

**American Radio Relay League
Proposed 2019 – 2020
Departmental Plans**

BOARD CONFIDENTIAL

ARRL, INC.
The National Association for Amateur Radio

2019-2020 Plan
Department Plans

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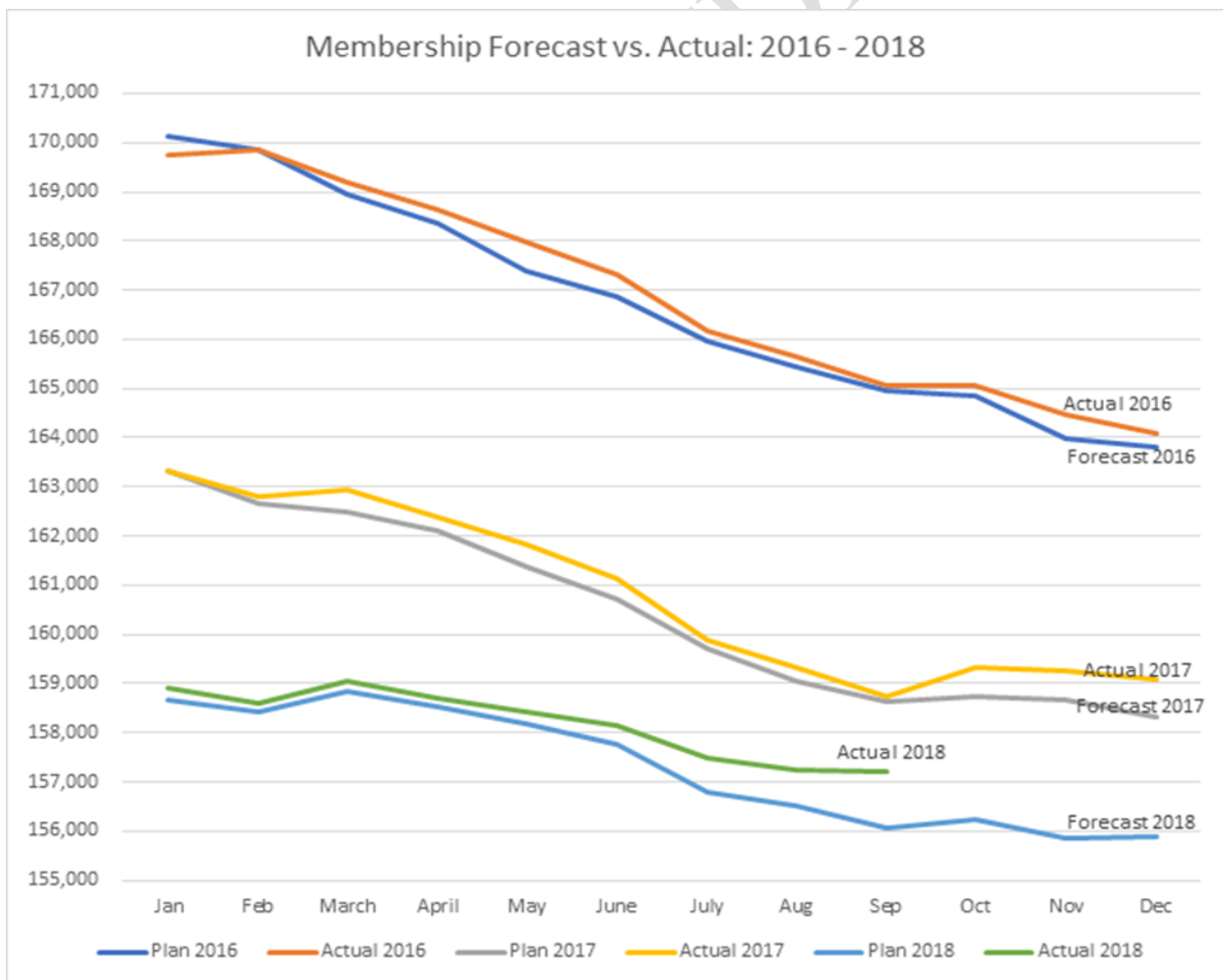
Membership

Diane Petrilli, Membership Manager

2018 will likely end with 156,642 members. This represents a loss rate of 1.5% for the year. This is the third consecutive year since the dues increase that actual membership has come in ahead of forecast. After three years, we'll have lost a little over 1% fewer members than forecast. Because of this trend, the loss planned for 2019 has been lowered from the original (pre-dues increase) forecast of -.75 to -.25. In 2019, we forecast a net loss of 397 members, bringing the year-end total to 156,245.

Summary

2019 Membership Forecast	
Year-end 2018 (projected)	156,642
Net Loss (.25%)	<u>(397)</u>
Year-end 2019	<u>156,245</u>



Strategies

Focus on New Hams

According to the 2015 Readex Market Study, 75% of all key radio amateurs (those most likely to engage with ARRL) who have never been ARRL members are Technicians. Addressing the needs of this group is the only way to grow ARRL's membership in a meaningful way. Conversely, Technicians comprise only 15% of ARRL's current membership so something very significant must change in our traditional model. Until we offer more real resources to Technicians -- a clear path that outlines steps they can take to get engaged and offer benefits/resources that align more closely with their beginner status in Amateur Radio -- only incremental growth will be possible.

The goals for 2019 will focus on continuing to improve the new ham mailings.

√ Continue to test new design materials (October 2018-June 2019).

√ Consider testing a smaller size version of the Quickstart Guide against the current size July-November 2019.

√ Test new design beginning December 2019. \$2,500 is included in the 2019 budget for a graphic designer to redesign these pieces.

Membership Strategy Development

As part of a small group of staffers, I will continue to work with Mintz + Hoke (M+H) to help formulate ARRL's strategy for the future. I hope to incorporate knowledge gained from the M+H work into all membership activities – updating messaging, improving branding, and ensuring all campaigns are targeted to a specific persona or personas. The work with M+H may also require additional outreach to members to get input pre and post program implementation. I hope to be learning and harnessing the power of new tools/technology such as marketing automation that M+H recommends.

Membership and Subscription Module

In 2019, I hope to be testing aspects of the new module, particularly reports.

Benefits for New Hams

I will continue to work with the Lifelong Learning staff to find ways to strengthen the value proposition for new hams, including working with the Publications departments to provide new hams content and information both in print and through the forthcoming online educational portal.

Monthly Mailings

In 2019, we will continue to test various messages, materials and methods before conducting large-scale campaigns--honing appeals, offers, formats, personalization and segmented (targeted) messaging. Major campaigns targeting lapsed and "never" members include:

- 8 mailings of 40,000 each (January, February, March, April, May, October, November & December).

- 1 mailing of 20,000 in September.

\$2,500 is included in the 2019 budget for a graphic designer to give these monthly mailings a fresh new look.

ARRL Tour and Visitors Program

We'll continue to enjoy the support of 35+ volunteers as part of the HQ volunteer "Tour Guides" program. Sustaining this program and volunteers requires:

- recruiting new volunteers as needed
- ongoing training, including training of new tour guides as necessary
- recognition events for the volunteers

BOARD CONFIDENTIAL

SALES AND MARKETING

Bob Inderbitzen, Sales and Marketing Manager

1. Sales and Marketing Department Mission and Goals

Our mission is to cultivate interest and engagement in Amateur Radio by promoting ARRL publications, products, and membership benefits. We serve members and customers through effective marketing and communication strategies, and the efficient centralized administration of membership application processing, order processing, and circulation. Excellence in serving members and customers is our #1 priority. The department includes the following operational divisions:

- publication and product marketing, and direct sales
- fulfillment and warehouse
- affinity benefit programs
- events and exhibits

2. Staffing Updates and Changes

There are no proposed staffing changes for 2019.

3. Publication and Product Sales

Publication and Product Sales Forecast by Category			
	2017 Actual	2018 Plan	2019 Plan
CLASS 01 HANDBOOKS	\$646,833 ^a	\$493,447 ^a	\$428,876
CLASS 02 REPEATER DIRECTORY PRODUCTS	\$110,439 ^b	\$144,364 ^b	\$138,862 ^b
CLASS 03 BEGINNER TRAINING PUBS	\$503,888	\$472,629	\$500,077
CLASS 04 UPGRADE LICENSING PUBS	\$411,049	\$400,963	\$400,287
CLASS 05 OTHER ARRL BOOKS	\$817,242	\$758,000	\$809,732
CLASS 07 NON-ARRL BOOKS	\$159,849	\$166,000	\$139,500
CLASS 08 RSGB BOOKS	\$52,578	\$47,000	\$50,000
CLASS 12 ROYALTY BOOKS	\$247,357	\$325,942	\$292,187
CLASS 32 MEMBERSHIP SUPPLIES	\$217,855	\$235,000	\$212,000
e-Book Royalties	\$96,003	\$90,000	\$102,000
PUBLICATION & PRODUCT TOTALS:	\$3,263,093	\$3,133,345	\$3,073,521

a. The 2018 Handbook, introduced in October 2017, was a major revision.

b. Includes commissions earned from the licensing agreement with RFinder.

Strategies

New Products: Our most successful sales strategy includes the regular introduction of new products, particularly new publications and new editions. New publications help us cultivate interest in the many facets of Amateur Radio, deepening knowledge, skill, and participation. Sales promotions and advertising focus on new publications, while benefiting our long tail of previously published titles and third-party offerings. This strategy is illustrated in the following table, which summarizes sales during the last 12 months. While we inventory over 564 SKUs, 65% of our sales commerce is attributed to ten publication titles and merchandise. This strategy produces the occasional blockbuster, like *Grounding and Bonding* (2017).

