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December 10, 2021

VIA E-MAIL

Re: Utah R. Admin. P. R174-1-306(c) and R174-1-506(c) Recommendations

Dear Governing Board of the Utah Communications Authority:

The Utah Rules of Administrative Procedure, specifically R174-1-306(c) and R174-1-506(c), indicate that not less than 30 days prior to the relevant Board Meeting, and after considering proposals from the PSAP Advisory Committee, UCA's 911 Division Director, and UCA's Radio Division Director, I am to make a recommendation to this Board of proposed formulas to be used to allocate or remove call handling positions and radio consoles to/from a PSAP. Below is my recommendation.

Attached hereto as Exhibit 1 is the joint recommendation of Melanie Crittenden, UCA's 911 Division Director, and Brad Morris, UCA's Radio Division Director. I wish to publicly express my thanks and gratitude for the time, attention, and thought they put into their recommendation. Attached as Exhibit A to Melanie and Brad's recommendation is the recommendation of the PSAP Advisory Committee, currently chaired by Kevin Rose. I too wish to express my gratitude for the time and energy put into this committee's recommendation.

While it seems clear that there is no perfect allocation formula, I am impressed with some of the similarities between the two recommendations. For example, at the core of both recommendations is the suggestion to measure growth as expressed by incoming 911 calls. Likewise, there is a common motive to ensure that PSAPs have ample equipment to perform their duties without engaging in waste or inefficiency.

After carefully considering both of the proposals before me, I would like to adopt the recommendation given to me by Melanie and Brad as my own and submit the same to this body with my request and recommendation for adoption and approval. Specifically, the recommended formula and process is that each year, after UCA submits the new 3-year 911 call count average to the Utah State Tax Commission, it will compare the new average for each PSAP and will increase/decrease each PSAP's UCA sponsored radio console allotment and call-handling position allotment based on quantity movements of 3,200 calls as compared to the baseline set forth in Exhibit B of Melanie and Brad's recommendation.¹

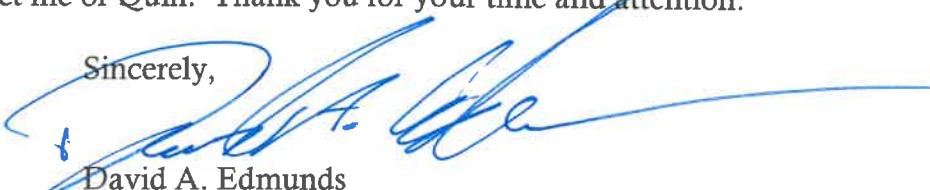
¹ There has been the suggestion that UCA should take the opportunity to standardize the console/call-handling equipment count that currently exists. For example, some PSAPs are taking around 1,100 calls/console/year as compared to others which are taking upwards of 7,400 calls/console/year. Similarly,

If a PSAP has an average that goes up 3,200 or more calls, it will be entitled to an additional radio console and call-handling position. On the other hand, a decrease of 3,200 calls would, of course, lead to a corresponding loss of said equipment. These amounts are linear multiples (an increase of 6,400 would result in 2 additional consoles/positions and 9,600 would equal 3, and so on). In addition, the year over year increase/decrease will be compared to the baseline. For example, if a PSAP had an increase of 3,000 calls in year one and 400 calls in year 2, it would be entitled to an additional console/position in year two. I would also include, as part of my official formula, that if PSAPs merge, that all consoles/call-handling positions provided to the consolidating PSAPs remain at the consolidated PSAP and that the combined baseline figures and any associated growth/loss be similarly consolidated.

My recommendation does differ, at least in form, from that of Brad and Melanie in that I am formally recommending and requesting that the Governing Board also pass a motion, separate and apart from the above formula, indicating that UCA, beyond what is included in the initial migrations to the P25 system and the NG911 system, will not be purchasing radio consoles or call-handling positions for PSAP backup centers. I am making this recommendation based on the reasoning presented in Melanie's and Brad's recommendation and I agree, it is not formally part of the Administrative Rule's requirements, but it seems on topic having been addressed by all who are making recommendations.

I genuinely hope this recommendation meets with your approval. This topic will be addressed in our January Board meeting with the hope and plan that an adoption of the proposed formula and declaration on backup centers will be made. I will ask Quin to prepare a brief analysis of the options provided in the relevant Administrative Rule to be presented at the meeting. Of course, if you have any questions, comments, or concerns prior, please do not hesitate to contact me or Quin. Thank you for your time and attention.

