**American Radio Relay League
Proposed 2021 – 2022
Departmental Plans**

**BOARD
CONFIDENTIAL**

ARRL, INC.
The National Association for Amateur Radio

2020-2021 Plan
Department Plans

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Membership
Diane Petrilli, Membership Manager

Summary

2020 is forecast to end with 157,579 members, representing a net gain of .53% for the year. As of September 30, we are 574 members ahead of forecast and show a net gain of .68% for the year.

Planning for the 2021- 2022 membership goals brought its unique challenges this year. The COVID-19 pandemic brought with it record unemployment rates which will affect how members spend their money and social distancing requirements impacting the number of new hams with limited remote testing available. This being offset by the fact that many of ARRL's members are already retired and on fixed incomes and the pandemic stay at home orders may produce more interest or a renewed interest in amateur radio as a hobby.

Despite all the uncertainty we are confident with the help of the increased acquisition of new hams from Mintz+Hoke, ARRL can realize a 1.24% growth in membership in 2021.

<div align="center">

2021 Membership Forecast

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Year end 2020 (projected)	**157,579**
Net Gain (1.24%)	1,953
Year end 2021 (projected)	**159,532**

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2022 Membership Forecast

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Year end 2021 (projected)	**159,532**
Net Gain (1.73%)	2,765
Year end 2022 (projected)	**162,297**

Strategies to achieve this growth will be accomplished by working with the Marketing Communications team to:

Increase Acquisition

- *New ham mailings*
  The new series of ham mailings started in January 2020 will be refined by Mintz+Hoke to focus on the new Learning Center benefit.

- *Win back lapsed members campaign*
  A new campaign will be developed to win back more deeply lapsed members. The campaign will consist of a combination of mail and email approaches.

- *Outreach to never member hams*
  A campaign will be developed to engage never members in all areas of ARRL to collect email addresses to launch a series of engagement opportunities. A trial campaign was tested in 2020, and the data gathered will be used to develop a formal campaign in 2021. A freshened list of never members will be available as people sign up (and provide email address) for trial usage of the Learning Center platform.

Improve Retention /Reduce Loss

- *First time member onboarding*
  This campaign will include a series of six emails to introduce the new ham to ARRL and include how they can get involved as a member and how benefits will help them get more active.

- *Promote auto renew*
  With the launch of the new Association Management System, Personify 360, members will have the ability to sign up for auto renewal. This will be heavily promoted in hopes that this new payment option will increase renewals (and reduce mailing costs).

- *New renewal notice series*
  In 2021 we will test a plan to reward/incent early renewals rather than late renewals. Notices will have a new look, different messaging and refined timing.

- *Continuous feedback*
  We will gather continuous feedback to refine and develop new benefits. This will be accomplished by emailing satisfaction and exit surveys, as well as by engaging the community at events like hamfests and conventions.

Risks

There is going to be a significant learning curve as we switch from the Siebel system to Personify 360. Several old processes and technologies will be retired and replaced by new ones, including campaign tracking/marketing automation software. While extensive training has been taking place, switching can be difficult and could prolong our ability to move forward with some of the initiatives set out in the 2021 Plan.

MARKETING COMMUNICATIONS
(Marketing and Communications, Member Services and Warehouse)
Kathleen Callahan, Membership, Marketing and Communications Director

1. Marketing & Communications Department

The recent change in the department's name from Sales and Marketing to Marketing & Communications reflects a new collaborative approach to serving members and customers with less emphasis on sales and more focus on creating an informed and engaged ham who finds value in the ARRL membership community.

We present solutions and opportunities for members and all hams to develop their skills, get more involved, and do more with their amateur radio license.

We accomplish this in the following ways:
- Direct and dealer publication and product sales
- Developing marketing strategies and campaigns
- Branding and graphic design services
- Communications and messaging development
- Managing customer expectations for fulfillment and warehousing
- Providing exceptional member and customer service
- Administering and delivering meaningful event and exhibit experiences

2. Freelance Web Content Writer/ Editor Consultant
Funding request: $22,500 (approximately 37.5 hours per month)

The current arrl.org website is out of date and will need redesigning soon. Given the vast amount of web pages and content needing to be reviewed, reorganized and, rewritten before being integrated into a new site, this process should begin well ahead of any technical development. We ran into a smaller but similar issue with the Personify site earlier this year. Starting the review, rewriting, and reorganizing website pages in 2021 will better prepare us for this more extensive and impactful website project.

3. Publication and Product Sales

Publication and Product Sales Forecast by Category			
	2019 Actual	2020 Plan	2021 Actual
HANDBOOKS	$331,520	$428,741	$425,786
REPEATER DIRECTORY PRODUCTS	$105,181	$117,448	$122,446
BEGINNER TRAINING PUBS	$570,068	$542,153	$557,874
UPGRADE LICENSING PUBS	$418,902	$395,713	$415,355
OTHER ARRL BOOKS	$749,926	$700,000	$750,192
NON-ARRL BOOKS	$92,314	$109,000	$60,000
RSGB BOOKS	$73,428	$70,000	$36,000
ROYALTY BOOKS	$232,809	$252,845	$288,213
MEMBERSHIP SUPPLIES	$217,538	$225,000	$260,000
e-Book Royalties	$69,708	$84,000	$96,000
PUBLICATION & PRODUCT TOTALS	**$2,861,393**	**$2,924,900**	**$3,011,866**

Publication Strategy

A complete assessment of our publication inventory and sales by the marketing and production departments in April 2020 revealed several issues, including stagnant, irrelevant and out of date inventory, as well as numerous slow-selling and barely profitable titles.

The previous strategy for publication sales aimed to get us to be "the Amazon of Ham Radio." To accomplish this, we acquired several third-party books in small quantities. While this strategy was productive in the past, Amazon's rise as ARRL's most-valuable dealer and the impact of information on the internet have reduced this approach's effectiveness.

Revenue from all 3rd party books (including RSGB books) averaged only 6% of our publication revenue, yet these books comprised 57% of our inventory. Many of these third-party titles compete with ARRL flagship titles, are outdated, or contain low quality and irrelevant content. The recent tariffs on imported (RSGB) books have reduced our profit on most of these titles to an unsustainable level.

Our new publication approach focuses primarily on ARRL titles and limits the number of third-party titles to those that are high-quality, profitable, and fill an information gap for our members. Enhanced marketing of the remaining titles and development of new products will allow us to cover any lost revenue from the discontinued titles.

2021 Publication Challenges
- Limited number of new titles
- It is a scheduled "off-year" for the release of a new licensing manual
- The anticipation of the 100th ARRL Handbook in 2022 may limit sales of this popular title
- Book delays add uncertainty to sales forecasting, for example, the six-week delay of the 2020 Repeater Directory in 2020.

Direct vs. Dealer Sales
- 57% of total sales were to members and individual customers
- 43% to dealers and wholesalers

Kindle e-Books:

Most new ARRL publications are produced in both print and Kindle format — Amazon's proprietary e-book platform. There are 35 ARRL titles in the Kindle marketplace expected to bring in $96,000 in 2021.

Top 10 Grossing Publication Titles
October 2019 to September 2020 (12 months)
Warehouse inventory consists of over 550 SKUs

Product Description	QTY	Gross Sales	Net Sales
ARRL Ham Radio License Manual	21,817	$509,429	$457,284
ARRL Handbook 2020	9,682	$417,225	$300,545
ARRL Antenna Book	8,090	$385,864	$264,672
ARRL General Class License Manual	10,079	$240,537	$214,985
ARRL Extra Class License Manual	4,378	$121,400	$103,365
ARRL Repeater Directory	5,074	$73,543	$61,294
ARRL Operating Manual	4,866	$72,759	$58,246
Amateur Radio Satellites for Beginners	2,795	$47,546	$37,984
Grounding and Bonding for the Radio Amateur	2,303	$36,936	$34,729
Understanding Basic Electronics	1,755	$36,577	$31,730
TOTAL – Top 10		**$1,941,816**	**$1,564,835**
TOTAL – All Products		**$3,105,239**	**$2,377,754**
Top 10 as a Percentage of Total Sales		**63%**	**68%**

Non-Publication Products

To increase our non-pub merchandise revenue, we have initiated a new store strategy focused on seasonal products that will maintain active inventory and minimize outdated items in the warehouse. The product mix will introduce seasonal, limited-time items, ensure minimal margins, and establish benchmarks for markdowns.

Evergreen products will have new photography produced to freshen the look and be routinely featured in communications to maintain visibility. With the integration of the marketing automation software, we will target and segment past purchasers with products that will be most appealing.

4. Marketing

The changes to the publication and product strategies and the current implementation of Higher Logic email marketing software (*details below*) allow us to project a 3% revenue increase for 2021.

Promotional pricing, print advertising (in *QST* and *On the Air)*, direct mail campaigns, monthly communications (e-newsletter), and email marketing comprise the primary marketing tactics employed to promote our publication and product offering.

Promotional Changes
The new Association Management System, Personify 360, does not permit unique individual promo codes. Therefore, the previously successful Birthday postcard promotion dependent on these unique codes has been retired and replaced with a new approach.

A new approach will offer distinct member and non-member pricing year-round on all items, along with an annual ARRL "birthday" celebration weekend to replace the revenue from the Birthday postcard promotion.

Annual Higher Logic Software Subscription – $10,500 annual subscription fee
This Email Automation software was licensed in October 2020 for a 3 -year term and will streamline, automate, and measure our marketing tasks and workflows, making our efforts more effective and efficient.

The Higher Logic platform will help us market our products, programs, and services, significantly enhancing our membership, publications marketing, and outreach. New member welcome and onboarding processes will help increase retention of first-year members, and shopping cart abandon emails will allow us to follow up with potential purchasers. The ability to add full personalization upon integration with the Personify 360 system will help us segment our messaging and make our communications more targeted and effective. Lastly, the data we can obtain from this email platform will allow us to better understand our members and customers and create more effective messaging.

The estimated integration timeline is six months from the Personify "go-live" date.

5. Member Services and Warehouse

The 2021 Member Services (Fulfillment) plan includes considerations for postage and printing expenses for freight and costs supporting our direct mailing campaign for our members. We will introduce a renewal notice series which will have a new look, different messaging, and refined timing. We plan to continue to print the 1st renewal notice and eliminate the printing of the 2nd thru 5th paper renewal notices. We have three new mailing pieces that we will also introduce in 2021: (International buck slip, Membership Rack Cards, which replaces the membership brochure,

and the member postcard). Savings in printing and postage costs is estimated to be around $50,000.

Forwarding
Our 2021 forwarding plan anticipates a 2% annual postal increase that USPS will begin effective January 24, 2021.

QST Circulation
Print *QST* is fulfilled to most domestic members via a "Co-mail" strategy (see below). Co-mailing ensures the greatest savings (postage and handling) and best delivery times. Print *QST* circulation is currently 127,000 copies per month.

On the Air Circulation
The first edition of ARRL's new bi-monthly magazine, *On the Air*, was introduced to members with the Jan/Feb 2020 edition. *On the Air* is offered as a print magazine option with membership, mailed to domestic members. Print *On the Air* circulation is increasing. The circulation figures for the Sept/Oct 2020 issue was 19,500 copies compared to 6,000 copies for the Jan/Feb 2020 issue.

We have been closely examining options for reducing mailing costs and supplements and are currently awaiting approval from USPS to mail *On the Air* at a periodical non-profit rate. We should receive final approval by December 2020. The 2021 Forwarding plan includes this consideration.

Co-mail Cost Savings
We continually participate in the largest co-mail platform, ensuring that we achieve the greatest savings possible and improved delivery for *QST*. Co-mail is currently the most efficient and effective process for Periodical mailing. We continue to see lower postage, less cost per copy, greater savings per copy, and higher co-mail savings.   We can only hope these trends continue.

6. Convention and Hamfest Program

The COVID-19 pandemic halted most of the Convention and Hamfest Program activities, as events after March 2020 that ARRL was scheduled to attend were canceled. The concern over large in-person gatherings is continuing in 2021, as the ARRL National Convention scheduled for February 2021 in Orlando has already been postponed until 2022.

In the hopes that by mid-2021, Hamfests and Conventions will resume, we included costs for the remaining major events in the 2021 Plan.
- Dayton Hamvention®, May 2020
- SEA-PAC—Seaside, Oregon, June 2020
- HAM-COM—Plano, Texas, June 2020
- Huntsville Hamfest—Huntsville, Alabama, August 2020
- HamXposition—Boxborough, Massachusetts, September 2020
- Pacificon—San Ramon, California, October 2020

Out of concern for our staff's safety and well-being we have not planned any international event travel in 2021. It is our desire to have a physical presence internationally in 2022.