Top 10 Grossing Publication Titles and Merchandise Lines Oct 2017 to Sep 2018 (12 months)

Note: we inventory over 564 SKUs at our warehouse.

Product Description	QTY	Gross Sales	Net Sales
ARRL Handbook (New edition in Oct 2017)	14,835	\$675,508	\$562,092
ARRL Ham Radio License Manual (New ed. in May 2018)	20,324	\$456,283	\$401,360
ARRL General Class License Manual	8,536	\$194,328	\$166,507
ARRL Extra Class License Manual	6,108	\$141,980	\$112,732
ARRL Antenna Book	3,482	\$123,938	\$95,177
ARRL Repeater Directory (New edition in Jan 2018)	7,375	\$97,251	\$71,548
ARRL Field Day merchandise (New items annually)	9,432	\$90,413	\$60,640
Grounding and Bonding (New in 2017)	3,957	\$67,925	\$63,889
Get on the Air with HF Digital (New ed. in Jan 2018)	3,902	\$65,551	\$61,220
Portable Operating for Amateur Radio (New in May 2018)	3,620	\$59,225	\$47,423
TOTAL – Top 10		\$1,972,402	\$1,642,588
TOTAL – All Products		\$3,041,794	\$2,435,621
Top 10 as a percentage of total sales		65%	67%

The dominance of some high performing titles also contributes to member satisfaction and loyalty, illustrated in the high percentage of direct vs. dealer sales. In 2017 (most recent year of complete sales history), direct sales to members and other individual customers were 61% of total sales which is up from 59% during the previous three years. Sales to dealers and wholesalers were 39%.

Kindle e-Books: Most new ARRL publications are produced in both print and Kindle format — Amazon’s proprietary e-book platform. There are currently 37 ARRL titles in the Kindle marketplace (27 titles in 2017; earnings of \$92,968). While each new book is considered for conversion to Kindle, a limiting factor is the economics of Amazon’s publishing and pricing strategy. In October 2018, we introduced, for the first time, *The ARRL Handbook* as a multi-volume download (6 volumes).

Multi-Channel Product Marketing: Marketing ARRL publications and products involves a multi-channel ‘mix’ of strategies and tactics: online ecommerce (ARRL e-store), advertising (*QST*, *NCJ*, *QEX*, digital *QST*, web, e-newsletters, third-party catalogs, etc.), copywriting, direct mail, email, catalogs and flyers (ride-along with other ARRL mailings and fulfillment), social media (Facebook, Twitter, etc.), and video.

Major campaigns for promoting publications and products include:

- 10 mailings, promoting new publications and products. These mailings, conducted throughout the year, include targeted lists of previous purchasers and best prospects.
- Member birthday postcards (monthly).
- Customer loyalty postcards (Feb, May, Aug, Nov).
- Upgrade license mailings, promoting General and Extra class license manuals (ongoing).

Profit and Cost Management: A forecast is produced to model the profitability of each new publication. In recent years, we have increased our attention on manufacturing costs and other variable costs which impact contribution margins. Printing quotes and freight/shipping options are scrutinized, and competitive bids are sought for all merchandise.

Business Development: Business development is ongoing, with a focus on generating new revenue using our existing publishing, marketing and fulfillment infrastructure. The effort is interdepartmental; for example, regular meetings of the Publication Planning Team.

Assumptions and Risks

- 1) When a new license manual is introduced as a result of a new question pool, it generates a surge of interest from individuals purchasing study materials for the new exam, and from dealers and wholesalers seeking to be re-stocked with new editions. In 2019, a new General Class question pool will prompt new editions of *The ARRL General Class License Manual* and *ARRL’s General Q & A* in May.
- 2) The 2020 edition *Handbook* will undergo only minor revisions (the 2018 edition was a major new edition). After the success of the 2019 box set, the promotion of the 2020 *Handbook* could prove to be challenging.
- 3) A new edition *Antenna Book* will be introduced in October 2019 (current edition is 2015). The *Antenna Book* is expected to be offered as a multi-volume boxed set.
- 4) Book delays add some uncertainty to sales forecasting. The forecast also assumes new titles will help drive interest for older titles (our long tail).

- 5) We aggressively leverage all sales channels: direct, dealer and wholesale. We follow trends that split our customer base between direct sales and wholesale purchases. The sales mix is further complicated as some titles are sold more successfully via direct promotion and fulfillment, while others are sold primarily through our wholesale buyers. It has become increasingly difficult to forecast sales with fewer dealers and their non-predictive ordering behavior.
- 6) The Association of American Publishers (AAP) has regularly reported a growth trend in print publishing (since 2016), and declining e-book sales. However, should reading preferences shift in an accelerated way toward digital publishing, and away from print, the cost-profit model may change significantly (low risk).

4. Fulfillment and Warehouse

The Fulfillment and Warehouse branches support membership application processing, renewal and retention strategies (executed in close coordination with the Membership Manager), circulation (*QST*, *NCJ* and *QEX*), and publication and product sales. In 2017, these staff administered and shipped over 50,000 paid orders. These branches also manage fulfillment of exhibit and event collateral (forms, brochures and handouts, display materials, and other media) and in-house inventory fulfillment and distribution (including membership signing premiums). The fulfillment team also provides “help desk” support for the digital edition of *QST* and ARRL website user accounts. Our staff supporting these areas is adeptly cross-trained in all responsibilities to support efficient work flow among these diverse activities.

Strategies

Membership Renewal and Retention: Working in close coordination with the Membership Manager, we support and administer numerous activities that fulfill our membership renewal and retention activities: renewal mailings and email reminders; annotating our membership recordkeeping with email addresses, birth dates, e-subscription preferences; and fulfilling supplemental copies of *QST* for new members.

QST Circulation: Print *QST* is fulfilled to most domestic members via a “Co-mail” strategy. Co-mailing ensures the greatest savings (postage and handling) and best delivery times.

There has been very little change in the total number of memberships which include digital-*QST*-only distribution (no print *QST*); 7,198 in November 2018 vs. 7,512 in November 2017. We expect this will continue to be the trend unless e-reading technology (in decline) itself changes in some significant way. Interestingly, while international members (over 8,000) are offered a less expensive digital-only membership option, the majority opt for print *QST*.

Technology: In 2019, we will participate as needed, in the evaluation and selection of a new membership information infrastructure (processing and recordkeeping).

Nearly 120,000 membership and subscription transactions are completed annually. Today, 50% of all membership and subscription transactions require manual data-entry, vs. only 13% of publication and product sales since most orders are placed online. When a new membership system is realized, we anticipate a significant migration of renewals to the new online membership application and new auto-renewal feature, permitting members to opt-in to automatically renew their membership and manage a payment preference (for instance, charging a credit card, debit card or auto debiting a bank account). An auto-renewal feature will ultimately reduce the costs associated with mailing renewal notices or auto debiting a bank account and manual data-entry. Some associations cite auto-renewal as part of their membership retention strategy.

Training: The member services team receives ongoing training and regular evaluation. Processing efficiencies have contributed to greater emphasis on our personal contact with members and customers (for example, using metrics from the telephone reporting application for planning). The team is trained to help educate members about benefits, and to leverage cross-selling and up-selling opportunities.

Shipping: In September 2018, following an extensive analysis of our small package shipping, we successfully negotiated lower shipping prices with one of our major carriers. This savings, estimated at \$75,000, is reflected in our 2019 planning.

Cost Management: We are committed to serving members and customers through cost effective, member-centric fulfillment strategies. In 2019, cost savings will remain central in our consideration of carrier options, costs for materials and supplies, in contract negotiations, and all business dealings. Printing and mailing services are regularly sourced. Competitive pricing is solicited for all projects and periodic reviews are made to ensure compliance with postal regulations.

Field Recruitment: We have a collection of high quality collateral and display items to support volunteers and staff involved with field-based membership recruitment and promoting Amateur Radio. We will continue to develop and/or redesign new materials as needed and requested. These items are regularly requested by Directors, Vice Directors, Section Managers, radio club officials, member-volunteers, and staff.

5. Affinity Benefit Programs

We support and promote the following suite of affinity benefit programs. Efforts to investigate and implement new benefits for our members are ongoing.

- ARRL Visa Card-U.S. Bank has been the service provider for our credit card program since 2005. This program has been a decline for several years. We have forecast earning commissions of \$40,200 for 2019.
- Home & Auto Insurance Program. In February 2015, we introduced Liberty Mutual Insurance as our benefit provider for home and auto insurance (MetLife, previously). There has been little traction for the benefit, and the program results have been disappointing. We have forecast commissions of \$2,400 for 2019.

- ARRL Equipment Insurance and Club Liability Program. We continue to have a successful revenue stream for this program offered through Risk Strategies. The forecast for 2019 is \$23,000.
- AmazonSmile. Since 2014, members shopping with Amazon are invited to shop at smile.amazon.com and choose ARRL as their charity of choice. The foundation donates to ARRL 0.5% of ordinary purchases with Amazon. We have forecast commissions of \$8,000 for 2019.