Sincerely,



David A. Edmunds
Executive Director
Utah Communications Authority

Cc: Quin Stephens
Brad Morris
Melanie Crittenden

some PSAPs are taking around 1,100 calls/call-handling position/year as compared to almost 6,200/calls/call-handling position/year. And while I do see the merit in such an argument, I believe the status quo should be maintained at present.

EXHIBIT 1



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November 12, 2021

VIA E-MAIL

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Re: Utah R. Admin P. R174-1-306(c) and R174-1-506(c) Recommendations

Dear Director Edmunds:

The Utah Rules of Administrative Procedure, specifically R174-1-306(c) and R174-1-506(c), instruct UCA's 911 Division and UCA's Radio Division, after reviewing the recommendation of the PSAP Advisory Committee, to make recommendations to you regarding formulas to be used to allocate or remove call handling positions and radio consoles to/from a PSAP. Please consider this our formal, joint recommendation.

Attached to this letter as Exhibit A is the recommendation from the PSAP Advisory Committee that was provided to UCA on or about October 4, 2021. We have spent a considerable amount of time and effort reviewing this recommendation. We commend the PSAP Advisory Committee for the thoughtful approach they have taken in this process. It is clear that they pondered what the right measuring sticks are when it comes to increasing the number of radio consoles and call-handling positions that UCA will provide to PSAPs. Notwithstanding, we do have some concerns with the recommendation that was given.

First, the rules require a formula which both contemplates an additional allocation as well as the removal of positions. The PSAP Advisory Committee's proposal does not provide for the removal of call-handling positions or radio consoles.

Second, the PSAP Advisory Committee has, in our opinion, exceeded the scope of the rule by laying out principles or formulas to address PSAP consolidation and the creation of "backup centers." Our proposal will not include these areas. Nevertheless, with the issue having been raised, we will address our specific thoughts and concerns on these matters. With respect to the issue of consolidation, UCA's Radio Division and 911 Division have a

slight difference of opinion. UCA's Radio Division believes that one of the distinct advantages of a PSAP consolidation is the efficiencies that are gained, including the fact that a combined PSAP will often need fewer radio consoles and call-handling positions than two separate entities. Accordingly, the Radio Division believes that a careful analysis of need should be conducted prior to automatically providing equipment that may go unused. The 911 Division, however, believes that the overall benefits of consolidation to the 911 caller, as well as other gained efficiencies, outweigh the points made by the Radio Division and does not desire to dissuade or deter any PSAPs considering consolidation out of a fear of the loss of equipment. The 911 Division supports the concept that a consolidated PSAP would inherit the combined number of call-handling positions, radio consoles, and 3 year average call counts. No resolution between these divergent opinions is necessary, however, because the issue is not a part of this recommendation.

On the subject of UCA providing call-handling positions and radio consoles for the creation of a new backup center, both the 911 and the Radio Division strongly agree that such would be a bad practice for UCA to engage in and emphatically do not support the concept of UCA providing additional radio consoles or call-handling equipment for new backup centers. Not only does the funding for radio consoles and call-handling equipment not contemplate such an increase in demand, the technologies being adopted through the ongoing upgrades to the P25 system and the NG911 call-handling network and equipment eliminate, in many substantial ways, the need for backup centers. Providing such a heavily subsidized expansion with little public safety justifications is, in our opinion, bad practice and policy. Once again, however, this is outside the scope of our recommendation and not a part thereof.

Turning now to the specifics of the PSAP Advisory Committee's proposed formula, we have some concerns that we will attempt to outline. First, the PSAP Advisory Committee's step 1 requires the calculation of "the number of consoles regularly staffed (>8 hours per day) by radio dispatchers (excluding any dedicated call takers)," but the formula provides no instructions on how a person is to arrive at this number and seems very subjective. Step 1 goes on to require that the radio dispatcher total be multiplied by .5. We assume the radio dispatcher total is the first number from step 1, and assuming this is correct, we do not see the foundational basis for why the dividing in half. The formula goes on to require that this number, cut in half, be subtracted from the total number of call-handling positions within the PSAP. Again, the reasoning behind this approach is not explained and we are left uncertain as to the reasoning for this calculation. While we understand that the formula is meant to call handling equipment and radio consoles, we do not understand why a subset of one is being subtracted from the other or why that subset is .5 as opposed to any other number. With all due respect to the PSAP Advisory Committee, UCA's 911 Division and Radio Division do not see the relevance of any portion of this formula.

