCA has been engaged with its partner, L3Harris Technologies, Inc. (“L3H”) over the past several years to replace Utah’s public safety radio system. This has been a massive undertaking and has involved upgrading approximately 125 radio sites, including things like solar panels, batteries, towers, shelters, generators, HVAC units, etc. All of these sites have had grounding upgrades as well, and UCA has taken the opportunity to upgrade the system backhaul from the old T1 connectivity to ethernet backhaul. Thereafter, L3H has installed its new equipment on these sites, and we are quickly shifting to the testing phases of this upgrade project. UCA and L3H are discussing some of the final details, but we hope to be able to release a detailed migration plan in the very near future, however, at a high level, we are on track with our schedule to be able to conduct the migration from the old radio system to the new radio system in the fourth quarter of 2023 into the first quarter of 2024.

Migration is going to be a massive undertaking, to be sure. Over the course of a few months, all 30,000-50,000 radios on the system will need to be replaced and/or reprogrammed. I want to touch briefly on the replacement portion of migration for just a moment. Over the past year, UCA has been discussing with the Utah Legislature the need to replace a large number of radios in Utah, both amongst state agencies as well as local public safety radios. Most of the radios on the system are Motorola branded radios. The Astro series of radios (XTS and XTL) are beyond end of life and, unless they received a software upgrade, commonly referred to as being flash upgraded,<sup>1</sup> they will not work on the

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<sup>1</sup> If you are uncertain as to whether your radio has been flash upgraded to operate on a P25 system, UCA recommends contacting the manufacturer, Motorola Solutions, Inc.

new P25 system.<sup>2</sup> The APX series of radios are P25, Phase I compatible out of the box, and some of these radios have already been flash upgraded to be Phase II compliant.<sup>3</sup>

During the last legislative session, thanks in large part to the efforts of Senators Derrin Owens and Wayne Harper, as well as Utah's legislative leadership, UCA has been appropriated funds to help upgrade some of Utah's radios to take advantage of Phase II functionality on the P25 system.<sup>4</sup> There is a certain amount of funding designated for selected state agencies as well as a certain amount of funding designated for local police, fire, and EMS users. Through this letter, we will address both scenarios.

The new P25 radio system is an open architecture radio system meaning that more than one radio vendor's radios will work on the system for a baseline set of P25 features. However, certain proprietary features will or will not work based upon the matching of the system and the radio manufacturer. For example, much has been said about the ability of an end-user's radio to be able to utilize not only an LMR signal, but also Wi-Fi or LTE signals to have voice communications with other system radios. This, however, will only work if the end-user radios are L3Harris branded radios. Similarly, while many radios may provide GPS locations, only L3Harris branded radios have the option of providing this data "in-band" meaning it's mixed in with the voice traffic. This can be important because with a voice-primary system, like we have in Utah, there exists a possibility that a GPS location could be pre-empted by a voice call and go undelivered unless it is in-band.

And, of course, the cost of an upgrade such as this is always a factor. UCA has been very aware of this fact and has negotiated with L3Harris to provide a 65% discount off of their MSRP pricing. This presents an incredible opportunity for Utah to upgrade some of its old and unserviceable inventory with brand new, high-quality radios. Accordingly, the Utah Legislature has instructed UCA to purchase only L3Harris radios with the funds provided.

## STATE AGENCY FUNDING

UCA has been appropriated funding in the following amounts for the following agencies:

- Utah Department of Corrections - \$6,900,600
- Utah Department of Public Safety - \$3,197,600
- Utah Tax Commission - \$112,000
- Utah Department of Agriculture and Food - \$50,400

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<sup>2</sup> If they were appropriately flash upgraded, they will work on the P25 system, but they will only work in a Phase I capacity. Phase II is the desired technology on the new system because of its ability to only use ½ a talk path, significantly increasing system capacity and decreasing the likelihood of maximizing system capacity.

<sup>3</sup> To determine if your APX radio has been flash upgraded to Phase II functionality, we recommend contacting the radio manufacturer, Motorola Solutions, Inc.

<sup>4</sup> P25 stands for Project 25, a digital radio standard that allows for increased competition because of its open architecture. Phase II of the P25 standard refers to the utilization of TDMA to divide talk paths in half, thereby nearly doubling the system capacity when end-users are utilizing Phase II devices.