6. Convention and Hamfest Program

The Convention and Hamfest Program was relocated to the Sales and Marketing Department in July 2018. The change consolidates the program with our support for, and operational participation at, larger conventions such as the annually held Hamvention. Guided by the OFFICIAL RULES AND REGULATIONS CONCERNING ARRL HAMFESTS AND CONVENTIONS, the primary responsibilities of the program include administration for:

- applications for ARRL Convention, Hamfest, and Event sanctioning,
- fulfillment of prize certificates, donated by ARRL to the events,
- the Hamfest and Convention Calendar (online database and monthly *QST* listing),
- and requests by conventions for speakers from among the Headquarters staff and officers.

In 2019, we will exhibit at the annual Hamvention®, sponsored by the Dayton Amateur Radio Association. The event has been sanctioned as the 2019 ARRL National Convention. For decades, ARRL has supported an organizational presence at Hamvention. The centerpiece of our participation at Hamvention is the ARRL EXPO, a showcase of ARRL exhibits, activities and program representatives. Hamvention is May 17-19, 2019.

As part of our negotiations with Hamvention to host our National Convention, we have proposed introducing a mobile event app. An event app allows attendees to more effectively network, keeps everyone aware of the latest event updates, and most importantly, provides a rich dataset from which event organizers (ARRL and Hamvention) can draw insights. ARRL will contract for, and administer, the app – the cost of which will be shared with Hamvention.

In addition to Hamvention, we will organize smaller exhibits (usually a double-wide booth) to promote ARRL membership at the following events. These are among the largest Amateur Radio conventions held annually, with attendance figures consistently over 1,000 or more, and include the participation of a large number of our advertisers and business partners. One staff person will be assigned to the booth as a membership representative:

- Orlando Hamcation—Orlando, Florida, February 8-10, 2019 (including ARRL book store)
- SEA-PAC—Seaside, Oregon, May 31-June 2, 2019
- International Exhibition of Radio Amateurs—Germany, June 21-23, 2019
 - Includes exhibit space to promote/serve DXCC and ARRL Award Programs
- Huntsville Hamfest—Huntsville, Alabama, August 17-18, 2019

- Boxboro—Boxborough, Massachusetts, September 2019
- Pacificon—Santa Ramon, California, October 2019

In recent years, we have supported or organized exhibits outside of traditionally ham radio events in an effort to develop interest in ham radio among similar and like-minded interest groups. For example, we have support member-volunteers with exhibits at Maker Faires, IEEE events, and the National Association of Broadcasters (NAB) show. In July 2018, we organized our first exhibit at the Experimental Aircraft Association EAA AirVenture, in Oshkosh, Wisconsin. Our booth was visited by over 500 licensed radio amateurs – impressive traffic, and supporting further investigation and development of the crossover between pilots and ham radio operators. We have committed to returning to Oshkosh in 2019.

- EAA Airventure – Oshkosh, Wisconsin, July 22-28, 2019

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PUBLICATIONS

Steve Ford, Publications Manager

1. Mission Statement

The Publications Department is responsible for producing (writing and/or editing) ARRL publication products including books, video presentations, software, CD-ROMs, electronic newsletters, and some World Wide Web content.

2. Staffing Changes

We do not anticipate adding more staff in 2019. Rick Lindquist will continue to serve as our freelance news editor and Barry Shackelford and Kai Siwiak will continue as freelance *QST* technical editors. Kai Siwiak will continue as *QEX* editor. Mark Wilson will continue in his capacity as freelance book editor.

3. Products and Services

The publications department produces these periodicals and e-letters:

- A. *QST* magazine (print)
- B. *QST* magazine (digital) — includes the Android, Kindle, and iOS apps.
- C. *QEX* magazine
- D. *NCJ* magazine
- E. E-Letters: *ARRL Letter*, *Contest Update*, *ARES E-Letter*

New book and CD titles anticipated for 2019, including new editions of existing titles:

(New titles are in **bold type**)

<u>Title</u>	<u>Author</u>	<u>To Press</u>
<i>Energy Choices for the Radio Amateur</i>	<i>Bob Bruninga</i>	02/01/2019
<i>2018 Periodicals DVD</i>	Shelly Bloom	12/15/2018
<i>General Class License Manual</i>	Ward Silver	04/01/2019
<i>General Q&A</i>	Ward Silver	04/01/2019
<i>2020 Handbook</i>	Various	08/01/2019
<i>Antenna Book, 24th Edition*</i>	Ward Silver	09/01/2019
<i>2020 Calendar</i>	Steve Ford	09/01/2019
<i>2020 Repeater Directory</i>	RFinder	11/15/2019

<i>Contesting for Beginners</i>	Doug Grant	11/01/2019
<i>Antenna Physics, 2nd edition</i>	Bob Zavrel	11/01/2019
<i>VoIP and Internet Linking, 2nd edition</i>	Jonathan Taylor	12/01/2019

*The 24th edition of the *Antenna Book* will be a major revision and will be offered in a boxed set of individual volumes, similar to the *2019 Handbook*.

There are three new books presently under negotiation that may also be published in 2019:

- *Low Frequency Cookbook*
- *Antenna Rotator Handbook*
- *Satellite Operating for Beginners*

The Outlook for Publications — 2019 and Beyond

QST remains the primary ARRL membership benefit, and our book publishing operations remain solid, but the headwinds forecast years ago continue to gather strength.

Specifically...

- Declining advertising
- Declining number of authors and the resulting decline of publishable content
- Aging readership

Last year we reduced the number of total *QST* pages in response to declining advertising pages. This approach worked well initially, but rather than flattening as we had hoped, the advertising trendline is still heading downward. As a result, we have relied on our in-house editorial staff to make up the difference and they have been doing very well in this capacity, creating articles that have proven to be well liked by readers. There is no need to further reduce *QST* pages at this time, but the idea may have to be considered for 2020 if advertising continues to decline.

We intend to increase our efforts at recruiting new authors for *QST*. We are searching online resources to find amateurs who are already authoring material for web pages, blogs, and other platforms, and who demonstrate an ability to write competently. We will be contacting those individuals and encouraging them to write for *QST* (and *QEX/NCJ*).

We are also advertising for authors in *QST* issues and will likely continue the *QST* design competitions, since these are often good sources for technical articles.

We will also rely more on in-house and freelance “ghost writing” where the writer/editor contacts an amateur with an intriguing story to tell and offers to write the subsequent *QST* article for him or her, with the amateur enjoying the article byline. This approach is more costly as it may eventually require hiring more in-house staff and/or freelance talent, but we feel it may be the only viable approach in the years to come.

Recruiting new book authors is a much more difficult problem. Even a small book requires a substantial amount of effort on the part of the author, typically spanning 6 months to a year. As with *QST*, online surveying provides the potential for finding new book authors. In addition, we have recently begun advertising for book authors in *QST* and it will be interesting to see if this bears fruit.

Looking further into the future, if we intend to continue to devote substantial resources to book publishing, we may need to consider hiring in-house staff, or freelance talent, that would be devoted strictly to writing books, either as ghost writers, or as bylined authors. This would mean a return to the days of an in-house “book team.”

We may also want to consider “compendium” books of previously published *QST* and *QEX* material. Sales of these types of books tend to be mediocre, but the books are also much less expensive to produce.

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ADVERTISING AND WHOLESALE BOOK SALES

Janet Rocco, Business Services Manager

Advertising Sales

Advertising revenue was re-forecasted down during the second half of 2018 as numerous clients decreased their QST advertising or left altogether due to a downward trend in sales or choosing to wind down their businesses altogether. The reforecast equaled approximately \$98,000 in lost revenue; these losses are reflected in the 2019 budget.

A small number of advertisers have sold their lines to larger companies or have them act as their distributors. In this case, the larger company includes the product or logo in their ad and in turn we no longer have the advertising dollars from the original advertiser.

Discussions with clients have concluded that there is the need to engage a younger, more active customer base that are buying equipment rather than dismantling their stations.

The advertising department sent a short survey to our current, past, and prospective advertisers in an effort to understand what their opinion is of some of our advertising products, what they would possibly like to see as new advertising opportunities and to elicit discussion points. The results of this survey will be combined with what we know from our work with Mintz + Hoke to form our strategies as we move forward in a declining market.

We continue to acquire a small number of new advertisers on a fairly consistent basis. They are typically small companies with small ticket items to sell, therefore our revenue is relative to their products. However, our efforts to find new companies to advertise remains a priority. Our philosophy is that the small ad acquisitions add up to impact the revenue positively.

Advertising strategies that can conceivably be considered as new or updated revenue streams in the coming year are as follows:

- Offer advertising on self-print Contest certificates
- New Podcast sponsors
- Redesign of current ARRL E-Newsletters to offer better advertising availability
- Allow advertisers to place ads on specific areas of the ARRL.org website
- Offer content advertising in *QST*
- Expansion of current customer base to include appropriate mainstream advertisers
- Video ads in digital *QST*

As in the recent past, there is no magic formula that will positively impact advertising revenue significantly in the near future. We will continue to engage our business partners in conversations that potentially can assist us in discovering new ways of advertising that will be beneficial to their bottom line and ours.

Wholesale Book Sales

Amazon.com continues to be our largest client in terms of sales. As of September 30, 2018, they comprise 61.3% of wholesale transactions. Amazon sales have been consistently increasing over the past three years as shown:

Year	Total Dealer Sales	Amazon Sales	% of Amazon Sales to Total
2015	\$1,301,673	\$687,074	52.8%
2016	\$1,163,571	\$822,644	60.3%
2017	\$1,331,857	\$832,809	62.5%

In 2017, overall sales were down yet Amazon sales were higher. Once again we are seeing that there is transfer sales from our traditional dealers to Amazon.