In addition to the five main events ARRL exhibits, we support smaller events at a handful of the largest amateur radio conventions held annually. These include participation from many members, prospective members, advertisers, and business partners. Travel expenses associated with speakers for these events are funded under the Member Contact Travel line.

We also regularly support member-volunteers who organize exhibits outside of ham radio events, promoting ham radio to like-minded interest groups. For example, we provide collateral materials for Maker Faires, IEEE events, and the other regional and national shows.

Included in the Plan are (4) New iPads for commerce at events and costs for obtaining new, updated branding materials for booth collateral.

ADVERTISING SALES
Janet Rocco, Advertising Manager

Advertising revenue for *QST* declined in 2020 as compared to 2019. Advertising cutbacks directly related to business decline due to Covid-19, canceled hamfests and conventions and cutbacks from companies citing difficulty in receiving co-op money for advertising in addition to companies moving to digital advertising all contribute to the decreasing advertising revenue.

On the positive side, the 2021 Plan includes new *QST* and Electronic advertising from companies such as Eton Corporation, Bioenno Power, Compuditgital Industries, Precise RF and W5SWL.

As *On the Air* gained more popularity, we have increased the ad rates for this publication in 2021.

QEX and *NCJ* advertising remains stable and the Plan for 2021 reflects this.

Electronic advertising including E-newsletters and website ads has seen a slight uptick as new and current advertisers are trending towards digital ads. We will continue to offer services to assist our clients with updating and/or creating new ads to freshen up the look and content of their ads. A newsletter client who changes his ad each week consistently receives one of the highest click-through rates overall. Having been under consideration for some time, updating the look and feel of the newsletters could possibly garner more interest from our advertisers.

Publication advertising has become less popular in recent years. Advertising dollars are at a premium and as a result book advertising has been trending downward.

Advertising strategies being considered as new or updated revenue streams for 2021, are as follows:
- New Podcast sponsors for existing Podcasts by offering monthly instead of annual sponsorships at an increased rate
- ARRL Annual Auction Sponsorship(s)
- ARRL Shopping Bag Sponsorship(s)
- Learning Network Webinars Sponsorship Packages
- Acquisition of more European companies as advertisers

Work will continue to engage our business partners in conversations that potentially can assist us in discovering new and creative ways of advertising that will be beneficial to their bottom line and ours.

PUBLICATIONS & EDITORIAL
Becky Schoenfeld, Publications and Editorial Manager

Personnel

The Publication & Editorial's 2021 budget involve the addition of one new position, a Book Editor and filling the Managing Editor position that was let vacant with Becky Schoenfeld's promotion to Department Manager.

Book Editor: The new book publishing strategy being forged by Kathleen Callahan and Becky Schoenfeld will further the goal of focusing resources on ARRL's best-selling core books (such as licensing titles and *The ARRL Handbook*), rather than taking on a large list of titles from third-party publishers. While book production will remain at Headquarters, we plan to rely almost entirely on freelancers for book editing duties.

The Publications Department will need an in-house Book Editor to implement and maintain this strategy and give ARRL's books a degree of attention they do not currently receive. An experienced Book Editor, ideally someone who has worked with technical publications before, would be charged with working with potential authors to shape book proposals in accordance with ARRL's needs, working with authors to shape the resulting manuscripts accordingly, liaising with technical editors (consultants) and language editors (freelancers) to prepare manuscripts for production, and working with the Publications Department's production staff and ARRL's Marketing Department to have books produced and printed.

Managing Editor: The department's succession plan took steps forward in 2020, with Steve Ford's retirement and Becky Schoenfeld's promotion to Department Manager, leaving the Managing Editor position vacant. The plan, until recently, had been to continue to cultivate the Senior Editor and create a path forward for her to becoming more of a Managing Editor over time. In autumn 2020, it was revealed that for personal reason, the Senior Editor does not aspire to move up. The department does still need a Managing Editor, not only to keep *QST* on track for deadline, but also to maintain *QST*'s editorial offerings at a consistent standard, and to keep pushing that standard forward – skills that only come with time and experience. For that reason, we'll need to hire an experienced Managing Editor to ensure that current and future content creation needs for *QST* and other ARRL publications are addressed appropriately and efficiently.

Potential future needs: The need for quality content increased in 2020, as was expected, particularly due to the demands of *On the Air* and its related media (podcast, blog, Facebook page). *On the Air*'s workload is handled by Becky Schoenfeld. When she stepped into the manager's position in July 2020, that workload became unsustainable for her, so it will need to be shared – ideally with one of the current Assistant Editors, as a training situation in which an Assistant Editor takes on more *On the Air* responsibilities for the magazine, podcast, and Facebook page (Bob Inderbitzen curates the blog) as she becomes comfortable with how the publication is edited. It's possible that the Assistant Editor would continue to work on *QST*, perhaps with a reduced workload to allow for *On the Air* duties. If that's the case, we may need to hire an additional Assistant Editor for *QST* in the future.

Goal: The goal is to build a strong Publications Department personnel structure so that it is equipped to address the challenges that are likely to occur in the future.

Books

Sales of printed ARRL books have been in gradual decline, a reflection of the changing needs of readers (who today rely strongly on the internet as a technical reference rather than printed books). At the same time, we have seen a sharp decline in the number of authors willing to write new books. We anticipate this trend will continue. In summer 2020, the Marketing and Publications departments reviewed ARRL's book list and discontinued most third-party titles in an effort to reduce overhead, be able to more efficiently market our most relevant titles, and be able to better see gaps in our book offerings so that they can be filled appropriately. In examining ARRL's existing titles, it determined that they could (and should) be edited more thoughtfully and thoroughly, in every aspect – scope, focus, content, clarity, copyediting, and so on.

> *Goal:* To reposition resources by focusing on improving and marketing the best-selling core books such as licensing titles and *The ARRL Handbook*. Hire a Book Editor to spearhead the effort to fill in gaps in the list and improve ARRL books overall.

Magazines

Due to the ongoing segmentation of the ham radio audience, we continue to refine the targeting of ARRL's periodicals.

In 2020 we shifted *QST*'s editorial emphasis to better serve the older core membership (advanced amateurs aged 65 and older) by relying more on nostalgia, topics of general interest, and simpler technical projects. In 2021, we will continue this, and work cross-departmentally to increase the amount of organizational content that appears in *QST*, to move it toward becoming a true "membership journal."

2020 also saw the debut of *On the Air*, a magazine that caters to less-experienced amateurs of all ages and license classes. The buzz around *On the Air* has been extremely positive. We will evaluate the publication's performance in early 2021.

QEX continues to be our most technically advanced publication, although demand for technically challenging content continues to decline. Technical content that would have been accepted for *QST* will increasingly be funneled to *QEX*, in a move toward making *QEX* ARRL's technology/projects publication, with potential for rebranding.

NCJ has been in decline for several years. In 2021, a new editor, Lee Finkel, will take over. In 2020, both *QEX* and *NCJ* were made available digitally to all members (research had indicated that most current readers did not want digital versions of either magazine). Going forward, we will need to evaluate how these two publications are faring, particularly now that they're available to all members.

> *Goal:* Continue to segment/target ARRL's publications, based on performance data. Explore the feasibility of creating new targeted publications.

E-Newsletters

The ARRL Letter continues to be highly successful with more than 110,000 weekly subscribers – a figure that approaches *QST*. We have seen significant circulation increases for the (recently

renamed) *ARES Letter* and *Contest Update* as well. We believe these increases are indicative of a rise in the appeal of focused e-letters generally.

     Goal: After the full implementation of the Personify 360 system, the e-letters will be redesigned to increase their reader appeal. Explore the feasibility of creating new targeted e-letters.

Podcasts

The ARRL Audio News, Eclectic Tech, and On the Air podcasts continue to do well, with a weekly listener audience in the range of 3,500-4,500 individuals. Steve Ford retained the bimonthly Eclectic Tech podcast after his retirement in August. News Editor Rick Lindquist took on production duties for ARRL Audio News after Steve's retirement. Becky Schoenfeld continues to research, write, and host the On the Air podcast, with regular assistance from Steve Ford. Ideally, she will turn these duties over to someone else, as her managerial workload has become demanding.

     Goal: Find someone to take over the On the Air podcast.

2021 Book and Software Projects

Title	*Author*	*To Press*
2020 Periodicals DVD	Shelly Bloom	12/01/2020
Arduino for Ham Radio, 2nd Edition	Glen Popiel	02/01/2021
2020 Annual Report	Publications	06/15/2021
Grounding & Bonding, 2nd Edition	Ward Silver	07/01/2021
2022 Handbook	Silver/Wilson	08/01/2021
2022 Calendar	Publications	08/01/2021
2022 Repeater Directory	RFinder	11/15/2021

DEVELOPMENT
Melissa Stemmer, Development Manager

In 2020, the Development Office focused on communication with ARRL's top donors to begin building stronger relationships. Through collaboration with the Membership, Marketing and Communications Director, all development promotional materials, which were quite dated, have been upgraded. The development team has been working on the new Personify database, configuring the system and training with other ARRL departments.

Primary goals of the Development Office in 2021 will be:

- To continue building relationships with our donors.
- To increase Diamond Club membership through targeted communications and by building a sense of pride in the program.
- To bring more awareness to and build the Legacy Circle.

The Diamond Club

2021 Goal: $380,000
2020 Goal: $365,000

The Diamond Club remains a critical resource for raising unrestricted revenue for ARRL. The goal for 2021 has been increased to reflect the outcome anticipated from plans to grow the program through targeted communications, highlighting the value of Diamond Club and building a sense of pride in being a member.

Efforts to gain new and increased Diamond Club members will include soliciting term members during basic membership renewal with the newly redesigned promotional material, targeting long-term ARRL members (five years of membership or more), reaching out to lapsed Diamond Club members, soliciting Life members, and updating members on what ARRL has achieved thanks to Diamond Club members, which will also contribute to retention.

The Diamond Terrace, started in 2007, currently holds 2,371 engraved bricks; 132 engraved bricks are scheduled to be placed in 2020.

At the end of 2019, there were 1,589 Diamond Club members, 361 Life members and 1,228 Term members. Diamond Club giving totaled $387,424 in 2019. As of September 30, 2020, there were 1,651 Diamond Club members contributing $230,517 of unrestricted donations.

The ARRL Maxim Society

The ARRL Maxim Society honors ARRL donors whose cumulative lifetime contributions to ARRL reach $10,000. To date, there are 292 members in this distinguished group; 8 have been welcomed to date in 2020 and 2 members have moved to a higher Maxim Society class this year.

The Maxim Society continues to be an incentive to individuals to contribute to ARRL. Staff alerts donors when they are nearing the $10,000 threshold so they can attain this special designation. Maxim Society promotional materials have been updated in 2020 and will be included in Diamond Club renewal letters and donation acknowledgement letters.

The Legacy Circle

ARRL continues to be the beneficiary of multiple bequests. To date in 2020, ARRL has been notified of more than $1 million in bequests from nine estates. The Development Office received inquiries about planned giving on a regular basis. When a member informs us that s/he is leaving ARRL in his/her estate plans, a copy of the documentation is requested which is kept in a confidential file until the gift is realized. While gifts may not be realized for many years, bequests and other planned gifts have tremendous potential to finance ARRL in the future.

The Development Office has planned a targeted Legacy Circle mailing for February 2021. The newly designed Legacy Circle promotional material will also be included in Diamond Club renewal letters and donation acknowledgement letters.

ARRL Funds

The Spectrum Defense Fund:

2021 Goal: $285,000
2020 Goal: $285,000

Traditionally, there are two Spectrum Defense mailings done each year, one in the spring and one in the fall. Due to the COVID-19 pandemic, in 2020 we chose not to send out a spring Spectrum Defense mailing. The fund continues to draw many contributors who are passionate about defending our amateur spectrum.

Development traditionally offers premiums for donations to the Defense Fund: a certificate for any gift amount, a pin for gifts of $50 or more, and a mug and pin for gifts of $100 or more. In 2021, we will be in the third year of our five year "bistro mug" series. Analysis shows that while a smaller percentage of Defense donors request premiums, their average gift is higher than non-premium donors.