- Utah Office of the Attorney General - \$68,400
- Utah Board of Pardons and Parole - \$39,200
- Utah Department of Commerce - \$78,400
- Utah State Development Center - \$11,200
- Utah State Hospital - \$2,200

Inasmuch as UCA is looking to submit a detailed purchase of radios to L3Harris on or before December 31, 2022, agencies wishing to purchase radios utilizing these funds must provide UCA with the details of their requested purchases on or before October 31, 2022. In an effort to assist in this process, UCA is including with this communication an Excel workbook which provides information about a number of L3H radios and features, including pricing, and gives a worksheet tool to help agencies select their radios. This Excel workbook is not inclusive of all of the products offered by L3H, and users are encouraged to contact L3H if there are other features or functions they are seeking but not seeing in the workbook.<sup>5</sup> State Agencies need not utilize the pricing worksheet contained in this Workbook, but may do so if it is helpful. Once your respective agency has made this determination, please email the relevant information to [radio\\_replacement@uca911.org](mailto:radio_replacement@uca911.org). It is anticipated that delivery of these radios will be September 1, 2023, before system migration.

## LOCAL AGENCY FUNDING

*Who can take advantage of this upgrade program?*

The funding provided to UCA is to be used for city/county radios for law enforcement, fire, and government owned ambulances. The funding is not for federal agencies, private agencies, public works agencies, or other local government users. In addition, at the time of the delivery of the new radio, most agencies will have to “trade-in” to UCA a radio that has a valid ID on UCA’s radio system, associated with an eligible agency. UCA recognizes that such a trade-in is much simpler with a portable radio than a mobile radio. Accordingly, agencies will be given up to 21 calendar days to trade-in/return their legacy radios *after* such agency’s migration to the new system.

UCA also acknowledges that there are some public safety agencies around the state who have never used the statewide, public safety, radio system, who are now intending on joining the system. It is the legislative intent that funding for these agencies be available as well, even though they may not have a radio to “trade-in.” Instructions for these agencies, as well as for agencies looking to expand their radio fleet based on growth or other valid factors, are contained within the Excel Workbook accompanying these communications.

*What radios are being purchased?*

As noted above, based on features and pricing, the Utah Legislature has instructed UCA to purchase L3Harris model radios through a large, bulk purchase. It has been left to

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<sup>5</sup> UCA recommends agencies speak with Aaron Williams by emailing him at [aaron.williams@l3harris.com](mailto:aaron.williams@l3harris.com) or calling him at 434-258-8771 for sales and product related questions.

UCA’s discretion to determine the specific models and feature sets, though as discussed below, there is the opportunity for agencies to change models and/or upgrade features. In making a baseline radio selection, UCA has tried to balance price, features, and functionality, and has ultimately chosen a high-quality radio that has all of the necessary features, but still permits for the best usage of funding. The baseline radios selected are the L3Harris XL-185P and XL-185M radios, and specific details about these radios can be found by searching [www.l3harris.com](http://www.l3harris.com) for the XL-185 radios or by contacting Aaron Williams, Vice President of Global Sales for L3Harris Technologies, at [aaron.williams@l3harris.com](mailto:aaron.williams@l3harris.com) or by calling 434-258-8771.

The XL-185P is a high-quality, single band, portable radio which, as configured, will include: a single band antenna, LTE Capabilities, P25 trunking, P25 Phase 2/TDMA, in-band GPS, single key AES encryption, link layer authentication, VIDA ID, Wi-Fi, and Bluetooth connectivity, a 3100 mAh battery, and a charger for that battery. MSRP for this radio and configuration would be approximately \$6,055.00. With the negotiated discounts, the purchase price is \$2,119.25.

The XL-185M is a high-quality, single band, mobile radio which, as configured, will include: LTE Capabilities, P25 trunking, P25 Phase 2/TDMA, in-band GPS, single key AES encryption, link layer authentication, Wi-Fi and Bluetooth connectivity, VIDA ID, a microphone, antenna, antenna roof mount, speaker, cabling, control unit, and GPS roof mount. MSRP for this radio and configuration would be approximately \$10,690.00. With the negotiated discounts, the purchase price is \$3,741.33.