We will continue to counsel our dealers, provide support and input to their sales techniques. We will also strive to maintain our “Excellent” rating with Amazon by adhering to their increasing number of rules and regulations.

DEVELOPMENT

Lauren Clarke, Development Manager

The Diamond Club

2019 Goal: \$365,000

2018 Goal: \$365,000

The Diamond Club (DC) continues to have tremendous potential in raising unrestricted revenue for ARRL and, although the goal is flat from 2018, Development persists in our efforts to increase the number of members and the dollars raised through this leadership giving group.

Efforts to gain new and increased Diamond Club members include soliciting term members when they are asked to renew basic membership (note: Development will be working with Circulation and Membership to develop new strategies for this), robust efforts to reach out to lapsed DC members, solicitation of Life members, building the sustained giving program, and focusing on retention.

The Diamond Terrace, started in 2007, currently holds 2,308 engraved bricks; 117 bricks were placed in 2017 and, to date, 188 engraved bricks have been placed in 2018. The 2018 budget allowed for an expansion to the Diamond Terrace, which has been accomplished over this past summer.

At the end of 2017, there were 1,578 Diamond Club members: 454 Life members and 1,175 term members. Diamond Club giving totaled \$378,160 in 2017. As of September 30, 2018, there are 1,634 Diamond Club members contributing \$237,000 of unrestricted donations.

The ARRL Maxim Society

The ARRL Maxim Society honors ARRL donors whose cumulative lifetime contributions to ARRL reach \$10,000. At the January ARRL Board of Directors annual meeting, the Board approved a motion allowing donations to the ARRL Foundation to be included in cumulative lifetime donations. Due to this motion, we welcomed six individuals and eight clubs into the Maxim Society in February. To date, there are 263 members in this distinguished group; 32 have been welcomed to date in 2018.

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.

The Legacy Circle

ARRL continues to be the beneficiary of multiple bequests. The Development Office receives inquiries about planned giving on a regular basis. When a member informs us that s/he is leaving ARRL in his estates plans, a copy of the documentation is requested which is kept in a confidential

file until the gift is realized. Most, but not all, members agree to this, and they are recognized in The Legacy Circle.

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 mailing for 2019, which has not been done for some time.

ARRL Funds

The Spectrum Defense Fund

2019 Goal: \$285,000

2018 Goal: \$285,000

Many thanks to Rick Roderick, K5UR, Chris Imlay, W3KD, and Jon Siverling, WB3ERA, for their assistance in the Spectrum Defense Fund solicitation mailing earlier this year. Featured prominently in the text was the threat of large corporations threatening Amateur Radio bands. Work will continue with Rick, Chris and Jon on revising the copy for the planned fall solicitation mailing.

Development has traditionally offered premiums for donations to the Defense Fund: a pin for gifts of \$50 or more, and a mug and a pin for gifts of \$100 or more. A new special “series” will be unveiled in 2019 to encourage donors to contribute to this important fund. 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)

2019 Goal: \$145,000

2018 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. A Lifelong Learning Manager has been hired, and Development will work with him to develop new and appropriate messaging to our donors.

Development produced a direct mail solicitation sent in September to 50,000 members. The average gift to the Education & Technology Fund is on the average smaller than donations to other funds, however, Development is confident we will achieve the goal this year and next.

The Legislative Issues Advocacy Fund

2019 Goal: \$0

2018 Goal: \$45,000

A Legislative Issues Advocacy Fund solicitation was planned for February of 2018. Through thoughtful discussions between the Development Manager, the CEO and the CFO, it was decided not to pursue this solicitation in 2018 or 2019. Funds in the Advocacy Fund are sufficient to support current advocacy efforts.

The W1AW Endowment

2019 Goal: \$65,000

2018 Goal: \$0

Development has not actively solicited for the W1AW Endowment since 2015, when Development turned its efforts to the Legislative Issues Advocacy Fund. Sporadic contributions continue to come in, but a focused solicitation mailing is planned for February 2019.

Other Development Activities

Membership Loyalty Program

This year, 2,489 members were recognized this year in the Membership Loyalty Program. Acknowledgement cards with pins attached were mailed out in CD boxes greatly reducing the number of damaged pins received by our donors. To date, 16 members purchased a specially-designed, personalized plaque through the e-store.

In 2019, 2,257 members will be recognized. This mailing will be outsourced to a mail house that can send the pins out in the CD boxes via bulk mail, incurring savings on postage and staff time.

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, together with spouses.

Development has reserved the Schuster Performing Arts Center in Dayton for the 2019 Donor Reception. The guest speaker is to be determined.

IRA Distributions

In 2016, the Internal Revenue Service made the ruling permanent allowing individuals over 70½ to designate all or a portion of an IRA distribution directly to a qualified non-profit organization without first having to declare the donation as income. The Development Office continues to market this option to members, receiving numerous gifts from this provision.

RADIOSPORT & FIELD SERVICES

Norm Fusaro, Radiosport & Field Services Manger

In our narrative for 2018 we stated that we would be collecting and analyzing data to make more informed decisions. Throughout this report we will include some data to support the plans going forward.

Given the current HF radio propagation and a planned major DXpedition that was terminated before the team could land, we were still fortunate to see a substantial increase in award applications due to the overwhelming popularity of new digital modes, particularly FT-8. Year to date all award applications have increased significantly and can be directly attributed to the new digital activity. Nearly two-thirds of the WAS application were endorsed for FT-8.

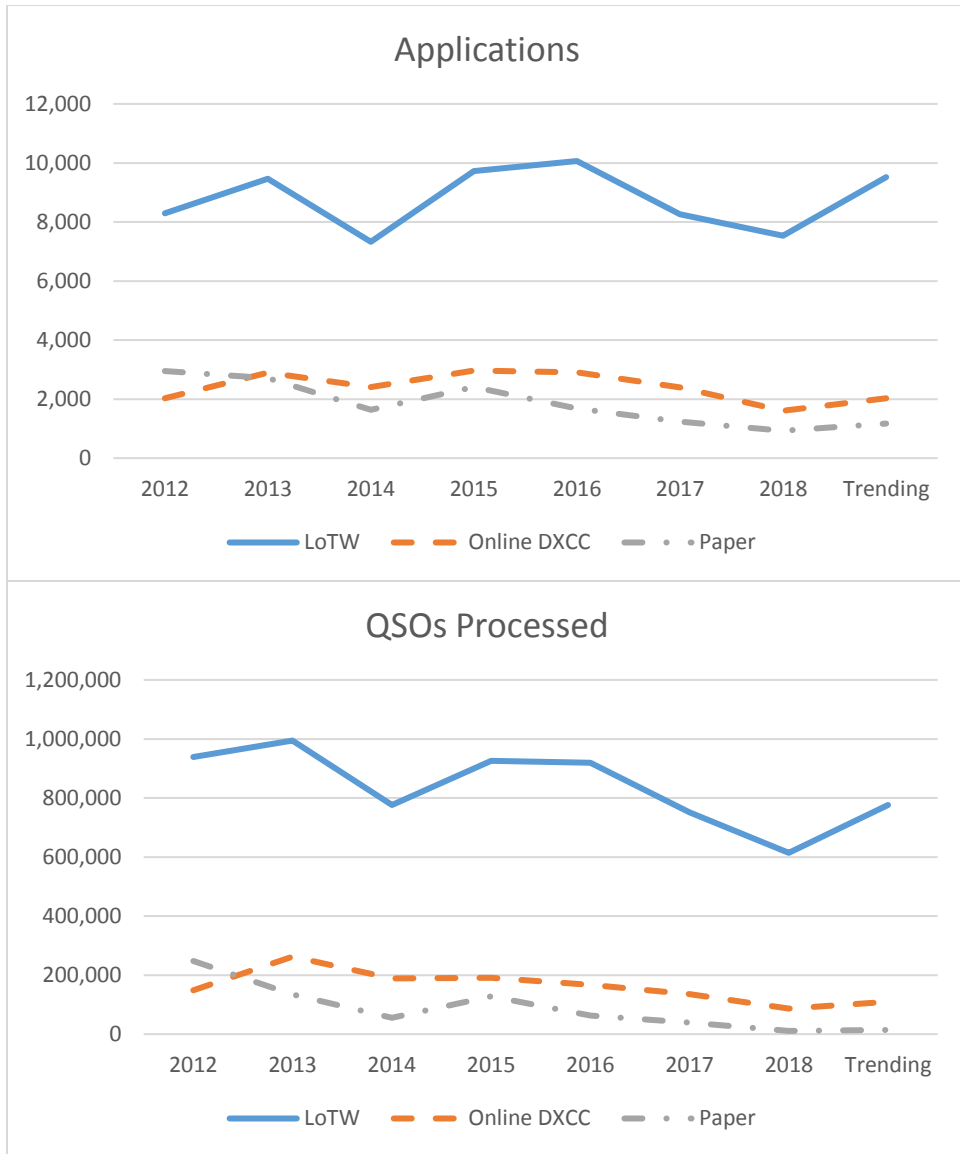
	2017 YTD	% change	2018 YTD
DXCC	6,339	49%	9,465
WAS	963	85%	1,782
VUCC	392	84%	722
WPX	462	53%	705

With further enhancements of FT-8 digital mode software already being developed and the success of FT-8 DXpedition mode demonstrated by the Baker Island KH1/KH7Z team, we do not foresee any decrease in on air activity. Applications for new awards and endorsements has leveled and we expect new applications and endorsements to remain steady. The DX Advisory Committee has been tasked with the viability of adding new digital awards or endorsements to the DXCC program and, the Contest Advisory Committee is discussing competition using FT-8.