The Education & Technology Fund (ETP):

2021 Goal: $145,000
2020 Goal: $145,000

The Education & Technology Fund receives several large gifts from major donors, many of whom have supported the fund at a significant level since the start of the Teachers Institute Program.

Annually, Development produces a direct mail solicitation in the late summer/early fall to approximately 50,000 members. This solicitation was not sent out in 2020 due to the cancellation

of the Teachers Institute for the year; the solicitation will resume in 2021. The average gift to the Education & Technology Fund is generally smaller than donations to other funds.

Logbook of the World Fund:

2021 Goal: $35,000
2020 Goal: N/A

In August 2020, the Development Office ran the first Logbook of the World campaign sent via email to all LoTW users. The response was positive, with 775 donations made to the fund. Of these donations, 234 came from non-ARRL members and 264 came from international LoTW users. Based on the response to the campaign, we will send out another solicitation in the summer of 2021. Users will likely want to see any improvements/changes made to LoTW over the course of the year in the next solicitation. If returns remain strong, we will make this an annual campaign.

Other Development Activities

ARRL Donor Reception in Dayton:

The annual donor reception in Dayton on the Thursday evening preceding Hamvention is a favorite tradition for our guests. This gathering brings together ARRL Board members and leadership donors, including Maxim Society and Legacy Circle members.

Development has reserved the Schuster Performing Arts Center in Dayton for the 2021 Donor Reception. The guest speaker is yet to be determined.

Additional Development Funds:

Development's other established funds continue to perform well. These funds will continue to be promoted via the website, *QST* ads and the ARRL Current. In Personify, donation funds can be linked to membership products to prompt donations at the end of the join/renew cycle. The funds linked to the membership products will be changed periodically to promote donations to all active funds.

RADIOSPORT & FIELD SERVICES
Bart Jahnke, Radiosport & Field Services Manger

Radiosport

As we look ahead to 2021 (and with similar considerations for 2022), we observe that 2020 Awards activity is about on par with September 2019 YTD. This was no doubt bolstered by months of sheltering at home due to COVID-19.   Current Awards activity has HF and VHF participants backfilling credits needed for endorsements rather than increased volume of new Awards/Certificates/Plaques. As propagation remains challenged for another 2-3 years until the sunspot cycle begins to climb again and with almost no new HF DXpeditions in 2020 or expected in 2021 to generate added award volume, we are not seeing and we don't expect to see many significant bursts of awards interest and activity in 2021 as compared to 2018 levels.

FT4 and FT8 continue their growth (and more new modes like FST4 are expected or will have rolled out) in the digital community (adding new log activity to ARRL RTTY Roundup, ARRL VHF Contests, and Field Day). While these modes continue to bolster contest activity, there has not been the same level of carry-over to awards in 2020, and we expect that softened trend to continue in 2021 while COVID keeps our nation unsettled.

ARRL Award Activity

Award	September 2019 YTD	September 2020 YTD	% Change YTD 2019 vs 2020
DXCC	8,373	8459	1.0%
WAS	1,542	2051	33.0%
VUCC	731	977	33.7%
WPX	600	763	27.2%
WAZ	534	699	30.9%
WAC	87	130	49.4%
Totals	11,867	13,079	**10.2%**

Awards Processing

Awards interest is primarily driven by the increased Digital Modes activity at HF, as well as at VHF+. The graphs below show 2020 activity as a trend – as projected for year-end 2020.
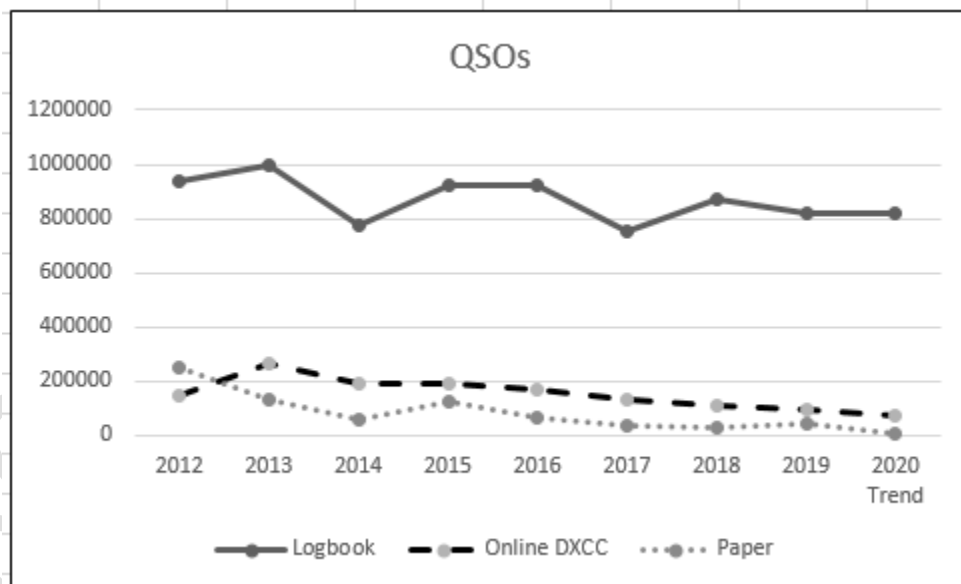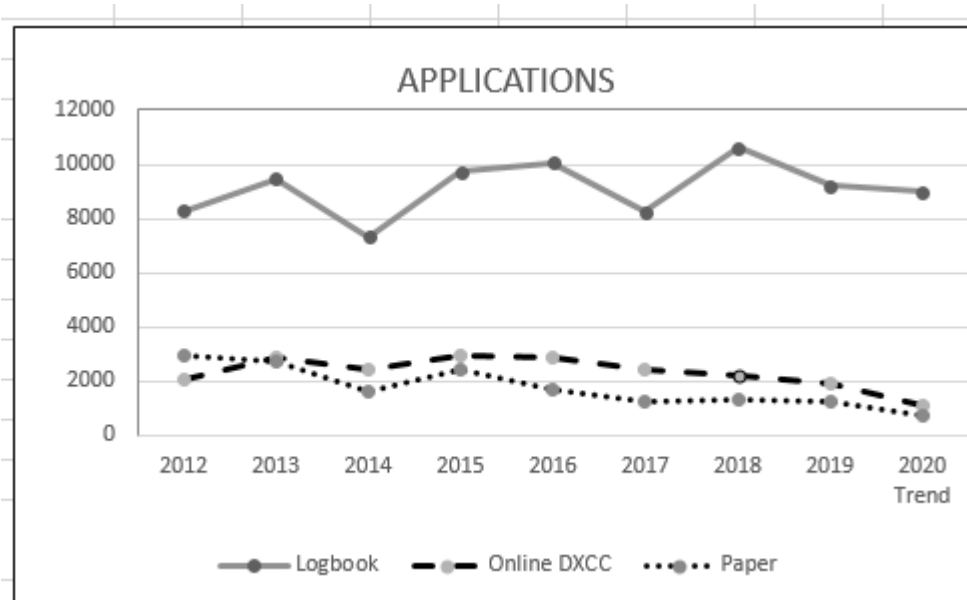
The trend of less paper applications continues, driven by continued interest in LoTW (fed by increased digital modes activity).

Most paper cards submitted for DXCC awards are entered through the online DXCC portal. Because QSO information is entered online by the applicant, HQ staff effort is only needed for

edits/corrections and final fulfillment. Our continuing objective is to have all paper QSL card applicants utilize online systems exclusively in the coming year or two.

LoTW

LoTW continues its growth in activity/interest. While we continue to experience sunspot lows, boosts in activity due to digital modes continued to fuel activity and interest on the HF (and lower VHF) bands.

The LoTW Committee, together with ARRL IT, are in the planning/development stages for the next generation LoTW (referred to as LoTW 2.0).

Currently, LoTW has 136,857 registered users (an increase of 14,400+ users since the end of 2019), and over 1.25 billion QSOs entered. LoTW remains one of ARRL's most popular programs.

At present, with our limited award offerings and reduced on-the-air award chasing, through September 2020 ARRL awards fees are below plan by 4.0%. CQ Award revenues are above plan by 30%, representing under 10% of all awards revenues.

There are several IARU Society Awards that have the potential to join LoTW once we are positioned to add them to LoTW. These additional awards will increase revenue generated from LoTW. LoTW is Radiosport's greatest revenue center, and it continues to have the potential for growth.

Special Operating Events

While ARRL-promoted operating activities remain very popular, COVID has limited most special events. As ideas come about, considerations for health and safety now must be included in addition to support capabilities limited staff and IT resources.

Contests

New Contest Rules

Two new rules have been approved by the Board of Directors and implemented in ARRL Contests:

- RTTY Roundup, a Multi-operator 2 Transmitter and Multi-operator Multi-transmitter Category have been added for all stations starting 2021.
- In all ARRL contests, unattended robot operations are categorically prohibited.

Actions by the Programs and Services Committee which is now empowered to regulate Contest matters (per the July 2020 Board of Directors action) include:

- A Waiver of the 500 Meter Circle Rule will be added to the 2021 ARRL DX Contests to permit multi-operator stations to expand their station equipment circle up to 100 km to allow their member operators to social distance while using the single group call sign (this

includes: maintaining a single group log and managing band changes with one signal per band at any time during the event subject to all other multi-op rules).

- The 2022 ARRL DX Contest will see additional Single Operator Single Band Category expansion to include Non-Assisted and Unlimited Categories as well as 3 power levels for each (increasing the number of categories from 6 u to 36; allowing 36 for W/VE, 36 for DX, and 36 for the Caribbean operations Island DXpedition operations).
- The 2022 DX Contest will also see expansion of the ARRL Affiliated Club Competition Rules for W/VE DXpedition stations, where these stations may apportion their equal portion of overall score (equal division per eligible operator) to a club where there member operator is on their club's member eligibility list.
- Band change limits (where present in rules) will be raised from 6 changes per hour up to 10 changes per hour.

Contest Advisory Committee (CAC)

As tasked by the PSC, the CAC continues its work toward evaluating the interests of the contesting community via their division representatives. Current efforts include a new HF+6 Digital Contest is being considered - targeted for 2021. The CAC will work with staff to develop parameters for a new digital-only contest considering things like bands, time-of-year, length, structure and whether it will remove digital modes from RTTY Roundup (leaving RTTY RU as an exclusive RTTY-mode event).

Contest Activity

Contest activity through late September has remained strong for ARRL-sponsored events. RTTY Roundup, as well as January, June and September VHF Contests, and Field Day, all benefitted from increased digital modes activity (primarily FT8), and each showed an increase in logs-submitted participation. The 2019 RTTY Roundup saw an increase of nearly 1,000 logs as compared with 2018.

Field Day activity for 2020 was impacted significantly by social gathering restrictions, yet more stations were on the air this year. See table below for additional details.

Field Day - Overall Statistics	2019	2020	% Change
Number of Participants	36,420	18,886	-52%
Total Entries	3,113	10,213	328%
CW QSOs	456,346	821,190	180%
Digital QSOs	138,848	380,317	274%
Phone QSOs	500,775	661,478	13.2%
Total QSOs	**1,095,969**	**1,862,985**	**171%**

As we enter the 2021 planning, we need to stay attuned to interests of the active amateur community, noting any feedback they offer on maintaining the competitive playing fields as the FTx modes continue their insurgence into our operating strategies and enjoyment. We must strive to keep Radiosport energized and interesting, especially to our newcomer – future members.

In general, 2020 HF Contest Activity is up by 26% (as compared with 2019 YTD), while VHF+ Contest Activity is up by 15% (as compared with 2019 YTD). These boosts are led by Field Day, June VHF, IARU HF and ARRL DX log receipts which were up significantly.

QSL Bureau

QSL Bureau activity has continued a downward trend, as predicted. Effects of impeded mail processes from COVID-19 have pushed the Bureau activity to even lower volume. Average weight of packages continues to decrease requiring increased resources to sort/process the number of individual submission packages.

Field Services

The ARRL Field Services department continues its strong presence in organizational activities. As volunteerism is at the heart of many programs (and the volunteers are active in multiple programs), a volunteer's influence on membership, promotion, product sales, and on operating activities is vital.

Continued support at all levels of volunteerism, especially with Section Managers and at the section level remain essential to our cause. Recent virtual workshops for new Section Managers have been very popular. Recent support for tropical storms, hurricanes and fires went very smoothly at headquarters.

The hiring and development of the National Club Coordinator position, together with developing tools for the member volunteers to energize clubs, will be key to increasing grass roots club, and therefore ARRL, membership growth.