*How much money does the local agency have to contribute to the purchase?*

If an agency were to refrain from selecting a different model and/or upgrading their baseline radios in any way, the cost of a radio (XL-185P or XL-185M, as configured above) would be as follows.

| CLASS OF COUNTY | AGENCY REQUIRED PERCENTAGE CONTRIBUTION | BASELINE PORTABLE CONTRIBUTION REQUIRED OF AGENCIES/RADIO | BASELINE MOBILE CONTRIBUTION REQUIRED OF AGENCIES/RADIO |
|-----------------|---|---|---|
| 6               | 0%                                      | \$0   | \$0   |
| 5               | 10%                                     | \$211.93  | \$374.13  |
| 4               | 20%                                     | \$423.85  | \$748.27  |
| 3               | 30%                                     | \$635.78  | \$1,122.40  |
| 2               | 85%                                     | \$1,801.36  | \$3,180.13  |
| 1               | 100%                                    | \$2,119.25  | \$3,741.33  |

*What if I want a different L3Harris model of radio or to upgrade to certain features?*

We understand that one size does not fit all. Agencies have the opportunity to add features to the baseline radio and/or select a different L3Harris model of radio, though the agencies will have to pay 100% of the cost of such changes. These changes can be documented when you submit your information to UCA to access the program. So, for example, if a public safety agency in a County of the 4<sup>th</sup> class wanted to modify the baseline

portable radio by adding a standard speaker microphone, they would have to pay a total of \$492.10 for that radio, comprised of their 20% for the baseline radio contribution (\$423.85) and 100% of the upgrade (sold at the 65% off MSRP discount), the speaker microphone (\$68.25).

*What if I want to purchase a different manufacturer's radio?*

The P25 system is open architecture, meaning other manufacturers' radios will work. However, the funds associated with this replacement program, have been explicitly designated for L3Harris by the Legislature, for the reasons noted above. Agencies can, however, use their own funding sources to purchase radios, so long as they are on the approved radio list found on UCA's website. Simply go to [www.uca911.org](http://www.uca911.org), select Radio in the top right corner, and then scroll to the bottom of the page and click the link for the "UCA Approved Radio List."

*What is the hierarchy of funding?*

Legislative instructions are to ensure that Class 6 counties are served first, followed by Class 5, Class 4, and so on. The availability of the funds appropriated for this radio purchase program will be determined by the demand of agencies in that order.

*How does an agency participate in the program?*

On or before October 31, 2022, agencies wishing to participate under this program should complete the proper worksheets in the contemporaneously provided Excel workbook and return the same to [radio\\_replacement@uca911.org](mailto:radio_replacement@uca911.org). On or before November 30, 2022, UCA will notify each agency that submits such a form of the acceptance (or rejection/modification based on the qualifications above) and the total amount due for the purchase. Fifty percent of the total amount due will need to be paid to UCA on or before December 31, 2022. The remaining 50% will be due to UCA at the time the radios are delivered to UCA, which is currently anticipated to be September 1, 2023, before the migration to the new system.

## PUBLIC WORKS

Changing gears a little bit, we have been asked several times what is permitted as it relates to public works and other governmental agencies on the public safety radio system. We wanted to address that in this correspondence as well. Utah Code Ann. §63H-7a-402(1)(a) states that UCA is to "provide and maintain the public safety communications network for state agencies and local government public safety agencies..." For purposes of this instruction, Utah law defines a public safety agency as "a functional division of a public agency which provides fire fighting, law enforcement, medical, or other emergency services." Utah Code Ann. §69-2-102. To better define "other emergency services" and who can and cannot participate on the network, UCA has adopted Administrative Rule R174-1-501<sup>6</sup> which essentially provides that local agencies, including public works agencies,

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<sup>6</sup> In consultation with its Advisory Committees and Governing Board, UCA is in the process of amending this rule to provide more clarity, however, the general substance of the rule will not be changed through this amendment.

that are not providing fire fighting, law enforcement, or medical services, may participate on the public safety radios system if: 1) they can state a public safety purpose for their participation; 2) they have a letter from a fire fighting agency, law enforcement agency, or emergency medical provider sponsoring their participation for the stated purpose; and 3) they receive approval from UCA's Executive Director. UCA recognizes that those providing "other emergency services" may vary based on the emergency. While there can be benefits to a broad usage of the public safety radio system, there is also a counterbalance when it comes to system capacity, as well as federal and state guidelines on things like the use of public safety frequencies and funding. The purpose of this rule is to balance these competing interests.