Awards Processing

Development of a new DXCC processing software application was started in 2017 by an independent contractor. The project was brought in-house to be completed by our IT staff. The new system is scheduled to be open for beta test in late 2018 and expected to be operational for 2019. The new software is expected to increase efficiency and streamline the DXCC award application process.

Currently paper applications account for slightly less than 10% of the total DXCC applications processed for the year, averaging 12 QSOs per application, or 1.5% of total QSOs processed. Most paper cards submitted for DXCC awards are entered through the Online DXCC portal which now accounts for approximately 16% of the total DXCC application processed. Because the applicant enters the QSO information in Online DXCC the need for data entry at HQ is reduced to editing any corrections. With 75% of the DXCC applications being submitted in LoTW, more than 86% of the total QSOs, LoTW is firmly established as the preferred method to apply for DXCC awards. Our objective is to steer paper QSL card applicants to Online DXCC, sunsetting the paper application for DXCC by 2021.



LoTW

Currently LoTW enjoys a considerable amount of traffic despite its limited award offerings. Currently there are 110,000 LoTW users, an increase of 12,000 users over same period last year. Other than QST, there isn't any other program or service offered by ARRL that enjoys such a significant membership penetration.

In April 2018 we introduced support for CQ WAZ award. Initially the traffic was strong with about 450 applications during the first two months however, interest has fallen to approximately 50 applications per month. CQ awards revenues still account for \$47,000 or roughly 10% of the top line revenue for awards.

The LoTW committee is investigating a proposed plan for LoTW users to apply for IARU society awards through LoTW. The planning phase of this project has just begun so at this time there are no revenue or cost projections included in the 2019 Plan.

Special Operating Events

The International Grid Chase will be closing at the end of 2018 and \$5,000 is allocated for recognition awards that will be issued in 2019. Because of the peripheral support and indirect costs involved with an extended operating event, careful consideration must be taken when planning any future events.

There is a plan for a short duration operating event for Hiram Percy Maxim 150th birthday. This will not require any major programming or leaderboard development by ARRL IT staff. Logs will be scored using existing contest adjudication tools and, participants will have the ability to download and print their own certificates.

Contests

In 2017, we began work on a project that would allow contest participants to download and print their own certificates with their name, call sign, score and placement. We projected this service to be implemented in early 2018 and it was delivered in mid-2018 by a team of outside developers lead by Bruce Horn, WA7BNM and coordinated by ARRL Contest Branch Manager Bart Jahnke, W9JJ. Besides saving ARRL significant amount of money in printing, labor and postage, it was well received by the contest community. We estimate an approximate savings of \$13,000 just in printing and postage. In addition, to provide downloadable certificates for current contests the developers were able to populate the database with archived contest results allowing users to recover lost or damaged certificates from past events. This was also well received among the contest community.

The contest branch will continue to regain and retain direct management back to HQ.

Inventory and Shipping

We continue tight management of on-hand inventory and ordering of awards. Moving into 2019 we estimate a savings of approximately \$3,000 in award expense.

QSL Bureau

Our goal has been to make the Outgoing QSL bureau self-sustaining. A new fee structure and accurate recordkeeping has allowed us to take control of the business. The final component to reaching sustainability is to reduce the staffing from one FTE to a part time position.

QSL bureau volumes continue to decline as more and more people use LoTW for confirming QSOs. Freight costs have been reduced from \$9,500 to \$3,600 because of reduced volume of QSL cards.

Incoming QSL bureau expenses continue to exceed \$20,000 due largely to the bureaus allowed to operate independently. Because ARRL offers LoTW to all radio Amateurs at no cost fulfills any obligation to IARU, and the number of unique users of the outgoing QSL bureau is less than 1,000 members, and that more than half the weight shipped via the outgoing bureau goes to six very common DXCC entities, and sourcing volunteers to work in the incoming QSL bureaus is becoming increasingly difficult, it is recommended that ARRL entertain a strategy to sunset the QSL bureau system by 2021 or 2022.

Emergency Preparedness

In 2018 we initiated an online software application form, Volunteer Hub, which we branded as ARES Connect. The education and roll out of the program has been going smoothly. We are committed to using Volunteer Hub so a budget expense of \$10,500 has been allocated for this application.

ARRL is represented at National VOAD, NPSTC, Skywarn, and National Hurricane Conference. The 2019 budget for these meetings is \$8,150.

Field Services

The Field Services department has a significant impact on the budget. This is not a revenue generating department however there are some intangibles that can be realized for our investment. Beginning with the Section Managers workshop, the message must be promoting ARRL membership. The workshop is a proven orientation for newly elected Section Managers. We have budgeted \$15,400 for this workshop.

Earlier this year the rules were revised for Section Managers to be allowed up to 10% of their budgets to be used to purchase merchandise from the ARRL store merchandise. While this does not change the SM budget line we will see if there is any indirect impact in membership numbers by section.

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 will provide a service level of the highest order to our customers, the Volunteer Examiners.” -- Resolution of the ARRL Board of Directors (1989 Annual Meeting)

2. Staffing

The ARRL VEC has met and will continue to meet our program goals using teamwork and cross training as effective tools within the department with the current level of staffing.

3. 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 and conventions.
- Conducts special mailings to VEs and to new licensees.

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 and club 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

- Administers the International Amateur Radio Permit (IARP) program for the FCC and ARRL.
- Manages the FCC Club Call Sign Administrator program for the FCC and ARRL, as one of three such coordinators, to provide an electronic filing mechanism for FCC Club Station License applications. Provides FCC-license renewal notices to clubs.
- Administers the 1x1 Special Event call sign program for the FCC and ARRL, as one of five such coordinators.
- Provides FCC-license renewal notices to ARRL members. We will process 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.
- 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 tear-off pads 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

Table 1 compares program results and projections over the past few years. In 2018 we are meeting all program goals and have maintained the VEC market share goal (table 2). Through the end of September, we have conducted 5,381 exam sessions, served 26,751 exam applicants, and filed 23,482 new and upgraded license forms to the FCC. We have also transmitted 5,641 individual license renewal and changes and 1,415 club license applications to the FCC. Program levels (table 1) are projected to remain stable in 2019.

TABLE 1: ARRL VEC RESULTS AND PROJECTIONS				
ARRL VEC ACTIVITY	2016	2017	2018 Projected	2019 Projected
Exam Sessions Held	7,494	7,075	7,000	7,000
Exam Applicants Served	38,097	35,352	33,000	35,000
Elements Administered	50,081	47,152	43,000	45,000
New VEs Accredited	2,103	1,813	2,000	2,000
New and Upgraded License forms transmitted to FCC	32,403	31,014	29,000	29,000
License Renewals and Changes transmitted to FCC	11,506	8,765	9,000	9,000
Total Club License applications transmitted to FCC	1,797	1,961	1,800	1,800

TABLE 2: ARRL VEC MARKET SHARE						
FCC LICENSES ISSUED	2014	2015	2016	2017	2018 Projected	2019 Projected
NCVEC License Activity	43,797	43,301	43,169	41,772	41,500	41,500
ARRL VEC License Activity	33,073	32,764	32,403	31,014	31,000	31,000
ARRL Market Share of Exams Given	76%	76%	75%	74%	75%	75%

FCC Activity

Results through the end of September 2018 show that successful new Amateur licenses issued are up 6% over last year. 2014 through 2017 boasted a record-setting pace for new hams (new licenses through September: 24,373 in 2018, 23,067 in 2017, 25,056 in 2016, 23,211 in 2015, and 25,867 in 2014) (table 3). Upgraded licenses are up 1% compared to the same period last year but much lower than previous years (upgraded licenses through September: 7,312 in 2018, 7,209 in 2017, 8,693 in 2016, 8,801 in 2015, and 8,228 in 2014) (table 3). Excitement generated by the ARRL Centennial made 2014 a record breaking year for VEC. This enthusiasm carried over into the years following for VEC activity and new FCC licensees.

We anticipate maintaining our share of total exams given at approximately 75% (table 2). License activity in 2019 is predicted to remain stable and we are cautiously optimistic about the number of new licensees. We forecast 32,000 new licensees and 9,500 upgrade licensees in the coming year (table 3).

A new General class question pool will take effect on July 1, 2019. We expect an adjustment period when a new question pool is introduced to the public as VEs, teachers, and candidates must prepare new study and exam materials. The Extra class question pool is up for review in 2020. No question pools are scheduled to be updated or released in 2021.

TABLE 3: NEW AND UPGRADED FCC LICENSES BY YEAR						
FCC ACTION	2014	2015	2016	2017	2018 Projected	2019 Projected
New Licenses						
Technicians	29,223	28,504	28,927	28,509	29,000	28,500
Generals	3,191	2,979	2,982	3,089	3,500	3,000
Extras	827	594	643	598	500	500
Total New	33,241	32,077	32,552	32,196	32,000	32,000
Upgraded Licenses						
To General	7,711	8,200	7,305	7,304	7,000	7,000
To Extra	2,845	3,024	3,312	2,272	2,500	2,500
Total Upgraded	10,556	11,224	10,617	9,576	9,500	9,500
GRAND TOTALS	43,797	43,301	43,169	41,772	41,500	41,500

4. New Initiatives and Services

The VEC exam fee will remain at \$15 in 2019. With increasing shipping and printing charges, expense control will continue to be a priority for us.