Summary

While there are many things beyond ARRL's control when it comes to on-air activities we do predict, as the pandemic impacts continue, more than ever before more members (and nonmembers) will continue working from home and continue to have the potential to be on the air more.

And for those chasing ARRL Awards, their opportunity to backfill missing required entries will cater to their pursuing Single or 5-Band Awards, one or multiple band Endorsements, Challenge Award, or 5-Band Plaques.

We will continue to promote Award accomplishments keeping the conversation and interest alive (activities like: club-focused on-air events, club planning for State QSO or similar Parties,

community support activities once COVID-19 subsides, talking up the ARRL Affiliated Club Competition for ARRL-sponsored Contests, and the like). We must go beyond a "build it and they will come posture to instead a "we must sell it; we must demonstrate it (mentored)" tactic.

VOLUNTEER EXAM COORDINATOR
Maria Somma, VEC Manager

1. Department Mission and Goals

The ARRL VEC provides licensing examinations for prospective new hams and upgrade examinations for those already licensed. It also assures that a sufficient number of examination opportunities are available on a schedule that is convenient to the applicants.

The ARRL VEC will provide the examination candidate with tests that meet all applicable requirements of current Federal Communications Commission Rules and Regulations and are administered in accordance with those requirements and generally accepted educational testing principles and practices.

The ARRL VEC provides a service level of the highest order to our customers, the Volunteer Examiners.

2. Products and Services

Volunteer Examiners
- Accredits qualified Volunteer Examiner (VE) applicants by soliciting across a broad spectrum of Amateur Radio operators.
- Registers and publicizes the scheduled exam activities of ARRL VE teams.
- Supports VEC services at hamfests/conventions.
- Conducts special mailings to VEs.
- Promotes ARRL membership and publications.
- Provides essential VEC and FCC information in *QST* Exam Info column and VE e-newsletter.

Exam Administration
- Supplies printed exam materials and/or software to meet the VE team's examination needs.
- Receives and processes the completed exam session results and electronically files successful applicant license data to the FCC.
- Answers exam and license related inquiries regarding the licensing process.
- Files all test session data electronically to the FCC within three (3) business days or less.
- Maintains the highest degree of service and integrity in ARRL VEC examinations.
- Participates as a member of the National Conference of VECs Question Pool Committee.

Call Sign Administration
- Manages the FCC Club Call Sign Administrator program for FCC and ARRL, as one of three such coordinators, to provide an electronic filing mechanism for FCC Club Station License applications. Receives and processes the completed exam session results and electronically files successful applicant license data and club license data to the FCC. Provides FCC-license renewal notices to clubs.
- Administers the 1x1 Special Event call sign program for FCC and ARRL, as one of five such coordinators.

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- Provides FCC-license renewal notices to ARRL members. Processes license renewal requests received from members at no charge. Non-members will be charged a fee.
- Manages the electronic filing mechanism for FCC License modifications (changes in name/call/address). The service is available to ARRL members for free and to non-members for a fee.

Additional Services
- Manages and maintains the *QST* Silent Key column.
- Administers the License Class Certificate Program.
- Administers the International Amateur Radio Permit (IARP) program for FCC and ARRL.
- Successful organizational presence at yearly NCVEC conference and fosters connections with other VEC organizations.
- Assists with field-based membership recruitment by providing ARRL Volunteer Examiners with flyers promoting membership to newly licensed hams at VE exam sessions.
- Maintain, update, and improve areas of the website for which we are responsible.

VEC Program Results
Remote video-supervised online testing has been steady since the beginning of April and more Volunteer Examiner (VE) teams are being trained every week. Table 1 compares 2020 program results and projections over the past few years. While exam applicants served are down by 14% through September, sessions conducted are slightly higher than 2019 totals because remote video sessions are one examinee to one team of three VEs (1:1 ratio). The remote session numbers will be skewed on the high side because most teams are only examining one candidate per session, while conducting multiple sessions per day. These types of sessions are time consuming and labor intensive for the VEs.

We are below the target for the VEC market share goal by 5% (table 2). Through the end of September, we have conducted 5,219 exam sessions, served 21,826 exam applicants, and filed 19,421 new and upgraded license forms to FCC. We have also transmitted 5,901 individual license renewal and changes and 1,060 club license applications to the FCC. The total number of accredited ARRL VEs is slightly over 32,000.

The ARRL VEC continues to maintain its position as the largest VEC in the nation. A significant challenge facing our VEC is to remain competitive in the examination market as our competition modernizes their operations and offers reduced or free license examinations. We must continue to train teams to conduct remote video sessions and lead candidates to our teams in the electronic sessions system.

Program levels are projected to remain steady through 2021 as we move more teams to electronic testing. We anticipate growing our business in 2022 as we expand electronic testing and session filing from the field. We hope VEs are willing to take on this challenging and demanding assignment which is vital to the amateur radio community's growth. In 2021 and going forward, license activity is predicted to stabilize and return to more 'normal' levels as exam session opportunities open.

TABLE 1: ARRL VEC RESULTS AND PROJECTIONS						
ARRL VEC ACTIVITY	2018	2019 through September	2020 through September	2020 Projection	2021 Projection	2022 Projection
Exam Sessions Held	7,035	5,148	5,219	6,500	7,000	8,000
Exam Applicants Served	34,493	25,233	21,826	32,000	32,000	32,000
Elements Administered	45,817	33,637	26,604	41,000	41,000	41,000
New VEs Accredited	1,781	1,549	1,304	1,800	2,000	2,000
New and Upgraded License forms transmitted to FCC	30,393	22,183	19,421	28,000	29,000	29,000
License Renewals and Changes transmitted to FCC	7,159	5,147	5,901	6,000	6,000	6,000
Total Club License applications transmitted to FCC	1,803	1,281	1,060	1,700	1,700	1,700

TABLE 2: ARRL VEC MARKET SHARE						
FCC LICENSES ISSUED	2018	2019	2020 through September	2020 Projection	2021 Projection	2022 Projection
NCVEC License Activity	41,032	39,776	28,567	38,500	38,500	38,500
ARRL VEC License Activity	30,393	29,427	19,421	28,000	29,000	29,000
ARRL Market Share of Exams Given	74%	74%	68%	73%	75%	75%

<u>FCC Activity</u>

By the end of March, exam sessions had dwindled to only a few locations around the country. VE teams scrambled to find ways to safely hold in-person sessions. VECs explored conducting remote video sessions and then quickly implemented the procedures after a short time beta testing the process. In-person exam session activity is trending up again as venues following COVID protocols can re-open. However, activity continues to remain weakened due to social distancing and gathering restrictions, and because most VEs fall into the at-risk category, they are being cautious about restarting in-person testing in their areas. The average number of examinees per session has risen because there are fewer in-person sessions in comparison to last year in addition to the backlog of candidates from all the canceled sessions in March, April, and May. Video sessions have a time limit for candidates (approximately 30 minutes per exam) so teams can swiftly move through the list of waiting examinees.

Since April 1, W5YI-VEC, GLAARG VEC, and ARRL VEC have remotely tested over 5,000 candidates using video conferencing and online examinations. Other smaller VEC organizations in the country that may be interested in pursuing remote testing have been gathering information on the process.

A new Extra class question pool took effect on July 1, 2020. No question pools are scheduled to be updated or released in 2021. The Technician pool is scheduled for review in 2022.

Results through the end of September 2020 show that successful new applicants are only 2% behind last year's results (Table 3) and should meet the original 2020 year-end prediction (29K). Upgraded licenses are 14% lower than the same period last year (Table 3) and will fall short of the original year-end target (original 9,500 versus reforecast 8,700).

It's important to note, the final quarter of the year is always challenging because of the usual decrease in license activity. This year could potentially see a bump in fourth quarter activity levels because of remote video exam session opportunities.

The upside of most of the country staying home and social distancing is a heightened interest in Amateur Radio. Candidates are extremely prepared to take their exam because they had plenty of time to study during the lockdown. The pass rate is notably elevated for all exam levels in 2020. The natural disasters are also having an impact on inquiries about amateur radio and how operators can help in local communities. Amateur radio interest and examination requests should remain stable in the coming year and we therefore, forecast 29,000 new licensees and 9,500 upgrade licensees in 2021 (Table 3).

TABLE 3: NEW AND UPGRADED FCC LICENSES BY YEAR							
FCC ACTION	2017	2018	2019	2020 through September	2020 Projection	2021 Projection	2022 Projection
New Licenses							
Technicians	28,509	27,984	26,503	19,403	26,000	26,000	26,000
Generals	3,089	3,147	3,101	2,244	2,500	2,500	2,500
Extras	598	445	408	281	500	500	500
Total New	*32,196*	*31,576*	*30,012*	*21,928*	*29,000*	*29,000*	*29,000*
Upgraded Licenses							
To General	7,304	7,288	7,698	4,586	7,000	7,000	7,000
To Extra	2,272	2,168	2,066	2,053	2,500	2,500	2,500
Total Upgraded	*9,576*	*9,456*	*9,764*	*6,639*	*9,500*	*9,500*	*9,500*
GRAND TOTALS	**41,772**	**41,032**	**39,776**	**28,567**	**38,500**	**38,500**	**38,500**

3. New Initiatives, Technology, and Services

The VEC exam fee will remain at $15 in 2021. With increasing shipping and printing charges, expense control will continue to be a priority.

The ARRL VEC market share of total Amateur Radio exams administered usually fluctuates between 72 and 76 percent. A significant challenge facing us is to remain competitive in the Amateur Radio examination market as our competition modernizes their operations. Our market share will decline as teams and candidates choose VECs that offer field data entry and reduced or free license examinations.

With the commonness of digitization, there is an expectation that information should be quickly and perpetually available. Instant access to information is prevalent on the internet which creates a demand for instantaneous data access and retrieval. Mail is inefficient and exam session package delivery times vary widely even within same regions of the country. In this age of instant gratification, we must be able to accept exam session documents in real-time to meet expectations.

As other VEC organizations in our industry digitize their operations, there has been a trend of growth for these VEC's. This has important implications on the future of our VEC. We must do the same to remain competitive.

Modernizing ARRL VEC

In the last six months, we've all had to navigate unprecedented challenges that we never imagined we'd be facing. The health and safety of examinees, volunteer examiners, and staff became a priority and was at the forefront of our exam session execution and planning.

Throughout its three and a half decades of service, the VEC system has served the FCC as a shining example of the successes of a privatized system. While each of us continues to respond to the evolving crisis and face unique challenges, opportunities also await. Adapting examination administration will be a challenge, but one we should undertake in order to advance the VEC system and improve services.

As we are grappling with an issue of enormous scale and human impact, we need to assure the public that we are here offering support to the community by providing safe in-person exam sessions and are flexible in embracing new ways to deliver examinations to the public. As we explore and develop remotely delivered exam sessions, we must be especially mindful of examination integrity as we pursue this new process.

As the COVID-19 takes its course, we know that we must keep an eye to our future and to new technology, and we must be poised to thrive in the post-COVID world.

New Technology
A. *VEC program migrating from computer to web-based application.*
B. *ExamTools online examination system available to VE teams.*
C. *Remote video-supervised exam sessions.*
D. *Session documents upload webpage.*

A. VEC Program on the AIS System

We are in the process of migrating the entire VEC program data off a legacy computer system onto a web-based application. Moving VEC onto the AIS system is a high priority project. Staff training in a test environment has been successful. Databases have been moved to the production

environment and new processes and programming for reporting are being created. The system will go live in November 2020. The desired outcome would be to improve and streamline functionality for VEC staff and to integrate with the FCC data entry program.

B. ExamTools is Modernizing US Amateur Radio Licensing

The ExamTools online examination system will replace the legacy ARRL VE Exam Maker test generating software developed by ARRL in the 1990s. Our current software (produced in-house) has limited functionality for the VEC and does not adequately serve our examiners. Additionally, Adobe Flash player is being discontinued at the end of this year which is our software's installation platform. Rather than trying to find a solution for our outmoded software, it will be phased out and will no longer be supported after December 2020. We are urging our VEs to start using ExamTools (https://exam.tools/) which is a more sophisticated web-based system.

VE teams have been using the ExamTools website for online examinations. The system works well for online or printed examinations and includes registering and tracking candidates throughout the session, on screen exams and grading, online signing of CSCE and 605 forms by the candidate and examiners, logging and compiling session stats and VE participation list, and output files for upload to the coordinating VEC. The program manages almost everything needed to conduct a test session. This comprehensive program also has exam questions analytics which is being shared with the NCVEC question pool committee. Users must create an account on parent website HamStudy (https://ham.study) to access the system.