Agencies wishing to utilize the public safety radios system should apply to UCA for access, considering the requirements above. Published on UCA's website is the application for public works and "other emergency services" to seek participation in the public safety radio system. This application can be found by going to [www.uca911.org](http://www.uca911.org), scrolling to the bottom of the page, and clicking "UCA Applications, Learn More." When submitting an application, it would be advisable to provide a written letter or statement outlining the public safety purpose of the request and explaining the intended use of the radio system on a regular basis.

As part of balancing the above interests, we ask agencies to consider a few possible options. First, as noted, the primary purpose of the public safety radio system is public safety, and the condition upon which an agency may be applying for access is an emergency or crisis situation. As such, UCA requests that agencies consider their actual need in that emergency scenario. The public safety radio system is not meant for the day-to-day dispatching and management of local road crews, non-law enforcement security, transportation services, etc. It is presumed that these agencies have their own means of communications and that the purpose for access to the public safety radio system is to interface with police/fire/medical in the event of a large-scale emergency. In this scenario, it may not be necessary for each and every line employee to have a public safety radio. Rather, it may be more appropriate for the agency's leadership and/or dispatch teams to have public safety radios so that they can communicate with a PSAP and coordinate their own non-traditional public safety personnel in that specific emergency. We respectfully ask agencies to consider this option.

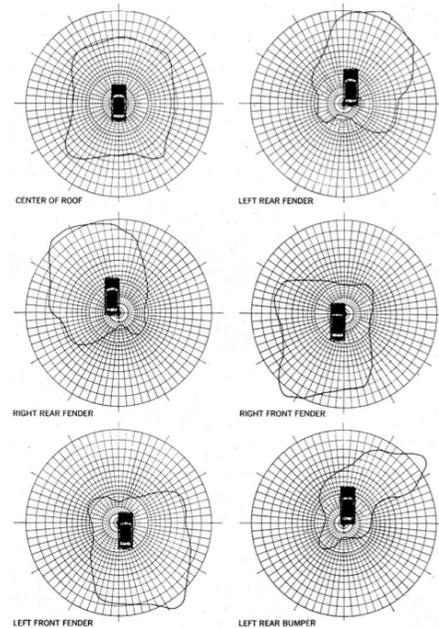
Second, we would also like agencies to consider L3Harris's BeON application. BeON is a smart phone/tablet app that provides push-to-talk connectivity to the public safety radio system utilizing Wi-Fi and LTE instead of LMR capacity. This would allow for a broader use of the system without interfering with public safety agencies, while also providing connectivity through interoperability channels in the times of an emergency. It's also worth noting that the cost of a BeON license is expected to be less than \$300, which is a substantial savings over the cost of a public safety radio. If this has interest to your agency, we again request you apply for access to the system by using the link above, and in your description of your requested use, please discuss how you might consider using this BeON solution.

## ANTENNA PLACEMENT AND COVERAGE

Since we have your attention, we wanted to take a minute and talk about coverage and antenna placement. UCA designs its system to provide on-street/on-hip coverage, meaning we don't plan sites with the intention of providing in-building coverage and we do not guarantee in-building coverage. In-building coverage is best provided utilizing distributive antenna systems which can be installed by qualified electricians all around the state. However, if our coverage maps show coverage in an area, your portable radio, on your belt, should be able to talk into our system and receive communications back. Please know and understand, the P25 system is a digital system, and as such, the shape of coverage may change a little bit, and the sound of your radio may change. This is not a vendor or radio matter, it's a digital/analog matter. The best analogy we have found is FM radio versus satellite radio. Road trips used to mean you would listen to your favorite FM station, it would start to get a little bit fuzzy, and then – it was gone. That's what your radio is like today and, quite frankly, most of you have gotten really good at listening through the static, thereby effectively extending your radio's range beyond coverage predictions. The new radios are like satellite radio in my car – it's clear until I get into a parking garage or near a high canyon wall, then, it's gone. There's no static and there's no gradual demise of the sound – it's either there or it's not. That's the P25 system. Likewise, we have heard that the sound of the radio may change for some, with reports are that users sound like they're in a tunnel or a bathroom. This is just the technology, and from what we hear, just like you got used to what the radio sounds like today, you will get used to what it sounds like in the future.