The ARRL VEC continues to maintain its position as the largest VEC in the nation. The ARRL VEC market share of total Amateur Radio exams administered 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 real-time data access and retrieval. 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.

Shifting the secure data entry function from HQ staff to VE teams in the field would require an elaborate system. We should focus on the objective (shorten the field response time quickly and simply) and not the method (technology). VEC staff worked with a subcommittee of the A&F Committee to examine the possibility for electronic filing of exam applications to the VEC. The subcommittee communicated via email and held several conference calls. The level of offered suggestions and exchanged ideas, served to make the subcommittee's effort very successful. A proposal was developed with a viable and practical solution, mindful of applicant's Personally Identifiable Information (PII) and FCC rules and protocols. A secure web page (https) would be a good option for usability and quick implementation and it has excellent security and encryption.

Online document sharing services have been a mainstream option for consumers for some time now. A secure, access-controlled web page could potentially be a safe way to rapidly deliver exam session documents from the field to VEC. There is immense potential when it comes to using an existing, highly successful platform rather than building new. It just makes things a lot easier and more convenient since we will be able to enjoy immediate and easy access to the system. Considerable time and money would be saved by using a credible pre-existing platform as an alternative to developing a new costly system.

An ARRL website-based platform should be easy to use and allow customers to upload electronic documents, such as PDFs, seamlessly and securely. This could be a quick, inexpensive, and easy to use solution to receive session data from the field, thereby reducing the time it takes for licenses to be issued. Mail is inefficient and exam session package delivery times vary widely even within same regions of the country. In this age of instant gratification, when it comes to how we handle our post exam session data, being able to accept exam session files in real time would appease our VE Teams and license applicants.

Therefore, in 2019, we will implement a secure ARRL website-based web page (https) for delivering post exam session information from VEs in the field to the VEC office. We will create and integrate additional interactive online forms to enhance our customer satisfaction and improve their website experience.

ARRL already has existing functionality for creating secure pages that is being applied in other areas of the organization. VEC department can utilize the current programming which will require minimal IT staff time and support. The page offers strong encryption and our security practices will comply with the most widely accepted standards and regulations to ensure all sensitive data stay unseen by third parties.

By offering a secure web page to our VE teams, we could efficiently serve our customers who expect to see their FCC licenses quickly. It will also demonstrate our mutual commitment to delivering a fast, easy, and affordable solution that allows teams to speed up FCC license issuance. The page could work as an in the field deposit function. There is also room to grow should our needs change.

A secure web page offers an instant solution to post session data transmission from the field and efficient management of our customer's personal data. Taking this simple step may mark the beginning of encouraging new teams to use our VEC and enticing migrated teams to transfer back. 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. The desired outcome would not only be to remain competitive but to grow our market share and improve our customer relations.

5. Acquisition and Retention

The more we understand our customer's wants and needs and meet those needs on our website and in our marketing, the better we will attract and serve them. We should be the knowledgeable source of FCC, VEC and VE information, while marketing our products and services to ARRL VEs, potential VEs, examinees and customers.

We will continue to redesign web pages and the VEC section of the website. We will increase content and information and add instructional and informative videos about exam sessions, FCC and VEC forms, FCC rules and license management. None of our competitors are doing this. Our strategy is to provide a superior overall experience for our customers and potential customers.

The free information we provide should serve as a way of keeping customers at the site or getting them to come back. Changing and updating the content frequently encourages customers to visit the site more often, which is a powerful and cost-effective marketing strategy.

ARRL should be the industry leader for VEC information, attracting both ARRL and non-ARRL VEs to our website. 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.

INFORMATION TECHNOLOGY

Michael Keane, IT Manager

The IT Department experienced no changes in staff during 2018. IT was able to complete a series of planned and unplanned projects while continuing to make progress on the strategic objective of replacing our major legacy IT systems.

IT projects that were completed in 2018 include:

- Completed requirements specification, statement of work and released a request for proposals a replacement for Siebel for Membership & Development.
- Installed an HP 3Par StoreServ network storage system as the replacement for our existing HP LeftHand network storage devices which had reached their support end-of-life.
- Assumed responsibility for completion of coding and testing the DXCC replacement system as an in-house software development project.
- Supported operation of and provided incremental improvements to the web site for the “International Grid Chase” operating event.
- Deployed new ARRL Contest Portal (<https://contests.arrl.org>) which among other services provides the “self-print” contest award web app. Most of the development work for this project was performed by outside volunteers Bruce Horn, WA7BNM and Trey Garlough, N5KO with ARRL IT providing the volunteer team web hosting, data access and the “on-the-fly” certificate generation code base that has been developed over the years to support awards for non-contest operating events such as Centennial QSO Party, NPotA, and most recently, IGC.

Having retired a significant amount of Logbook of the World’s accumulated “technical debt,” a new addition to LoTW’s capabilities was able to be deployed in 2018: support for CQ Magazine’s WAZ award program. The diversion of staff resources to the in-house completion of the DXCC replacement project had the effect of slowing the planned progress on adding further awards to LoTW in 2018. Adding support for new awards to LoTW which was deferred in 2018 has been carried forward into the 2019 plan.

In this plan, it is assumed that the long overdue retirement and replacement of the legacy DXCC system will have been accomplished in Q4 of 2018. The Information Technology department’s highest priority for 2019 will continue to be progressing with the replacement of our remaining legacy systems: Siebel (specifically the Membership and Development functions remaining in Siebel), the ARRL web site and VEC. It remains critically important to maintain a tight focus on the successful replacement of these legacy IT systems in a timely manner.

By the start of 2019 we expect to have received and evaluated proposals for the new Membership & Development system, will have selected a preferred vendor and be in the process of negotiating a contract by the start of 2019.

IT must allocate sufficient resources to the projects replacing legacy systems during 2019. While we believe that we have sufficient internal resources to carry these projects to completion, any additional, unplanned demand on IT resources will directly affect completion of the planned work.

In 2019 we will continue the process of identifying the requirements for ARRL's new web presence. This has been begun as a component of the Mintz+Hoke Phase I tasking. We will continue to explore our options for engaging outside expertise in the project management and visual design areas to assist with what will be a very large, complex and expensive project.

As for ARRL's IT infrastructure, the 2019 plan is to continue re-investing in our hardware and software, keeping these up-to-date replacing those components which will be reaching the end of support life during 2019. The 2019 plan identifies two significant infrastructure refreshes:

- Replacing (and consolidating) the “backbone” switching and routing hardware that provides the core network within and between the HQ server rooms.
- Our mail server, currently at Microsoft Exchange 2010, reaches its software end-of-life in January 2020 and thus will need to be replaced during 2019 in advance of that deadline. The upgrade path that we recommend is a migration of our existing Exchange mailboxes to an “Exchange Hybrid” implementation which will begin to utilize the “cloud” features included in our current Microsoft Office 365 subscription, features which we have not been utilizing before.

We have identified the following software projects for the IT Department in 2019. This is the priority list with which we will begin the year although this does not mean that priorities won't change or projects won't be added. However, if projects are added it will change the priorities and impact the delivery of the projects deemed lower on the priority list.

High Priority Projects:

1. Membership and Development (Siebel replacement) – This includes:
 - a. Finalize contract
 - b. Manage execution of project through integration and cutover, i.e. completion
2. ARRL Web Site
 - a. Generate requirements specification
 - b. Visual design consultation
3. Logbook of the World
 - a. Web technology refresh, web site redesign with the goal of providing an improved user experience UX (Logbook 2.0)
 - b. New awards: 5B-DXCC, WAC, RAC award(s), JARL award(s), other IARU societies.

Medium Priority Projects:

1. Improvements to newsletter editor.
2. VEC
 - a. Stakeholder interviews
 - b. Generate requirements specification

Generally, it should not be assumed that these projects will be completed in the order shown above. Application of IT resources will be to higher priority projects over lower priority projects. However, because there are limited resources (mostly staff time) available to be assigned to projects, the order in which projects are started, worked on and completed will not necessarily follow the list exactly. Multiple projects will be in progress simultaneously and in different stages of completion.

BOARD CONFIDENTIAL

WASHINGTON

Jon Siverling, Technical Relations Specialist

ARRL Participation at International Meetings - 2019

The following meetings will require ARRL participation in 2018:

ITU-R World Radiocommunication Conference 2019
ITU-R Radiocommunication Assembly 2019
ITU-R Conference Preparatory Meeting 2019-2 (CPM 19-2)
ITU-R Conference Preparatory Meeting 2023-1 (CPM 23-1)
ITU-R WRC-19 Inter-Regional Workshop
ITU-R Working Party 5A, 5B, 5C and Study Group 5 (WP 5ABCD, SG 5)
ITU-R Working Party 1A, 1B, 1C and Study Group 1 (WP 1ABC, SG1)
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)

The amateur and amateur satellite services have to 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.



Internal Telecommunications Union (ITU)

- 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 ITU World Radiocommunication Conference 2019 (WRC-19) will be held in conjunction with the Radio Assembly 2019, and the Conference Preparatory Meeting 23-1 October 21 – November 26, 2019 in Sharm El Sheikh, Egypt. Typically there are some 3,300+ delegates from almost all of the 193 Member States attending. The IARU team for WRC-19 includes Jon Siverling, IARU President Tim Ellam, VE6SH; IARU Vice President Ole Garpestad, LA2RR, and

radio amateurs from Canada, Venezuela, Brazil, the United Kingdom, the Netherlands, Germany, Kuwait, Japan, Australia, and New Zealand.