ExamTools online exams can also be used at in-person sessions to minimize contact between VEs and candidates. The program will also create printed exams that utilize GradeCam for grading tests. GradeCam will automatically grade exams in seconds using the camera on a phone or computer, which eliminates the need to manually score the tests.

The system automatically generates output files (one PDF and one JSON) at the conclusion of the session which are immediately ready for upload to the coordinating VEC. The PDF files contain the exams, 605s, CSCEs, the VE participation list, and the test session summary which we (as the VEC) must check. The JSON files have basic session information and 605 form information that the FCC requires.

Our IT department has been beta testing the JSON files for importing into our database. Eventually, the JSON files will automatically upload into our FCC data entry system. Staff will not have to key information from these uploaded sessions. The upload must be checked for accuracy and the validity of the session PDF data must be verified before transmitting to FCC. When we are ready to roll out this feature, the VE teams will have to upload both file types to be compliant with FCC rules.

The desired outcome is to improve processing and functions, reduce errors, and shift some of the data entry workload to the field.

C. Video Exam Session Technology

We currently have about 30 teams trained to conduct remote video exam sessions with that number slowly growing every month. Remote sessions are time consuming, labor intensive, and require

VEs to be tech savvy and meet system requirements (high speed internet, webcam, a computer with at least 1 GB of RAM and a dual-core processor, etc.).

At best, a team of 3 VEs can test one candidate every 20 minutes (depending on how long the candidate takes on their exam). Video sessions are cumbersome and move multiple candidates through testing much slower than in-person sessions. Time and experience with in-person exam sessions is invaluable when transitioning to video sessions.

Zoom is currently the most common video conferencing platform being used for remote sessions, but others can be utilized (such as Microsoft Teams, GoToMeeting, BigBlueButton, Discord, etc.) if the team is more familiar with those systems.

Teams will need to set up a way to electronically accept test fee payments directly (such as PayPal, Venmo, Zelle, Apple Pay, Google Pay, etc.) and then will have to send the VEC a check or pay for the candidates with a credit card.

We realize this requires a heavy time commitment for our volunteer examiners and we appreciate their interest in exploring this new way to conduct Amateur Radio exam sessions.

Conversely, we have several teams that do not want to take on this endeavor or cannot because they lack the technological tools. A few mentioned that they live in a very rural / remote areas where cell phone service and wireless is very limited and does not support any video or remote viewing. These teams consistently coordinate exam sessions with our organization. Additionally, many candidates have indicated they prefer in-person sessions and were waiting for locations to open. Therefore, we must ensure we continue to serve these types of customers as we shift our business towards automation.

D. Upload Session Files from the Field
The ARRL VEC's highly sought after and lauded program feature during the pandemic has been our session documents upload webpage.

The interactive upload page allows users to submit a variety of electronic documents such as PDF, DOC, DOCX, JSON, quickly and easily. ZIP files are not allowed by design as they present a tremendous security risk. Uploading session files allows for quicker processing to the FCC. VE teams upload files to HQ related to the conducted exam session and all information relevant to the successful candidates. Authorized VEs are sent the upload page URL which is hidden from the public.

We are averaging 100 to 150 uploaded session files (both in-person and remote) per week. Pre-COVID we were averaging 25 session file uploads per week as most VE teams were not utilizing this program feature.

Candidates must be registered in the FCC system and must have FRNs (Federal Registration Numbers) already issued for use at sessions. Social Security numbers are not permitted on any exam documents or session files that are uploaded.

For the all-electronic sessions (remote online), the ExamTools examination system creates a PDF file (for VEC record retention) and a JSON file (for the FCC submission).

For in-person sessions, because it was conducted on paper, there are different protocols. The VEC retains the uploaded scanned paperwork PDF files (as a backup) but we must receive the original paper documents from the VE team and hold on to those original documents for 15 months.

VE teams and candidates are thrilled that the average wait time for a license has plummeted to a few days instead of a few weeks. Sessions conducted over a weekend will typically see licenses issued by Monday afternoon.

We will continue to promote this widely popular and marketable program benefit.

4. Acquisition and Retention

ARRL should be the industry leader for FCC and VEC information, attracting both ARRL and non-ARRL VEs to our program. The more we understand our customer's wants and needs and meet those needs at our exam sessions, on our website, and in our marketing, the better we will attract and serve them.

ARRL VEC will maintain regular contact with the ExamTools developer and programmers and offer product improvements where needed. We will head off potential market share and revenue losses due to industry consolidation of the examination software system used in online examinations. It will become increasingly difficult to meet projections and retain our market share as the examination industry continues to consolidate. Remote video online exams have played a large role in the amalgamation of the industry. We will aggressively continue to leverage space on the ExamTools system and take actions to head off possible losses. We will develop a mechanism to collect exam session fees online and collect examinee contact information for membership recruitment.

We will identify and build on new capabilities made possible by the AIS / FCC data entry systems integration. We will continue to fine tune and improve the connectivity between the backend system and the web. Online video exam sessions conducted in ExamTools will be uploaded directly into our FCC data entry program from JSON files created by the program. Shifting the 605 application form data entry function from HQ staff to VE teams in the field would shorten the field response time from examination to license issuance. New efficiencies will be attained and examinees and VEs will enjoy quicker turn-around times on license issuance.

We will provide a superior overall experience for our customers and potential customers, which will increase traffic to our website and improve our acquisition rates. The extraordinary demand for online exams during the pandemic forced the quick transformation and advancement of the amateur radio testing industry. The number of VEs using web-based services, the online exam system, and upload web page must continue to grow. We must stay committed to offering quality programs and services and emphasize our new web-based services to remain competitive in the electronic testing market.

We will continue to advertise and deploy remote session procedures, authorizing and expanding the number of teams using these program service enhancements. Established teams will be trained to administer electronic sessions in the ExamTools system and use the session documents file upload webpage. We will also continue to strengthen our relationship with our internal customers (VEs) and our external customers (examinees) to draw attention to our new products (online exams) and market our program to draw potential VEs to ARRL. By steering VEs toward online exams we will decrease spending on shipping and printed materials.

There is immense potential in creating new mechanisms and systems to enhance our customers' satisfaction and improve their examination experience. Taking these steps may mark the beginning of encouraging new teams to use our VEC and enticing migrated teams to transfer back. It will demonstrate our mutual commitment to delivering a fast, easy, and affordable solution that allows teams to speed up FCC license issuance for customers who expect to see their FCC licenses quickly. Hopefully, heading off a market share decline and giving us traction to grow our customer base. Stronger business results will be achieved through meeting our VE team expectations, less dependence on USPS and higher customer satisfaction with the shorter wait times for license issuance.

Therefore, in 2021, as we continue to modernize the ARRL VEC department, these strategies will help our program remain strong and active in the amateur radio community. By 2022, the desired outcome would not only be to remain competitive but to grow our market share and session activity, improve our customer relations, and decrease expenses.

EMERGENCY MANAGEMENT
Paul Gilbert, Emergency Management Director

The world of ARES emergency communications needs updating to remain relevant to served agencies and customers of the ARES amateur radio community. It is the responsibility of the ARRL Emergency Management Department to shepherd this task to fruition.

The Emergency Management Director will be working with various national partners and the ARRL volunteer leadership in conjunction with various ARRL departments to identify and accomplish needed changes. Through cross department efforts, tools will be developed to assist with digital communications, mesh networks and other communication technologies in addition to exploring the potential for a publication focused on the needs of the radio amateurs interested in emergency communications, preparedness and public service.

The emergency communications dynamic for amateur radio is changing because systems that amateur radio have supported in times of failure are no longer failing. Therefore, ARES emergency communicators are going to have to reinvent themselves in order to remain relevant to the needs of the served partners.

The process of reinvention will include teaching Communication Leader (COML), Technician (COMT) and Radio Operator (RADO) type skills along with changing members thought processes to not be just radio operators. They would be overall assets and resources to help the served agency. Examples of new duties include having an ARES member answering phones, vetting ICS forms, monitor a low water crossing rather than an EOC staff member perform those tasks. This releases EOC staff, making ARES relevant as a force multiplier.

The 2021 Plan includes allocation of resources for travel and meetings outside of Newington, new HAM Aid kits, upgrades to some of the current HAM Aid kits and content provided by experts in the field of emergency management.

The overall goal is to change the operational approach to make ARES and amateur radio a premier emergency communications community and thereby creating value in membership to ARRL.

PRODUCT DEVELOPMENT
Bob Inderbitzen, Product Development Manager

Overview

A dedicated Product Development function was established in 2019. For ARRL, "products" include member and mission-related benefits, services, published content, programs, and experiences. The mission of Product Development is to create products that have value for our members and other stakeholders, and to continue to be relevant and attract members. It has introduced a new way for developing ideas, for creating a climate of innovation, improving the effectiveness of existing programs, and most importantly -- for cultivating collaboration; between staff, business units, member-volunteers and other stakeholders. Creating value relies on a regular source of ideas from everyone. Small, cross-functional agile teams develop ideas, and the Management Council provides additional review and input.

2021-2022 Product Development Goals

The Product Development Manager provides ongoing management for a variety of products, programs, and partnerships. The following is a summary of department goals, including initiatives already underway. Since we have an agile product development culture, this list is intended as a starting point or snapshot of foreseen interactions. This work is subject to rapid and flexible response to changes made throughout new product discovery and planning.

Products that Target New Licensees. In 2020, the introduction of *On the Air* magazine and the ARRL Learning Network webinar series responded to our strategic focus to redesign ARRL's membership experience and to increase membership growth by increasing benefits for new and inexperienced radio amateurs. Additional development of these new benefits includes migrating the *On the Air* blog to a true blogging platform and deciding how to use our increasing library of recorded webinars to draw prospective members to ARRL.

Partnerships. ARRL has many partnerships that help us achieve our mission. Partner relationships increase the visibility of ARRL and amateur radio while creating mutually beneficial opportunities. For example, ARRL and FEMA have a long history of partnership with respect to our shared interests in training volunteers for public service and emergency management. At the time of this writing, we are exploring future partnerships with representatives from the Civil Air Patrol, National Association of Tower Erectors, Courage Kenny Handiham Program, and QSO Today Virtual Ham Expo.

Increase Engagement Using Video. We must capture the interest of members and prospective members who currently seek and find amateur radio video content mostly outside of ARRL. We are exploring ways to increase our ability to produce and deliver more video, and to develop a digital video competency.

W1AW. Longtime members have strong affinity with W1AW's first century. Members have enjoyed W1AW for ham radio news bulletins, Morse code practice, visitor tours, and guest

operating. As we look forward to using W1AW to engage a second century of members, we will evaluate its present use and explore opportunities to transform the station for the future.

ARRL's Introduction to Radio Kit. Throughout 2020, we advanced development of an "introduction-to-radio kit" that can be used by anyone to learn about basic radio principles. The project design was created by student engineers and 2020 ARRL Foundation Scholarship recipients Levi Zima, KN4YHS and his sister Kirsten Zima, KC9RWG. Ultimately, the kit will help members develop meaningful interactions through their outreach activities to introduce radio communications to others.

Expand Digital Media. ARRL must increase our publication of information and content in the digital realm if we expect to attract and retain tech-savvy members. Additionally, as we increase our digital publishing competency, we will increase the likelihood of prospective members to find, from ARRL, the information they need to expand their knowledge of radio technology and radio communications. Most new ARRL books already follow parallel print-and-digital publishing paths. Additional areas of development include further expansion of digital media using ARRL's vast library of previously published content and use of mobile optimized platforms for content delivery such as a blogging platform.

Portfolio Analysis. As we set our sights on trying new things, it will be important to identify opportunities to shed legacy programs, services, and products that no longer provide (enough) value to members and/or contribute to the organization's strategic needs. This will require developing efficient methodologies for evaluating products on an ongoing basis. Ultimately, discontinuing some products will free up resources, including staff, creating opportunities to support new products. There are many examples of existing products that have outlived their usefulness, and which can be discontinued or sunset:
- Books with few sales
- Programs with disappointing participation
- Services with weak penetration
- Benefits that do not have strategic underpinnings

Collegiate Amateur Radio Initiative. Established in 2017 by the W1YSM Snyder Family Collegiate Amateur Radio Endowment Fund, the program helps network college radio clubs, and explores opportunities to bolster student interest in radio communications for practical experience and career connections. Program support comes from member-volunteers Andy Milluzzi, KK4LWR, and Tony Milluzzi, KD8RTT while Bob Inderbitzen serves as staff liaison.