Step two in this process is to run the ECaTs staffing module, a calculation utilizing the Erlang-C model, to determine the number of call-takers a PSAP needs to have on duty to timely answer 911 calls based on volume and average duration. Conceptually, we can see the relevance of this step in the formula. At the heart of this formulaic analysis is the desire to ensure that a PSAP has the call-handling positions and radio consoles it needs to answer 911 calls. This module, essentially, predicts that number with respect to call-handling positions. However, this module does nothing to provide information about the

number of radio consoles a PSAP would need. In addition, in the specific environment that UCA operates in, running this module as indicated in the formula, ignores that PSAP telecommunicators are often answering 10-digit emergency calls and administrative calls alongside their 911 calls. As will be displayed below, the failure to consider this fact and/or to include the status quo as a relevant factor could leave a PSAP woefully short of equipment to adequately meet the demands placed thereon.

Step 3 requires that the final number derived in Step 1 be subtracted from Step 2 and if there is a positive number, that UCA provide that number of additional call-handling positions and radio consoles. As noted above, the relevant administrative rule requires a formula that not only considers allocation, but also revocation, if necessary.

Running this analysis through some practical hypotheticals reveals some of the problems. For example:

Hypothetical #1

PSAP A has 6 call-handling positions and 6 radio positions. They regularly staff 4 of these positions with radio dispatchers (not dedicated call takers). As such, multiplying 4 by .5 gives us a 2. When we subtract that from the 6 call-handling positions at the PSAP, the “PSAPs [sic] total available 9-1-1 call taking positions,” as defined in the PSAP Advisory Committee’s proposed formula, is 4. Assuming the ECaTs model returns a value of 6, meaning that the PSAP needs to staff 6 positions, the formula would provide that UCA needs to give PSAP A, 2 additional radio consoles and 2 additional call-handling positions, thereby giving them a total of 8 each. Why? If the ECaTs model says this PSAP should have 6 at its busiest, why buy them two more positions when they already have the 6 required?

Hypothetical #2

PSAP B has 50 call-handling positions and 35 radio positions. They regularly staff 30 of these radio positions. As such, multiplying 30 by .5 yields 15. Subtracting this 15 from the 50 call-handling positions provides the “total available 9-1-1 call taking positions,” again as defined by the PSAP Advisory Committee’s proposed formula, is 35. If the ECaTs module returns a value of 25, a likely possibility given that the ECaTs module does not account for 10-digit emergency and administrative calls,¹ the PSAP would not presently receive any new positions, would likely not receive any new positions any time in the near future (barring astronomical growth well beyond the boundaries of what the 50/35 positions could support), and would, arguably, be required to give back 10 call-handling positions and 10 radio consoles, which would probably be an inappropriate result.

The reality of these deficiencies can also be seen when running some real-life scenarios based on today’s numbers. For example:

VECC

VECC currently has 37 radio consoles and 52 call taking positions. UCA has no way to determine how many of these radio consoles are regularly staffed, but giving VECC

¹ The temptation may exist to simply account for 10-digit emergency and administrative calls in a PSAP’s formula, however, this would be inappropriate as both Utah and Federal law designate that 911 funds are to be used for 911 purposes and, by extension, not 10-digit emergency or administrative purposes.

full benefit of the doubt, we will assume they are staffing approximately 30 of these stations at least 8 hours per day. So, when we run through the formula, VECC's "total available 9-1-1 call taking positions," as defined by the PSAP Advisory Committee's Formula, would be 37. When we use the ECaTs staffing module, the highest daily recommended call taker count (going back 16 months) was 17. Under this formula, VECC would have to give back 20 call-handling positions and radio consoles. In fact, even if we assume VECC staffed all 37 radio consoles at least 8 hours a day, they would still have to give up 16.5 phone and radio positions. We do not believe this is an equitable result.

SLC911

SLC911 currently has 14 radio consoles and 27 call taking positions. UCA has no way to determine how many of these radio consoles are regularly staffed, but giving SLC911 full benefit of the doubt, we will assume they are staffing approximately 12 of these stations at least 8 hours per day. So, when we run through the formula, SLC911's "total available 9-1-1 call taking positions," as defined by the PSAP Advisory Committee's Formula, would be 21. When using the ECaTs staffing module, the highest daily recommended call taker count (going back 12 months) was 8. Under this formula, SLC911 would have to give up 13 call-taker positions and radio consoles. And, like VECC, even if we assume all of the radio consoles are staffed, , they are still giving back 12 positions. Again, the formula, as interpreted by us, does not make sense.²

DPS-RICHFIELD

DPS Richfield currently has 4 radio consoles and 4 call taking positions. UCA has no way to determine how many of these radio consoles are regularly staffed, but assuming the answer was 4, the PSAP Advisory Committee's formula would say that the "total available 9-1-1 call taking positions," was 2. The ECaTs staffing module shows that on July 4, 2021, Richfield should have staffed 3 call takers. It is important to note, all other dates of the year, the most that the ECaTs module indicates that Richfield should be staffing is 2 call takers. Nevertheless, under this scenario, the PSAP Advisory Committee's formula would indicate that UCA should purchase DPS-Richfield a 5th radio console and 5th call-handling position. Again, this makes little sense to us as even on the 4th of July, the PSAP's busiest day, they would staff 3 of its 4 available positions and meet the anticipated demand. Further, elasticity of this model is questionable when it comes to its application to smaller PSAPs as demonstrated through this example. If, instead of 4 radio positions being staffed, Richfield only staffed 2, the model would then, on the same variables, indicate that no new positions are required.