Issues that may impact Amateur Radio to be discussed at WRC-19 include frequency bands for the future development of International Mobile Telecommunications (IMT), radio local area networks (RLANs), land-mobile and fixed service applications 275 – 450 GHz, Intelligent Transport Systems (ITS), railway radiocommunication systems between train and trackside, space-operation service (non-GSO satellites), and the 50 – 54 MHz issue for Region 1.

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.

Allocation of 50-54 MHz (Region 1)

The main agenda item for Region 1 Radio Amateurs is known as WRC-19 agenda item 1.1, which is *to consider an allocation of the frequency band 50-54 MHz to the amateur service in Region 1, in accordance with Resolution 658 (WRC-15)*. ITU-R Working Party 5A (Land mobile service excluding IMT; amateur and amateur-satellite service) completed draft Conference Preparatory Meeting (CPM) text for WRC-19 agenda item 1.1. WRC-19 will consider a possible new Region 1 allocation to the amateur service in the frequency band 50-54 MHz by full or partial worldwide harmonization with the existing 4 MHz primary allocations in Regions 2 and 3.

The Conference Preparatory Meetings are normally two sessions during the interval between WRCs. The first session will be for the purpose of coordinating the work programs of the relevant ITU-R Study Groups, and preparing a draft structure for the CPM Report, based on the agenda for the next two WRCs, and for taking into account any directives which may have come from the previous WRC. The second session shall prepare a consolidated report to be used in support of the work of World Radiocommunication Conferences, based on contributions from administrations and the Radiocommunication Study Groups. For 2019 there will be CPM 19-2 and CPM 23-1.

The ITU-R WRC-19 Inter-Regional Workshop allows ARRL to develop support for proposals that favor Amateur Radio at the WRC-19 and to discourage support for proposals that may have a negative impact on Amateur Radio. The 6 regions send delegations to this meeting to brief on the current status of positions and proposals for the conference.

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 one Task Group (TG 5/1) conduct studies to prepare for WRC-19.

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.

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 Task Group 5/1 (TG 5/1)
(WRC-19 agenda item 1.13)

WRC-19 agenda item 1.13 is “*to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15)*”.

Task Group 5/1 has completed its work and will provide CPM text for WRC-19 agenda item 1.13 to the Conference Preparatory Meeting 2019-2.

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.

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. This will include the new threat posed by Apple which has contributions into WP 1A for magnetic resonant technologies for mobile/portable devices in the 100 – 150 kHz range with potentially a harmful impact to the Amateur secondary allocation from 135.7 to 137.8 kHz.

Question ITU-R 210-3/1 addresses “Wireless power transmission (WPT) and related issues” and will be dealt by ITU-R WP1A and WP1B. The main areas of work to be studied are:

- Under what category of spectrum use should administrations consider WPT: ISM*, or other? (*Industrial, scientific, medical)
- What radio frequency bands are most suitable for WPT?
- What steps are required to ensure that radiocommunication services are protected from WPT operations?

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 take into account 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. The results of the WPT studies will be treated in the draft CPM Report to WRC-19 as issue 9.1.6 under WRC-19 agenda item 9.1. WP 1B is the responsible group for this agenda item, while WP 1A, WP 5B and WP 6A have been identified as contributing groups.

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.



Inter-American Telecommunication Commission (CITEL)¹

- CITEL PCC.II (radiocommunications including broadcasting) mirrors the ITU Plenipotentiary Conference, CPM and WRC-19 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 body
- Establishes the policies for achieving the objectives and functions set out in Article 3 of the CITEL Statute
- Elects the members of COM/CITEL
- Establishes the Permanent Consultative Committees
- Approves 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
- Proposes amendments to the Statute for approval by the General Assembly of the Organization
- Approves the CITEL Regulations

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

Permanent Consultative Committee I (PCC.I) serves as the advisory body 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.

PCC.I Rapporteurship on Disaster prevention, response and mitigation, ICT and climate change, environmental protection and circular economy

¹ 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

This Rapporteurship, chaired by the United States (**Chairman: Jon Siverling/ARRL**) is a part of the **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 take into account 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-19 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 of 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.

COMMUNICATIONS

David Isgur, Communications Manager

The goals of the ARRL's Communications Department in 2019 are very similar to our goals in 2018 -- creating more content, creating higher quality content, and delivering that content through the most appropriate traditional and social media platforms and the ARRL web site. Through this content, we will look to improve our engagements, both internally with our members and our field services appointees (PIOs and PICs) and externally with the media and the general public.

The Communications Department has been working with several departments at ARRL HQ to develop ideas for content that can be posted to our social media platforms and be used as story pitches to traditional media. The goal has been to get departments thinking about ways to relay important information and to showcase their work on behalf of ARRL members over a variety of media platforms. In 2019, we will reach out to more departments and introduce them to our new Work Order Form that we believe will accomplish two things – 1) allow us to more efficiently schedule and organize our work flow, and 2) help others think through and more fully flesh out their ideas.

In 2019, we will reach out to an underserved market – new hams – through our new podcast, “So Now What?” The goal of this podcast, which will have Communications Content Producer, Michelle Patnode, W3MVP, and W1AW Station Manager Joe Carcia, NJ1Q, as hosts, is to provide the information and support that new hams need to get active in the hobby and get on the air. We will be using our Facebook and Instagram platforms to promote this show and ARRL's other podcasts.

In 2019, we will reach out to another underserved market – PIOs and PICs – through the re-launch of the Contact! e-newsletter, through which we will provide timely advice and guidance to help them perform their responsibilities to the best of their abilities.

In addition, we will be working closely with the Lifelong Learning Department on updating the PR 101 course and enhancing the online platform on which it is offered.

Another way of improving our engagement with our Amateur Radio community will be to have more of a presence at select hamfests, so we are planning to attend more gatherings in 2019 and we plan to have enhanced video, audio and computer equipment to better capture the experiences there and share them with our community and beyond.

In addition, we will continue to pursue opportunities to attend professional development training courses or workshops that will improve our communication and engagement skills.

Lifelong Learning

Kris Bickell, Lifelong Learning Manager

Overview

Lifelong Learning will continue building the foundation for the program in 2019, including identifying content paths for a range of Amateur Radio skill levels and interests, developing relevant instructional materials for each path, and implementing the necessary learning technology. The department will continue to support existing Education Services and Education Technology Program (ETP) functions.

Staffing

No staff changes are planned for 2019. Current staffing consists of one full-time position (Lifelong Learning Manager) and one-part time position (Lifelong Learning Administrator).

Lifelong Learning

The Lifelong Learning department will be developing a selection of learning resources for new, current and prospective Amateur Radio operators, with the objective of helping to expand the reach of ARRL. These resources will be created in a variety of formats (video, audio, written), for a range of experience levels (from beginner to advanced), and suitable for various Amateur Radio interests (getting on the air, public service, contesting, youth education, etc.).

Establishing the Lifelong Learning program will require several new resources:

- A Learning Management System (LMS), which is needed to develop, manage, and track usage of the learning resources
- Content development, which will be a collaborative effort between Lifelong Learning staff and select subject matter experts (SME)
- E-learning authoring software, which can be used to create modern, visually-appealing instructional materials

In addition, Lifelong Learning will work together with the following ARRL departments to share expertise and resources:

- Communications - for assistance with video production, editing, and promotion
- Lab - for technical expertise and to collaborate on the possible creation of a “learning lab” space at HQ to be used for making instructional resources
- IT - to help integrate the learning technology with ARRL systems in a seamless manner for users
- Production/Editorial - for assistance utilizing existing ARRL resources and re-formatting for use as Lifelong Learning content

Education Services

Lifelong Learning will continue to maintain existing functions that were handled by the former Education Services department, including supporting volunteer instructors, managing the development and distribution of license instruction materials, and providing assistance for classroom instruction through the Education & Technology Program (ETP).

Teacher's Institute

The Teacher's Institute, funded by the Education Technology Program (ETP), is an important activity that helps ARRL to expose Amateur Radio concepts to classroom teachers and their students. The feedback from the 2018 TI participants was very positive, expressing satisfaction with the quality of the content and instruction, the high level of interaction, and the convenient event coordination. The plan for 2019 includes three Teacher's Institute (TI) sessions, including two TI-1 and one TI-2.

To increase the effectiveness of the TIs, several promotional methods will be utilized to expand the number and quality of applicants. The focus will be on marketing to those teachers involved in STEM activities inside and outside of the classroom, including science and math classes, robotics and electronics electives, and extra-curricular radio and STEM-related clubs. Promotion will include advertising in STEM publications, exhibiting at STEM teacher conferences, and conducting outreach to registered ARRL teachers, instructors, and clubs.

Development of Instructional Materials and Activities

To offer resources to teachers beyond the scope of the TI's, instructional materials and activities will be developed for use by classroom teachers and school club facilitators. Experienced teachers with a background in ham radio and/or STEM instruction will be utilized as content experts and work with ARRL staff to develop content. These materials will also be made available through the Lifelong Learning platform.

ARISS Support

The department will continue to act as an ARISS resource, by providing financial support for ARISS administration, and offering the ARISS loaner station for schools interested in making ARISS contacts.

LAB

Ed Hare, Lab Manager

1. 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.