Regular areas of interface include monthly web meetings with participation from dozens of active or budding ham radio programs at colleges. We have included ARRL-sponsored collegiate exhibits and forums at Dayton Hamvention and Orlando HamCation, increasing the visibility of young hams. The Milluzzi's organize the annual Collegiate QSO Party (October), for which ARRL provides editorial support and donates winner plaques (funded by the program's endowment). Throughout 2020, our interface with college radio clubs contributed a regular source of content for ARRL publishing outlets.

In 2021, we will prepare a year-long recognition and celebration of amateur radio at colleges and universities for the 2022/23 school year. The centerpiece of the planning will include a year-long operating event, *ARRL Colleges on the Air*. The event will be organized much like *National Parks on the Air* in 2016. The event will be an exciting activity for college radio club members and their new student-hams and will attract all members to join the fun as university stations are "activated." Other parallel activities are being considered to further engage collegiate ham radio including a project-building competition, a student competition (individual challenge), and an ARRL student-membership booster.

Events and Exhibits. Bob Inderbitzen, for Product Development, and Kathleen Callahan, for Marketing and Communications, co-organize our participation and exhibits for major amateur radio events – including our annual participation at Dayton Hamvention (May 21-23, 2021). We acknowledge that the COVID-19 pandemic has introduced much uncertainty into any long-term planning for in-person conventions, and even if some of these events resume in 2021 – our participation may be modified to meet the health and safety of our staff and volunteer participants.

2022 ARRL National Convention. In October 2020, with the approval of the Executive Committee, we made a joint announcement with the Orlando Amateur Radio Club to postpone the 2021 National Convention and Orlando HamCation® until February 10 – 13, 2022. A cross functional team has been developing a National Convention program and exhibits. A convention theme has been committed: *reDiscover Radio*. Our planning includes a series of day-long ARRL-sponsored Training Tracks and a National Convention luncheon on Thursday, February 10 preceding HamCation's 3-days at the fairgrounds. A hotel contract is in place and there are plans to use the ARRL Events app, introduced at Dayton Hamvention 2019, to support attendees navigating the HamCation program.

QSO Today Virtual Ham Expo. We are currently negotiating ARRL's participation for the second QSO Today Virtual Ham Expo, March 13-14, 2021, organized by the QSO Today podcast with the sponsorship of some of our major advertisers. We enjoyed a significant amount of insight by participating in their first event, held in August 2020. Our partnership with the event gave us close access to organizing information and attendee details. The 2020 event had over 26,000 registered and over 16,000 attendees on the platform, of which 80% of the US Amateur Radio Licensees were ARRL members. The ARRL virtual exhibit saw nearly 5,000 unique visits. Unlike the flurry of in-person events that have moved their presentations to webinar format events, this event is held on a live, virtual reality platform used by Fortune 500 companies and major universities. The online event includes many of the same features as an in-person event: forums, exhibits, and opportunities to interact. We look forward to continuing to develop our participation in a virtual event that has strong backing, and to test a new model for partnering with these kinds of events. In the process, we are collecting thousands of names and email addresses to which we can market our membership and products.

Outreach. We rely on having a healthy pool of new entrants to amateur radio to grow our membership. The current Strategic Plan urges us to "reach out to communities and avocations whose members may be interested in the wide variety of amateur radio activities, experiences, and opportunities." Examples of current areas of focus include collegiate amateur radio and pilots. 2021 will mark the third year of our 3-year commitment to participate at the annual EAA

AirVenture – a final year to evaluate the overall opportunity as contributing to our goals, or not. We will also examine opportunities to increase the visibility of amateur radio and ARRL among organizations and communities promoting STEM education by leveraging our Teachers Institute on Wireless Technology, ARISS, ARRL Foundation scholarships, Collegiate Amateur Radio Initiative, and instructional resources.

Developing Member-Volunteers. We are increasingly developing more effective ways to enlist the help of member-volunteers to contribute their knowledge, experience, and time – especially in areas that will help us increase resources for new and inexperienced hams. For example, In July 2020, we introduced the ARRL Learning Network webinar series as a function of our Lifelong Learning Department and future Learning Center program. The live webinars and recorded presentations are intended for members and will create additional value in the membership. The Learning Networks requires collaboration across functions at HQ and it uses qualified member-volunteers to help us reach our objectives, two things we have been criticized for in the past. We are also supporting the ARRL Amateur Radio Direction Finding Committee with their interest in developing ARDF content on our website – a model that could be expanded to increase our website content.

Lifelong Learning
Kris Bickell, Lifelong Learning Manager

<u>**Overview**</u>

The department will remain focused on the development of the Lifelong Learning program. The primary focus for 2021 will be the successful launch of the new ARRL Learning Center. Additional resources will continue to be needed to foster the ongoing development and support of this initiative, as the Learning Center is a vital element of ARRL's digital expansion for 2021 and beyond. In addition, the department will continue managing the Education & Technology Program.

<u>**Staffing**</u>

One additional staff member is proposed for 2021, to allow the department to properly expand capacity for developing dynamic digital content that is necessary for the Lifelong Learning initiative:

- **New position:** Digital Content Developer
  This position will assist the Lifelong Learning Manager and Instructional Designer in developing digital content, producing & editing video content, assisting in the management of the Learning Center and other related tasks. This position is essential for properly supporting the growth of the Lifelong Learning program through the development of high-quality digital content.

<u>**Lifelong Learning Program**</u>

Efforts will be focused on these key areas in 2021:

- Launching the new ARRL Learning Center:
  The Learning Center is designed to be the public-facing hub of ARRL digital learning content, providing users with a seamless integration between the various platforms, including the current website, the new website developed in cooperation with Mintz+Hoke, the Path LMS (Learning Management System), and Personify 360 (Association Management System).

- Ongoing development of digital learning content:
  The development of high-quality learning content will continue on an ongoing basis, so resources will be needed for a variety of tasks, including contracting with external Subject Matter Experts (SME), creating dynamic multimedia content, and refreshing existing content, all supported extensively by the new Digital Content Developer position.

- Administration & support for the learning platform:
  Support for both members and prospective members will be offered by Lifelong Learning staff, who will provide assistance for the entire learning environment, including training for using the Learning Center, requests for technical support, managing the learning technology and the corresponding functionality between the platforms, and overall program oversight.

The following programs serve as the foundation for the present and future of ARRL's focus on digital learning content:

ARRL Learning Center

The department continues development of the new online ARRL Learning Center to provide a variety of training for new, current and prospective amateur radio operators. The focus is on creating an amateur radio learning hub that provides instructional topics for a wide range of users and interests, including recently licensed hams looking for help getting started, experienced operators seeking to expand their skills, and non-licensed individuals wanting to learn more about ham radio and obtain their license.

ARRL currently offers 3 online courses that provide training in the area of Emergency Communications:
- EC-001
- EC-016
- PR-101

The new ARRL Learning Center will expand upon these current courses and is being built in cooperation with Mintz+Hoke, a digital media and public relations agency that is assisting ARRL with the strategy, design, and promotion of this project. The Learning Center will offer training through 3 primary learning tracks, identified through research as the top reasons that new hams get involved in amateur radio:
- Emergency Communications
- Personal Communications
- Electronics & Technology

Development of additional courses is well under way, and includes the following topics:
- Intro to Amateur Radio Communications
- Intro to Amateur Radio Contesting
- Introduction to Space and Satellite Communications
- Intro to Radio for Disasters and Emergencies
- Introduction to How Radio Works
- Understanding Basic Electronics-Components
- Understanding Basic Radio
- Understanding Basic Antennas

ARRL Learning Network

The ARRL Learning Network was started in July 2020, to help introduce more members to the variety of activities and opportunities that radio amateurs enjoy. This webinar series features live online 30-minute presentations from member-volunteers who want to share their experience and help others become more active, involved, and engaged in ham radio. A 15-minute question-and-answer period follows each presentation.

The webinars are hosted using the GoToWebinar platform, and recordings are available for viewing by members and ARRL-affiliated radio clubs, as part of the ARRL Learning Network library. Ultimately the recordings will be located within the new ARRL Learning Center. These sessions have quickly become a popular offering, as the first 12 presentations were attended by more than 2,250 members. Below is a list of upcoming and recorded sessions:

Upcoming Sessions:
- How to Get Started in Amateur Radio Contesting
- Amateur Radio's Role at the Boston Marathon Bombing
- Learn and Have Fun with Morse Code

Previous Sessions:
- Your First SOTA Activation
- Welcome to the World of Arduino
- Grounding & Bonding for Home HF Stations
- Kit Building Techniques for Success
- Getting Started with Summits on the Air
- The Sport of Finding Hidden Transmitters on Foot
- Capture the Magic of 6 Meters
- Introduction to Computer Logging
- Introduction to Digital FM Modes
- HF Wire Antennas
- Fun with Digital Signal Modes FT4 and FT8
- Relay Stations and the Art of Traffic Handling

Proposals for future sessions are welcome at any time and can be submitted online through ARRL's Learning Network page, with new sessions being added on a regular basis.

Educational Services

The department will continue to offer the following educational programs and services:

- **Education & Technology Programs (ETP)**

  o *Teachers Institute (TI):* Unfortunately, due to the pandemic, the 2020 Teacher's Institute (TI) had to be cancelled. The TI program is supported by the ETP Fund and is an important activity that allows ARRL to offer professional development to classroom teachers. The plan for 2021 includes an additional TI-3 session, in response to demand from recent participants, along with the three regularly scheduled sessions (two sessions of TI-1 and one session of TI-2). Marketing efforts will be expanded to promote Teachers Institute to a larger audience, by advertising in STEM publications, exhibiting at STEM teacher conferences (as conditions allow), and conducting outreach to registered ARRL teachers.

o *ETP Grants:* The ETP Fund provides two grants to support amateur radio in the classroom:

1) ETP School Station Grants are awarded to schools that provide a plan to use Amateur Radio as part of an enrichment program and/or as part of their classroom instruction.
2) ETP Progress Grants offer further support to those teachers who are currently using Amateur Radio in their classrooms as an instructional tool, and who need additional resources to enhance their current configuration.

- **ARISS (Amateur Radio on the International Space Station)**

The department will continue to serve as a resource for ARISS, by providing financial support for ARISS administration, maintaining ARISS resources on the ARRL website, and managing the ARRL Ground Station Loan Program, for groups in need of the appropriate equipment required for making an ARISS contact. Lifelong Learning Manager Kris Bickell, K1BIC, is also a member of ARRL's ARISS Committee.

- **License Instruction**

The department will continue to maintain and update the instructional materials and web resources which support license instruction, along with approving instructor affiliations and license class listings.

LAB
Ed Hare, Lab Manager

MISSION STATEMENT

The ARRL Lab provides ARRL members and the Amateur Radio community with technical information services, trusted product-review testing, spectrum-protection engineering, professional industry contact and a comprehensive RFI/EMC program.

MAJOR ACTIVITIES AND PROJECTS

- ### *Product Review Testing*
  The Lab expects to test approximately 40 pieces of equipment for Product Review in 2021. A typical multi-band, multi-mode HF through VHF (and up) transceiver may take as much as 10 days of testing, with some units requiring some re-testing due to problems discovered during the review process. Most of the smaller units take one to two days of testing time. The Product Review testing program also requires interface with the Product Review editor, the individual doing the review and possibly with a manufacturer to help resolve technical deficiencies encountered during the review.

- ### *Other Support of Publications*
  The Lab will continue to author and/or review ARRL publications material. This is done on an as-needed and as-requested basis. The Lab also reviews the technical content of all advertisements that appear in ARRL publications and assists the Advertising Department as needed.

- ### *Technical Information Service (TIS) and the Technology Web Pages*
  The Lab responded to member technical inquiries by phone call, email or letter. In 2020, major revisions to the ARRL TIS web pages were made including creating a comprehensive index page to all the technology pages. Improvements will be made to the pages throughout 2021, primarily in to identify and create new pages that cover technologies not covered by our current pages. This will be ongoing throughout the year.

  As requested, the ARRL Lab and W1AW staff regularly support the creation of videos, podcasts and webinars. The Lab and W1AW will continue to do virtual "club talks" from the Lab facility, as well as attend ARRL conventions virtually and in-person when travel restrictions are lifted.