For all of these reasons, we are proposing a different formula. Like the PSAP Advisory Committee's formula, our formula relies on 911 calls as the measuring stick for an increase/decrease in both call-handling positions as well as radio consoles. We recognize that there is not a direct correlation to 911 calls and radio usage, however, there does seem to be a direct correlation between population and emergency services needs and 911 calls, and there is a direct correlation between emergency services needs and radio traffic.

² We have considered the possibility that we are applying the formula in a manner different than what was intended by the PSAP Advisory Committee, though if we are, we do not know how it was intended to be applied. In any event, the ambiguity would speak to the errors in the formula.

Our proposed formula also recognizes the importance of the status quo. At the present time, or at least just prior to the NG911 migration which is underway, PSAPs purchased their own radio consoles and call-handling equipment. As such, their needs and wants were offset by the costs of adding unnecessary positions. Similar to a supply and demand curve, these offsetting motives, at least in theory, led to a meeting of the radio console/call-handling position supply and demand curves, leading to an optimal number of call-handling positions and radio consoles for each PSAP. As such, UCA believes the call-handling positions and radio consoles obtained for each PSAP in the respective NG911 and P25 contracts form a baseline for these PSAPs, coupled with the latest 3-year average 911 call volume report given to the Utah Tax Commission in January of 2021. Utilizing this approach also gives some credibility, at least as it relates to the rollout of this formula process, to the fact that PSAP's field 911 calls, 10-digit emergency calls, and administrative calls.

Analyzing this data shows that on average, Utah's PSAPs have 1 call handling position for every 3201 911 calls it receives and Utah's PSAPs have 1 radio console for every 3,252 911 calls it receives.³ As such, we propose a simple formula relying upon an increase or decrease in the 3-year average call count volume. The starting point for the analysis will be as shown in the table attached as Exhibit B.⁴ Each year, after UCA submits the new 3-year 911 call count average to the Utah State Tax Commission, it will compare the new average for each PSAP and will increase/decrease each PSAP's radio console numbers and call-handling positions based on quantity movements of 3,200 calls. If a PSAP has an average that goes up 3,200 or more calls, it will be entitled to an additional radio console and call-handling position. Similarly, an increase of 6,400 would mean two new positions, and so on. On the other hand, a decrease in these same amounts would, of course, lead to a corresponding loss of said equipment.

This approach gives credence to the current situation and provides that smaller PSAPs such as Rich County, Emery County, and Beaver County don't have their radio console counts and call-handling positions diminished lower than the necessary two, while allowing the appropriate and timely increases for the larger centers like VECC, SLC911, and Weber Area Dispatch which are the most likely to experience massive amounts of growth.

³ The math behind these conclusions comes from taking the three-year average call volume of each PSAP and dividing it by the number of radio consoles and call handling positions to arrive at the calls/console and calls/per position for each PSAP. The average of all of the PSAPs' calls/console and calls/per position are what is reported. Calculating the averages this way is deferential to PSAPs as opposed to an aggregated approach. The statewide three-year average of 911 calls is 1,014,622 calls. Utah's PSAPs collectively have 211 radio consoles and 238 call-handling positions. Using an overall average would mean that there are 4,809 calls per radio console and 4,263 calls per phone position. Some might argue that these averages are more appropriately used to determine if/when a PSAP receives or loses a radio console and/or call-handling position.

⁴ Exhibit B intentionally does not include any existing backup centers in these counts. Initially, UCA replaced backup center call-handling positions and radio consoles adhering to its 1:1 replacement commitment. PSAPs had invested their own funds to create these backup centers and it would be improper for UCA to destroy them through these upgrade processes. However, as highlighted, the technologies being deployed significantly reduce, if not eliminate, the need for a backup center. As such, it would be our suggestion that UCA not purchase additional radio consoles or call-handling for any backup centers, be they existing or new, following the migrations of the 911 and radio systems.

We hope this recommendation meets with your approval and, of course, we are available to address any questions, comments, or concerns you may have. Thank you for your consideration.