When it comes to shifts in coverage, these are unpredictable, but they are something UCA will be watching very closely and doing our best to address. One thing that agencies can do to help, and quite frankly, a prerequisite to raising coverage concerns, is to ensure that your users have the right antennas installed in the right place. When it comes to your portable radio, the size of the antenna can make a difference. Please know that if you have a shorter antenna, you are compromising coverage. Even more important, however, are antennas for mobile radios. As seen in the graphic below, the low-profile antennas will not provide the coverage that an approved antenna provides. Similarly, the location of the antenna can make a significant difference in your coverage. The correct place for coverage is on the roof in the center of the vehicle, also as shown in the graphic below. Often times UCA receives complaints about coverage and when we go to investigate, a user has the wrong antenna or the wrong placement. In these instances, the first step to troubleshooting is always going to be to correct the antenna type and placement and see if it addresses the concern. If not, then UCA can consider system level matters.

## Mobile antenna type



## FLEET MAPPING

At UCA's Annual Stakeholders meeting in the latter part of 2020, we introduced two concepts for fleet mapping and radio management that differed from the status quo. For those who are not familiar, fleet mapping is essentially the structure for talkgroups and end user utilization practices on the radio system. UCA was proposing changes, and as part of the presentation, UCA requested two separate radio consulting firms provide input as well as the two largest public safety radio manufacturers in the world – Motorola Solutions, Inc. and L3Harris Technologies, Inc. Unanimously, these experts all recommended the new proposed fleet map (which technically includes the radio management portion of the presentation). We then asked agencies to vote on their preference. The majority opinion was to follow the input of the experts and to shift Utah's fleet map. All of this data was then presented to UCA's Governing Board which voted likewise to make the changes.

UCA has begun reaching out to PSAPs to get further information in order to effectuate these changes at the time of the system migration, and it has awakened questions from many agencies. We want to reassure everybody that this new fleet map, not only provides ample talkgroups for agencies, but also does so in a manner that promotes interoperability and permits growth and adjustment. The structure places the emphasis on the PSAP and empowers the PSAP to be able to manage emergency communications amongst the agencies that PSAP serves in the most efficient manner. In all honesty, for most of the state, there is very little change from the status quo. For others, the biggest change is likely the name of a talkgroup.

Recognizing this is new, however, UCA will be embarking on an aggressive training program to make sure that every user of the public safety system has an opportunity to learn this new fleet map. The first training will be held at UCA's Annual Stakeholders Meeting later this year, as discussed more fully below. Thereafter, with very few exceptions, UCA intends to hold one in-person training each week, at varied locations around the state, and

one live, Zoom training each week, as well as to have a recorded version available on-demand on our website. Of course, anybody who has questions can always reach out to UCA; we simply ask that you attend one of these training sessions first as many of your questions may be resolved in the training.

### ANNUAL STAKEHOLDERS MEETING

UCA has a young tradition, but a tradition nevertheless, of holding an Annual Stakeholders Meeting. This year the meeting will be November 29-30 at the Hilton Garden Inn in St. George, Utah. We think this will be a very informative and helpful meeting, and we invite any and all who are interested to attend. An agenda is included with this letter to provide more details. If you would like information on obtaining a discounted hotel room, please contact Tina Mathieu, UCA's Deputy Director, at [tmathieu@uca911.org](mailto:tmathieu@uca911.org).

UCA truly appreciates the opportunity we have to serve Utah's public safety professionals and citizens. If you ever need any assistance from UCA, but aren't sure who to contact, please feel free to reach out to me via email at [qstephens@uca911.org](mailto:qstephens@uca911.org), or by calling 801-840-4200. Our goal, each and every day, is to ensure that Utah has the best public safety communications in the world. And while my time at UCA has not taken me overseas, I have had the opportunity to meet numerous public safety personnel in the United States and Canada, and I am confident Utah has the best public safety communications in North America and it isn't even close! Thank you for everything you do each and every day, and please let us know how we can assist in your lifesaving and emergency efforts. Thank you for your consideration!

Sincerely,



Quinton Stephens  
Executive Director/General Counsel  
Utah Communications Authority