- ### *RFI Program*
  There are six areas of significant concern that will be addressed in 2021:

  1) *Interference from power lines and other noisy electrical devices*
     Power-line cases continue to dominate the ARRL's RFI work. The Lab will continue to work directly with Laura Smith and other FCC enforcement personnel, under the scope of our informal agreement with the FCC on the resolution of power-line noise cases.

2) *Identification of noisy devices and formal FCC complaints*

In response to interference reports, The Lab is continuing to identify and test various noisy devices. These cases are either handled as a harmful interference complaint or, if devices exceed the FCC noise limits, a formal complaint to FCC is initiated. This work was begun in 2020 but put on hold due to staff not being able to be in the HQ building to do the needed testing. This will be ongoing throughout 2021, driven by complaints, opportunity and the identification of noisy devices.

3) *IEEE Standard on the resolution of power-line noise complaints*

The Lab has been working with the IEEE on a standard on the method/process to handle power-line cases. This standard is expected to be in ballot in the first quarter of 2021 and published by the IEEE near the end of the second quarter.

4) *Solar power*

ARRL has continued to receive complaints of interference from solar-power installations. The majority of these have involved one company, Solar Edge. Solar Edge has been more responsive than many companies to address approximately 200 cases of harmful interference at various locations across the country. ARRL will continue to work with Solar Edge to resolve a few remaining cases that have proved to be somewhat difficult. This is being discussed with FCC staff. Lab staff member, Paul Cianciolo, has a Solar Edge system at his home and has made some progress helping Solar Edge to improve its RFI solutions.

5) *Noise studies*

There is an increased interest in knowing more about the impact of noise on radio communications. Both the FCC and ITU have been looking at various ways to determine whether noise levels have changed or are changing. In 2021, the ARRL Lab will obtain copies of existing noise studies and determine how they can be compared to create a timeline of the changes in noise levels over time.

The ARRL Lab is also working with the EMC Committee to make measurements of man-made ambient noise levels at various locations. Vice Director Ned Stearns has arranged for ARRL to have remote access to a quiet contest location in New Mexico. This will allow ARRL to obtain noise data over a long-term basis at a quiet rural site. This work is primarily an activity of the EMC Committee, so the timeline and measures of success are-driven by external circumstance. The Lab will continue to support this effort throughout 2021.

The Lab will also make drive-around measurements of noise levels across a relatively large geographical area. Spot measurements of noise from fixed locations will also be made at various antenna heights. This will also allow better correlation of the measurements of commercial noise emissions typically made at a height of 1 meter to the actual, practical heights of Amateur antennas. ARRL will seek to have some of these results published in IEEE peer-reviewed journals, adding to the body of knowledge about man-made radio noise.

6) Individual responses to help members with interference problems

Helping members with RFI problems will continue to be a priority in the ARRL Lab. This ranges from answering questions about RFI to actual RFI cases to helping forward cases to the FCC for further action. This is an ongoing responsibility of the Lab that is expected to continue at its present levels into the future.

- ## *Support of ARRL Spectrum-Protection Activities*

In addition to its RFI programs and ARRL involvement with industry standards and industry contact, as needed, the ARRL Lab will respond to various regulatory and other threats that may arise during 2021. Although it is not possible to predict the exact nature of various FCC and other regulatory threats, the Lab will continue its historical precedent of generating engineering studies and/or measurements as requested to support ARRL's responses to FCC rulemaking actions.

The Lab is also more heavily involved with the IARU than it has been in years past. This includes the work with IARU on wireless-power transfer systems as described below and Ed Hare's service as the ARRL representative to the IARU Region 2 EMC coordination activities.

- ## *Wireless Power Transfer and Electric-Vehicle Charging*

There are two major classes of wireless-power transfer (WPT) devices available. One type includes small wireless "pad" chargers used to charge some cell phones. These typically operate at low power and have not posed any specific interference problems to amateur radio. WPT chargers are also being developed for use in charging automotive electric vehicles (EVs). These may operate at power levels of up to 20 kW in residential environments and greater than 100 kW for some commercial installations. Evaluation by the Lab staff and IARU volunteers indicates that these pose a significant interference to amateur radio. As driven by regulatory activities in this area and industry opportunities, work will continue in 2021 with testing, committee participation and regulatory activities related to WPT.

ARRL serves as a voting member of the American National Standards Institute accredited C63® EMC Committee. It is working on a standard for wireless power transfer charging devices, both the smaller powered devices as well as higher-powered charging stations used to charge electric vehicles. Ensuring that WPT is tested correctly is a vital part of assessing the impact of WPT on licensed service. This standard is nearing completion and is expected to be balloted in 2021. We will begin to introduce our EMC Engineer to this process, as a succession plan to accommodate any future staffing changes.

WPT is also being addressed at the ITU level as well. There are proposals on the table to create an ISM allocation for WPT that could overlap the lower amateur bands. In 2021, work will continue with IARU volunteers to allow coordination between IARU societies on how to respond to the ever-changing WPT regulatory environment. This work will consist of field strength measurements when systems are publicly available to test, working with manufacturers and regulators and analyzing several technical papers provided to the ITU.

- *__IEEE and Other Industry Contact__*
  The Lab staff will continue to improve ARRL's relationship with the industry, in areas ranging from local Section and Regional participation to EMC. Ed Hare will continue to serve on the IEEE EMC Society Board of Directors as its elected Vice President for Standards. This highly visible position adds significantly to the credibility of amateur radio and ARRL in its dealings with industry and regulators. He also continues to serve as a member of the EMC Society Standards Development and Education Committee, as its Standards Representative, overseeing the development and maintenance of 27 IEEE standards on EMC, plus 6 other standards being co-sponsored with other IEEE Societies. He also coordinates the work that ARRL consultant Jerry Ramie (ARC Technical Resources) is doing for the EMC Committee with the IEEE groups developing standards for smart grid, ensuring that enough immunity is built into the design of smart-grid technology. This will prevent routine amateur and other transmissions from having a negative impact on power grids.

- *__Promote the Use of High-Speed Digital Networking within Amateur Radio (AREDN)__*
  High-speed digital communication is becoming more widespread in amateur radio communications. The Lab has begun to work with a group of amateurs on the Amateur Radio Emergency Data Network (AREDN) project, with the goals of familiarizing ARRL staff with the technology behind mesh networking and its potential use in routine and emergency amateur communications and then helping to implement high-speed digital communication into routine and emergency amateur communications. The project will include:
  - Meet with local Newington area officials to plan a possible implementation involving AREDN nodes in the police, fire and shelter areas including installing equipment into their facilities.
  - Work with the Emergency Management Director to integrate and overlay high-speed digital communications into the ARES program.
  - Help design and assemble AREDN jump kits for possible deployment into EMComm situations.
  - Deploy AREDN jump kits to local Amateur teams to test the kits and feasibility of implementation.
  - Work with ARRL's Educational Department to help design courses to teach and certify amateurs in necessary digital communication skills and procedures to allow high-speed digital operation to become an integrated part of modern digital emergency communications.

- *__Maintenance of Lab Facility__*
  In 2021, the Lab will make some improvements to the W1HQ operating station. In the first quarter, the internal coaxial connections and patch panel will be redesigned to be labeled more clearly and to be easier to use by the staff. Because some staff are still working remotely, W1HQ will be outfitted with remote-control capability to allow HQ staff to access the station and be able to operate W1HQ from remote locations. In the 2nd half of 2021, technical demonstration displays for the OSCAR 1 satellite, software-defined radio, VHF

digital repeaters, high-speed digital networking, Arduino and other microcontrollers will be created or improved in the Lab.

- *ARRL Board Committees*
  The Lab staff will continue to serve as staff liaison to the EMC Committee, the RF Safety Committee and the Historical Committee.

- *W1AW*
  W1AW transmits code practice and bulletins on 160, 80, 40, 20, 17, 15, 10, 6, and 2 meters. This is done using CW – with speeds ranging from 5 to 35 WPM – as well as digital modes Baudot, BPSK31, and MFSK16. There is also one voice bulletin daily.

  In 2021, we expect to transmit a minimum of 260 bulletins, based on bulletin counts from previous years.

  In general, the number of visitors to W1AW varies, depending on the time of year and weather. It is not uncommon to see anywhere from 500 to 700 visitors each year. We look forward to when COVID-19 restrictions are lifted and W1AW can once again be open to visitors.

  W1AW is considered an EOC (Emergency Operations Center) based on those definitions set forth in the ARRL Field Day rules. This allows the station to be called into operation for communication operating events – such as any weather system adversely affecting the US - or SHARES/MARS communications exercises, or any operating exercise that incorporates amateur radio.

WASHINGTON
Jon Siverling, Technical Relations Specialist

ARRL Participation at International Meetings - 2021

The following international meetings will require ARRL participation in 2021.
- ITU-R Working Party 5A, 5B, 5C, 5D and Study Group 5 (WP 5ABCD, SG 5)
- ITU-R Working Party 1A, 1B, 1C and Study Group 1 (WP 1ABC, SG1)
- ITU-R Working Party 4C
- ITU-R Radiocommunication Advisory Group (RAG)
- ITU-D WTDC 2021
- CITEL PCC.I, PCC.II, COM/CITEL
- *Federación Mexicana de Radio Experimentadores* (FMRE) National Convention
- *Fraternidad de Radio Aficionados de Centro América y Panamá* (FRACAP)

Possible additional meetings include:
- ITU-BDT/CTU/IARU Region 2/ARRL Emergency Communications Workshop
- Amateur Radio Administration Course (ARAC)
- The amateur and amateur satellite services must continuously defend Amateur Radio allocations and to avoid being blindsided at each step along the path toward a possible allocation action. The World Radiocommunication Conference (WRC) calendar drives the process.

	International Telecommunication Union (ITU)[1]

The ITU World Radiocommunication Conference 2019 (WRC-19) and the Conference Preparatory Meeting 23-1 (October21 – November 26, 2019) in Sharm El Sheikh, Egypt set the agenda and assigned the work within the ITU for the World Radiocommunication Conference 2023 (WRC-23).

Issues that may impact Amateur Radio at WRC-23 include additional consideration for the future development of International Mobile Telecommunications (IMT) (agenda item 1.2). This agenda item includes 3300-3400 MHz, 3600-3800 MHz 6425-7125 MHz, and the 10-10.5 GHz bands. WRC-23 "Topic" 9.1 b addresses additional measure to protect Radio Navigation Satellite Service (RNSS) (Space-to-Earth) in the 1300 – 1350 MHz band and for GALILEO - both hold potential impact to the 1240 – 1300 MHz Amateur band. This is of particular concern due to the "weak signal" Earth-Moon-Earth (EME) ("moonbounce") operations at 1296 MHz. Other WRC-23 agenda items that may impact Amateur Radio include "Spectrum Needs" for non-safety Aeronautical Mobile RES. 430 (agenda item 1.10), Earth Exploration Satellite Service (EESS) (Active) Spaceborne Radar Sounders "around" 45 MHz, RES. 656 (agenda item 1.12), "Spectrum Needs" for Mobile Satellite Service - "Potential New Allocations" RES. 248 (agenda item 1.18).

The WRC is held approximately every 4 years to discuss changes to the allocation of frequencies in the RF spectrum. Broadcasters, government agencies, satellite users, and emerging technology information providers all want a piece of this finite property. ARRL officials and volunteers actively participate in many of these meetings in defense of Amateur Radio interests. Each issue is projected over years of domestic preparatory meetings and international meetings.

ITU-R Radiocommunication Advisory Group (RAG)

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[1] *ITU-R groups in which we participate*:

♦ Radiocommunication Advisory Group (RAG), advises the Director on management of the radio sector
♦ Study Group 1 (spectrum management and monitoring), also its Working Parties 1A (spectrum engineering) and 1B (spectrum administration)
♦ Study Group 5 (Terrestrial Services - Systems and networks for fixed, mobile, radiodetermination, amateur and amateur-satellite services.)
♦ Study Group 6 (broadcasting) and Working Party 6E (terrestrial emissions)
♦ Study Group 7 (science services), Working Party 7C, (earth exploration-satellites), 7D (radio astronomy) and 7E (conference preparation)
♦ Study Group 9 (fixed service) and Working Party 9C (HF fixed)
♦ Conference Preparatory Meeting (CPM)
♦ Special Committee for Regulatory and Procedural Matters

The Radiocommunication Advisory Group (RAG) is tasked to:
- Review the priorities and strategies adopted in the Sector;
- Provide guidance for the work of the Study Groups
- Recommend measures to foster cooperation and coordination with other organizations and with the other ITU Sectors.