Sincerely,

Melanie Crittenden

dotloop verified
11/12/21 8:15 AM MST
QIUS-W0KZ-K84Y-ZS40

Melanie Crittenden
911 Division Director
Utah Communications Authority

Sincerely,

Brad Morris

dotloop verified
11/12/21 8:42 AM MST
8SPF-QLGC-CYQ2-AGFY

Brad Morris
Radio Division Director
Utah Communications Authority

EXHIBIT A

Principles:	<p>If two or more PSAPs physically consolidate into one PSAP, the new/consolidated PSAP is entitled to the total number of phone and radio consoles previously allocated to the consolidating PSAPs.</p>
	<p>If a PSAP is awarded a new phone console using the formula below, the PSAP shall be entitled to an equal number of radio consoles, if desired.</p>
	<p>If a PSAP or Region desires to establish a backup center with UCA provided phone and radio console equipment, the PSAP(s) will submit a proposal to UCA outlining the purposes, benefits, and costs of the backup center/location. UCA should establish criteria for full or partial funding of any backup equipment and incorporate such criteria into its strategic plan. Proposals would be evaluated by UCA's PSAP Advisory Committee, 911 Division, and Executive Director for a recommendation provided to the Board, with any award based on available funding and the overall best interests of the 9-1-1 system.</p>
Formula for new Phone Console	<p>Step 1: Calculate the number of available call taking consoles. Determine the number of consoles regularly staffed (>8 hours per day) by radio dispatchers (excluding any dedicated call takers). Multiply the radio dispatcher total by .5, and subtract that number from the total number of phone consoles in the PSAP. This number is the PSAPs total available 9-1-1 call taking positions.</p>
	<p>Step 2: Using ECaTS' Staffing Forecast Module, determine the highest number of Call Takers needed using the following criteria: Date Range: Use the month with the highest hourly number in the previous 12 calendar months immediately preceding request. Call Type: 911 Calls Including Abandoned. Service Level: 90%. Answer Time Goal: 15 Seconds.</p>
	<p>Step 3: If the highest hourly number of 9-1-1 call takers required from Step 2 exceeds the number of available 9-1-1 call taking positions determined in Step 1, the PSAP is entitled to one or more additional consoles.</p>
	<p>Step 4: Documentation of the formula calculations above should be provided to UCA using whatever form or statement UCA deems sufficient for its purposes.</p>

EXHIBIT B

PSAP	2018	2019	2020	3 Year Average	RADIO CONSOLE	PHONE POSITIONS
Beaver County Sheriff	3049	3410	3556	3338.33	2	2
Bountiful PD	20586	22190	23115	21963.67	5	5
Central Utah 911	74348	86188	95414	85316.67	16	16
Clearfield PD	11201	11862	11745	11602.67	3	3
Davis County Sheriff	33050	39972	38390	37137.33	6	6
DPS-Box Elder Communications	16296	17107	16990	16797.67	4	4
DPS-Cedar Communications	15771	17457	18278	17168.67	6	6
DPS-Price Communications	6363	6830	6588	6593.67	6	6
DPS-Richfield Communications	7593	7914	9183	8230.00	4	4
DPS-Uintah Basin Communications	16276	16129	17585	16663.33	6	6
Emery County Sheriff	4189	4288	4619	4365.33	3	2
Garfield County	2448	2806	3112	2788.67	2	2
Grand County Sheriff	4741	4619	6317	5225.67	3	3
Kane County	4615	4884	5175	4891.33	3	9
Layton PD	18352	19454	18796	18867.33	6	6
Logan PD	23505	26378	27357	25746.67	8	8
Millard County Sheriff	5290	5348	5355	5331.00	2	2
Orem City PD	26736	30505	31460	29567.00	6	8
Provo City PD	28551	30526	29109	29395.33	7	8
Rich County 911	1651	1806	3472	2309.67	2	2
Salt Lake City 911	160147	168177	168798	165707.33	14	27
Salt Lake Valley (VECC)	255451	279117	286483	273683.67	37	52
San Juan County Sheriff	6628	6685	7297	6870.00	2	2
Sanpete County Dispatch	5477	5702	6329	5836.00	3	3
Springville PD	7970	8810	9253	8677.67	3	3
St. George Police Communications	48808	54538	64442	55927.67	11	10
Summit County Sheriff	20267	22521	23045	21944.33	7	7
Tooele County Sheriff	21992	22678	24498	23056.00	6	6
Wasatch County Sheriff	8594	9571	11587	9917.33	4	4
Weber Area Dispatch 911	84692	89541	94875	89702.67	24	22
	944637	1027008	1072223	1014622.667	211	238