2. Staffing Changes

No new staff will be added in 2019. ARRL's EMC Engineer, Mike Gruber, W1MG, retired in the fourth quarter of 2018, so it is expected that training of his replacement will be ongoing through early 2019.

3. Current Products and Services

Current products and services:

- Product Review testing
- Technical Information Service and ARRL web page
- RFI Program
- IEEE and Other Industry Contact
- Support of ARRL spectrum-protection activities
- Support and production of publications and content digital
- Promote the use of high-speed digital networking within Amateur Radio
- Donations and Lab Volunteers

Product Review Testing

Product Review remains among the most popular parts of *QST*. Based on historical records, the Lab expects to test approximately 80 pieces of equipment for Product Review in 2019, plus provide support as needed for non-tested products.

Technical Information Service and the ARRL Web Page

Led by Zack Lau, the Lab will continue to respond to member technical inquiries.

In 2018, significant progress was made updating the Technology pages on the ARRL website. The majority of the errors in the database providing access to downloadable *QST* articles were also corrected in 2018. In 2019, Zack Lau will identify any areas still needing updating or correction and make changes as needed.

RFI Program

There are four areas of significant concern that will be addressed in 2019.

- Interference from power lines and other noisy electrical devices
- Wireless Power Transfer and Electric-Vehicle Charging
- Solar Power
- Noise studies

Interference from power lines and other noisy electrical devices

Power-line cases continue to dominate the RFI work done, and the Lab has been supporting policy efforts to improve the way that the FCC handles power-line cases. Lab staff continues to serve on industry committees, especially in the RFI area. Lab staff work on various industry committees is now included as part of published IEEE and ANSI standards.

The Lab is continuing to identify and test various noisy devices, and this is expected to continue in 2019. The new EMC Engineer will identify products that are involved in interference reports and, if the noise levels are high enough that the device appears to be operating in excess of the FCC emissions limits, samples will be obtained, purchased on the open market and the devices will be tested. This is part of an overall strategy to address EMC problems from a combination of technical and enforcement perspectives.

The Lab has been working with the IEEE on a standard on the method/process to handle power-line cases. It was hoped that this standard could be ready for ballot in 2018, but several of the non-staff IEEE Working Group members have been bringing a large number of updates and changes to the group, requiring additional webinar meetings and more time. The IEEE authorization for this project is valid until December 31, 2020, so the project is on schedule.

Wireless power transfer and electric-vehicle charging

ARRL serves as a voting member of the ANSI accredited C63® EMC committee. The Lab Manager, Ed Hare, serves as its primary representative. It is working on a standard for wireless power transfer charging devices, both the smaller powered devices as well as higher-powered charging stations that will be used to charge electric vehicles. Lab staff will continue to serve on these committees in 2019. We will begin to introduce our new EMC Engineer to this process, as a succession plan to accommodate any future staffing changes.

In 2018, a Petition for Rulemaking was announced by the FCC, with the intent to allow high-powered charging of electric vehicles in the 60 to 90 kHz range. Although this is not an Amateur band, spurious emissions, especially harmonics, from these devices have a significant potential for causing harmful interference to Amateur Radio. The Lab provided Chris Imlay with material for a 2018 response to this petition, but it is expected that ARRL will provide additional Ex Parte material in 2019. The Lab will also coordinate with Jon Siverling, who is also working on this matter internationally.

Solar power

ARRL has continued to receive complaints of interference from solar-power installations. The majority of these have involved one company, Solar Edge. Although Solar Edge has indicated a willingness to address interference problems, the League must continue to work with this company in 2019, to clean up remaining problems.

The growing number of solar installations also requires close watching. The Lab operates a donated news van with a 60-foot mast. In 2019, this van will be outfitted with a PC-based spectrum analyzer and calibrated antenna, then used to make measurements of a number of solar installations in the area. This will include individual home and business installations as well as measurements of a few of the “solar farm” installations now in operation in nearby towns. Information gathered from this operation will also be part of the work the ARRL Lab will do in 2019 to study and measure man-made radio noise.

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, from some of the early work done in the 1970s that resulted in the creation of an ITU-R Recommendation, P372-13, *Radio Noise*. There have been numerous noise studies done over the ensuing decades, each using its own test methods and criteria, and it has been hard to correlate data from one study with the others. In 2019, the ARRL Lab will obtain copies of all of these noise studies and evaluate them, to determine if and how they can be compared to perhaps create a timeline of the changes in noise levels over time.

The ARRL Lab test van will also be used to make drive-around measurements of noise levels across a relatively large geographical area, at heights of approximately 3 meters above ground. Spot measurements from fixed locations will also be made at heights of 18 meters, to obtain an estimate and measurement of the ways that noise can impact Amateur antennas at heights greater than the noise source. This will also allow better correlation of the measurements of noise emissions typically made at a height of 1 meter to the actual, practical heights of Amateur antennas.

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, with a second term extending to 2020, 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 sufficient 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.

Support of ARRL Spectrum-Protection Activities

The ARRL Lab will respond to various regulatory and other threats that may arise during 2019. Although it is not possible to predict the exact nature of various FCC and other regulatory threats, the Lab will continue generating engineering studies and/or measurements to support ARRL's responses to inevitable FCC rulemaking and other procedures.

Support of Publications and Content Digital

The Lab will continue to author and/or review ARRL publications material. Assistant Lab Manager, Bob Allison, serves as the Lab's representative on the internal editorial-review committee that evaluates incoming material and articles.

The Lab is planning the production of a number of technical videos, for upload to ARRL's web page and Youtube. It is also identifying and categorizing a large number of videos that are available to Amateurs and including links to many of them on the ARRL technology web pages. As part of an overall strategy to do more webinars and podcasts, the ARRL Lab will provide talent as needed.

In addition, the Lab and Lifelong Learning Departments are working on a proposal to create a facility and content in support of the technical component to lifelong learning. This will ultimately result in an on-line learning channel that features videos of technical topics. In the first quarter of 2019, the Lab will set up an area in the Lab to be used as a set to create videos, including the dedication of one of the Lab workbenches, lighting and use of tools in the Lab machine shop. Videos are to be produced in the ARRL Lab's shop, using existing workbenches, configured for such videos, with identifying posters/banner, tools and associated equipment contained within the video set.

Initial startup will be provided by existing staff, with plans to produce 5 to 10 videos per year. An existing ARRL staff member will host each video, but the production and shooting of videos will be done by existing Communications and Lifelong-Learning staff and/or volunteers. The Communications department will also initially provide the necessary video equipment.

Promote the use of high-speed digital networking within Amateur Radio

High-speed digital communication is becoming more widespread in Amateur Radio communications. The Lab has begun to work with a group of Amateurs doing this work, the AREDN project, with the goal of completely familiarizing ARRL staff with the technology behind mesh networking and its potential use in routine and emergency Amateur communications. The timeline for the work on this through 2019 is:

Quarter	Milestone
4Q2018	Familiarize staff with technology and deploy a mesh network within ARRL HQ as a demonstration
1Q2019	Meet with local Newington area officials to plan a possible implementation involving AREDN nodes in the police, fire and shelter areas
3Q2019	Install equipment into local police and fire facilities
4Q2019	Working with Mike Corey, plan the process of integrating and overlaying high-speed digital communication into the ARES program
Ongoing into future	Design and assemble AREDN jump kits for possible deployment into EMCom situations
Ongoing into future	Deploy AREDN jump kits to local Amateur teams to test the kits and feasibility of implementation

Donations and Lab Volunteers

The number and value of donated Amateur and test equipment donated to ARRL continues to increase. The Lab will continue to process this for sale or use. Most of the work for this program will continue to be done by volunteers.

The ARRL Lab currently uses the services of 3 volunteers to do various projects for the Lab. This work includes testing and sometimes repairing incoming donated equipment, maintenance of the Lab facility and work on various digital projects such as ARRL's work with high-speed digital technology. In 2019, the Lab will seek one or two additional volunteers, to increase the amount of help available for the increasing number of incoming donations and other needed administrative tasks.

Maintenance of Lab facility and administrative

The Lab will continue to perform the following administrative functions:

- Maintenance of Lab facility including the ARRL Library
- Maintenance of W1HQ - The Lab will make continuing improvements to the W1HQ facility
- This will include the resolution of noise problems currently limiting the use of the station
- Technical support of field organization as needed

- Travel to ARRL conventions
- Technical support of other departments

4. W1AW

In January 2018, with the addition of 6-meters into the transmission band complement, W1AW now 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 (1) voice bulletin daily.

In 2019, we expect to transmit a minimum of 260 bulletins, based on bulletin counts from previous years.

In addition to the scheduled practice and bulletin transmissions, W1AW also provides twenty-four (24) Qualifying Run transmissions each year. The speeds start at 10 WPM, up to a maximum of 40 WPM. Currently, three (3) stations on the West Coast provide a single run per month (for the benefit of West Coast/Pacific stations) for a total yearly run of 36 transmissions.

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.

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.

W1AW's operating exposure is enhanced by the many visitors who place W1AW on the air. This exposure is also prevalent when W1AW is active during the many operating events (contests) that take place throughout the year.

Since W1AW is visited by people from all over the world, its appearance must be pleasing to the eye and kept current. Therefore, any aesthetic work would be included in the Capital Plan if necessary.

In 2019, W1AW is slated to replace one (1) transmitter used for its scheduled transmissions, as well as replace high power amplifier tubes (tubes previously failed when one of the broadcast antennas failed).