The RAG provides advice on these matters to the Director of the Radiocommunication Bureau.

The RAG provides an overview of all the ITU-R groups and allows for an "early warning" of possible issues that may impact Amateur Radio from groups where we do not participate on a regular basis.

ITU-R Study Group 5 (SG 5)
(Terrestrial Services - Systems and networks for fixed, mobile, radiodetermination, amateur and amateur-satellite services.)
Four Working Parties (WPs) carry out the studies on Questions assigned to Study Group (SG) 5 and conduct studies to prepare for WRC-23.

ITU-R Working Party 5A (WP 5A)
(Land mobile service *excluding* IMT; amateur and amateur-satellite service)
Working Party 5A is our "home" within the ITU-R Study Groups.
WP 5A meets between five to ten working days; SG 5 meets for two days typically.
Internationally, WP 5A is divided into smaller groups - key to us is WG 5A – 1 (Amateur Services).
ARRL also participates in other meetings to learn who may be interested in our frequencies and to keep abreast of new technologies. WRC-23 assigned future agenda items/issues to WP 5A.

ITU-R Working Party 5B (WP 5B)
(Maritime Mobile Service including the Global Maritime Distress and Safety System - GMDSS; the Aeronautical Mobile Service and the Radiodetermination Service)
WP 5B is responsible for studies related to the maritime mobile service, including the Global Maritime Distress and Safety System (GMDSS), the aeronautical mobile service and the radiodetermination service, including both radiolocation and radionavigation services. It studies communication systems for the maritime mobile and aeronautical mobile services and radar and radiolocation systems for the radiodetermination service.

ITU-R Working Party 5C (WP 5C)
(Fixed wireless systems; HF systems in the fixed and land mobile services)
WP 5C is responsible for studies related to fixed wireless systems and HF systems in the fixed and land mobile services. It studies performance and availability objectives, interference criteria, RF channel/block arrangements, system characteristics and sharing feasibility. (Note that for fixed wireless access (FWA) systems, work related to public access systems for potentially large deployment coverage is carried out in WP 5A.)

ITU-R Working Party 5D (WP 5D) - IMT Systems
Working Party 5D is responsible for the overall radio system aspects of International Mobile Telecommunications Systems (IMT). For WRC-23, it is expected to conduct sharing and compatibility studies for the 1300 – 1350 MHz band; of course, this is a concern to Amateur Radio due to the adjacent 1240 – 1300 MHz band, especially for the 1296 MHz "weak signal" operations EME.

ITU-R Study Group 1 (SG 1)
(Spectrum Management)
Spectrum management principles and techniques, general principles of sharing, spectrum monitoring, long-term strategies for spectrum utilization, economic approaches to national spectrum management, automated techniques and assistance to developing countries in cooperation with the Telecommunication Development Sector.)

Three Working Parties (WPs) carry out studies on Questions assigned to Study Group (SG) 1:
- WP 1A Spectrum engineering techniques
- WP 1B Spectrum management methodologies and economic strategies
- WP 1C Spectrum monitoring

The goals of ITU-R Working Parties 1A, 1B and 1C activities are to develop and maintain ITU-R Recommendations, Reports and Handbooks relevant to spectrum engineering techniques, spectrum management fundamentals and spectrum monitoring, respectively. Potential impact to Amateur Radio in these working parties include continued work on Wireless Power Transmission (WPT), both for Electric Vehicles and for mobile devices.

ITU-R Working Party 1A (WP 1A)
(Spectrum Engineering Techniques)
Spectrum engineering techniques, including unwanted emissions, frequency tolerance, technical aspects of sharing, spectrum engineering, computer programs, technical definitions, Earth-station coordination areas and technical spectrum efficiency. Working Party 1A addresses bands from 275 GHz and above.

Issues that impact Amateur Radio in WP 1A include Wireless Power Transmission (WPT), the coexistence of telecommunication systems with wires and radiocommunication systems and related matters, including power line telecommunications (PLT) and smart grids.

Question ITU-R 210-3/1 addresses "Wireless power transmission (WPT) and related issues" and will be dealt by ITU-R WP1A and WP1B.

Wireless Power Transmission (WPT) has been identified as "Urgent studies required in preparation for the World Radiocommunication Conference 2019" (Resolution 958 WRC-15).

1) Studies concerning Wireless Power Transmission (WPT) for electric vehicles:

   a) To assess the impact of WPT for electric vehicles on radiocommunication services;

   b) To study suitable harmonized frequency ranges which would minimize the impact on radiocommunication services from WPT for electrical vehicles. These studies should consider that the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO) and the Society of Automotive Engineers (SAE) are in the process of approving standards intended for global and regional harmonization of WPT technologies for electric vehicles

2) Studies to examine:

   a) Whether there is a need for possible additional measures in order to limit uplink transmissions of terminals to those authorized terminals in accordance with No. 18.1;

   b) The possible methods that will assist administrations in managing the unauthorized operation of earth station terminals deployed within its territory, as a tool to guide their national spectrum management program, in accordance with Resolution ITU-R 64 (RA-15).

3) Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work.

ITU-R Working Party 1B (WP 1B)
(Spectrum Management Methodologies and Economic Strategies)
Spectrum management fundamentals, including economic strategies, spectrum management methodology, national spectrum management organization, national and international regulatory framework, alternative approaches, flexible allocations and long-term strategies for planning.

ITU-R Working Party 1C (WP 1C)
(Spectrum Monitoring)
Spectrum monitoring, including the development of techniques for observing the use of the spectrum, measurements techniques, inspection of radio stations, identification of emissions and location of interference sources.

ITU-R Working Party 4C (WP 4C)
(Spectrum Monitoring)
Working Party 4C – Efficient orbit/spectrum utilization for the mobile-satellite service (MSS) and the radiodetermination-satellite service (RDSS)
CPM 23-1 decided that Working Party 3M (point-to-point and Earth-to-space propagation) and Working Party 4C (MSS and RDSS) will *Review of the amateur service and the amateur-satellite service allocations in the frequency band 1 240-1 300 MHz to determine if additional measures are required to ensure protection of the radio navigation-satellite (space-to-Earth) service operating in the same band in accordance with Resolution* **774 (WRC-19)**. WRC-23 agenda "topic" 9.1 b

The World Telecommunications Development Conference 2021 (WTDC-21)
World Telecommunication Development Conferences (WTDCs) are convened in the period between two Plenipotentiary Conferences to consider topics, projects and programs relevant to telecommunication development. WTDCs set the strategies and objectives for the development of telecommunication/ICT, providing future direction and guidance to the ITU Telecommunication Development Sector (ITU-D). WTDC-21 will be the first WTDC Chaired by BDT Director Doreen Bogdan-Martin (KD2JTX).

Inter-American Telecommunication Commission (CITEL)[2]

♦ CITEL PCC.II (radiocommunications including broadcasting) mirrors the ITU Plenipotentiary Conference, CPM and WRC-23 preparations

♦ Rapporteurship on Disaster prevention, response and mitigation, ICT and climate change, environmental protection and circular economy **Chair: USA (ARRL/Jon Siverling)**

♦ COM/CITEL meets once each year - critical to continue to participate in this exclusive management Board of Directors.

- Establishing the policies for achieving the objectives and functions set out in Article 3 of the CITEL Statute;
- Electing the members of COM/CITEL;
- Establishing the Permanent Consultative Committees;
- Approving the request for membership in CITEL of American States that are not members of the Organization subject to ratification by the General Assembly of the Organization;
- Proposing amendments to the Statute for approval by the General Assembly of the Organization;
- Approving the CITEL Regulations.

Permanent Consultative Committee – I
(Telecommunications/Information and Communication Technologies) (PCC.I)

Permanent Consultative Committee I (PCC.I) serves as the advisory Board of Directors of CITEL in the area of telecommunications/ICTs, especially with regard to matters of telecommunication/ICT policy, regulatory aspects, standardization, cybersecurity, international Internet-related public policy matters—insofar as those matters involve telecommunication networks or ICT infrastructure—, universal service, economic and social development, environment and climate change, infrastructure development, and new technologies.

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[2] CITEL is the regional telecom organization for the Americas, part of the Organization of American States (OAS), with secretariat in Washington, DC

♦ Jon Siverling participates in CITEL as a member of the US Delegation
♦ IARU Region 2 is a recognized observer, usually represented by an Area Director
♦ The CITEL Assembly is the highest body
♦ COM/CITEL, its executive committee, usually meets annually
♦ Permanent Consultative Committee I (Telecommunications/Information and Communication Technologies) (PCC.I) meets 2 or 3 times annually
♦ Permanent Consultative Committee II (Radiocommunications) (PCC.II) meets twice annually; three times in years with a World Radiocommunication Conference

PCC.I Rapporteurship on Disaster Prevention, Response and Mitigation, ICT and Climate Change, Environmental Protection and Circular Economy
This Rapporteurship, chaired by the United States (**Chairman: Jon Siverling/ARRL**) is a part of the Working Group **Working Group on Deployment of Technologies and Services (WGDTS).** The Rapporteurship provides a unique opportunity to promote Amateur Radio throughout the Americas; and to ensure continued support by administrations of Amateur Radio. The Rapporteurship supports disaster preparedness and serves as a means for Member States to channel their telecommunication needs regarding natural disaster early warning, mitigation and relief. Terms of reference for this Rapporteurship include:

1. To identify suitable technologies for emergency communications.
2. To improve communication, liaisons, and exchange of emergency communications in order to maximize resources and give way to innovative, effective programs for the region, promoting, among others, coordinated actions in border areas.
3. To help in the design of national and sub-regional emergency communications plans and early warning systems, paying special attention to SIDS and LDC.
4. To contribute to the development of public policies and regulatory frameworks that considers international best practices in emergency communications, the impact of climate change, environmental protection, and the circular economy.
5. To foster, among the Member States, greater deployment, updating and maintenance of the emergency communications infrastructure.
6. To promote the temporary availability of emergency communications equipment in the region during the initial disaster intervention stage, as part of ITU's cooperation in cases of emergency.
7. To follow up on the implementation and achievement of the objectives related to the AMS1 Regional Initiative, adopted during the 2017 World Telecommunication Development Conference.

Permanent Consultative Committee – II (Radiocommunications) (PCC.II)

The CITEL Permanent Consultative Committee II: Radiocommunications (PCC.II) typically meets twice each year. **Impact to Amateur Radio: *all* Americas regional proposals for WRC-23 are developed in PCC.II.**

CITEL Working Group to Prepare for the ITU Conferences
The CITEL Working Group to Prepare for Conferences is the responsible group to prepare Inter American Proposals (IAPs) for World Conferences, to include World Radiocommunication Conferences, World Telecommunication Development Conferences, and the Plenipotentiary. This is where consensus is reached on agenda items which are then submitted to the ITU as regional proposals.

Impact to Amateur Radio: formation of positions and proposals for the Americas region are developed here. Once regional consensus is reached for each agenda item, the Inter American Proposal (IAP) is sent to the ITU. Proposals that favor Amateur Radio positions must be developed in this Working Group and support developed for favorable proposals sought from Member States throughout the process leading up to world conferences.

FMRE National Convention
The Mexican Federation of Radio Amateurs
(Spanish: *Federación Mexicana de Radio Experimentadores* or FMRE)
ARRL continues to support Amateur Radio and support for Amateur issues with our neighbor IARU Member Society. Mexico is often a key supporter for Amateur Radio in both the CITEL and ITU meetings.

FRACAP
Federation of Radio Amateurs of Central America and Panama
(Spanish: *Federación de Radio Aficionados de Centro América y Panamá* or *FRACAP*)
FRACAP is the largest gathering of Radio Amateurs representing all Central America.
ARRL participation promotes Amateur Radio in the region and affords unique opportunities to maintain close relationships with Amateur Radio activities and their respective regulators in six countries. ARRL participation often results in support for Amateur Radio issues at world conferences. ARRL participates each year in their convention and this participation should be continued.

Amateur Radio Administration Course (ARAC)
The ARAC is for regulators in charge of administering the Amateur Radio and Amateur Satellite services. Among other topics, the course covered the legal framework for Amateur radio in the International Telecommunication Union (ITU), Amateur Radio spectrum, reciprocal licensing, emergency communication, and the IARU and its member societies. To be conducted in conjunction with IARU Region 2.