Mahoning Valley Amateur Radio Association
Voice Coil

December 2025	mvara.w8qly@gmail.com	The Voice Coil - Volume 25-12

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President	Scott Wilton KE4UHC
Vice President	Mark Haverstock K8MSH
Secretary	Rich Slutz KB8GAE
Treasurer	Nancy Brett KD8QNY

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VE	Mark Haverstock K8MSH

President's Corner

Some 71 articles and 6 years have gone by and this is my final article. When I first became president, the club was in good shape. We had all of our events and community service going well. Then Covid hit and shut down everything we were doing. For almost 2 years we did not meet in person in fact we started zoom meetings and special nets instead of meetings.

After Covid we hit it hard and got into the school system, Kent State and OH WOW. We are doing well exposing kids to ham radio. If not for the condition of the roof we would be connecting kids with the International Space Station to talk to the astronauts. The speed that everyone stepped up and gathered the equipment needed and had plans to fabricate what we needed was astounding.

Field day you guys rocked. This past year we scored higher than we had ever before. My hat is off to

all of you for stepping up and helping with all of our activities no matter what we do. I also could not have done it without the help of all of you. Thank you.

Scott, KE4UHC, President

Upcoming MVARA Events

Date	Event	Location
December 8-12, 2025	Hilltop Elementary	Canfield
December 11, 2025	MVARA Meeting	Boardman

December Club Program

In case you missed the decorations around town, it's that time of year again, and MVARA will be celebrating the Christmas holiday with our annual Christmas Party meeting on December 11. We will get together at the GOP Meeting Room for the traditional Christmas pizza and we ask everyone to bring a dessert to share.

MVARA Election Results

Our November meeting was our annual club Officer and Trustee elections. The Officers and Trustees for 2026 will be:

Office	
President	Ralph Streb K8TCP
Vice President	Mark Haverstock K8MSH
Secretary	Rich Slutz KB8GAE
Treasurer	Nancy Brett KD8QNY
Trustee	Andy Brincko WA8ZLK
Trustee	Don George W8DPG
Trustee	Doug Sage KB8TPG
Trustee	Dave Brett KD8NZF

Groups.io

This is a reminder that MVARA has a groups.io page we use to make announcements and discuss upcoming events and such. The page is available to all members of the club and can be found here: https://groups.io/g/mvara and there is a subscribe link about midway down the page.

From the Shack and Field: A New Amateur's Notes

Neal Bayless, KA3UON

I feel like there is something new going on every day in amateur radio that is either easy fun or wildly deep into the realms of radio science. I don't feel like I can keep up and I wish I had the time to do it all. But since I don't, I thought I'd blast a few out as I collect these things and make others aware of them and hope that someone else will pick them up and tell me about how they went. Please reach out if you do have any interesting bits on these, operate these events or have in the past, or suggestions for others. You can email me at nabayless@gmail.com or put it out there on the io groups page for everyone to see.

HAMSCI METEOR SCATTER

https://hamsci.org/msqp

We missed out on the first, let's not miss the December date. Set the coffee maker and get up early for this really cool chance to work meteor scatter as they heat up small threads of the ionosphere and contribute to a data compilation as they research how these events change propagation. Visit the HAMSCI link or KO4GLN's link in the bullet points to find out more information. Don't have a 6m antenna? No problem. See below for one to homebrew on the cheap.

From the hamsci.org site.

Aug 11-12 and Dec 12-13, 2025

- Contribute to science as we strive to uncover the secrets of meteor scatter (MS) propagation
- Join hundreds of operators on 6 m (50.260 MHz) and 10 m (28.145 MHz) MSK144 during the August Perseid and December Geminid meteor showers
- **Two-Way** (transmit/receive) and **Monitor** (receive only) stations are needed
- Sending reception reports to PSKReporter is important to the success of these events. See the Software Setup section for details
- Enter the MSQP Competition - Who makes the most QSOs or generates the most reception reports? See the MSQP Operating Guidelines and Rules and **KO4GLN's poster** describing the event.

Gwinnet Co. Radio Society's "Fire Hose" presentation is a great eye opener to the 6m meteor game. Also shows another Mid-November shower you can do some early testing in preparation for December's event.
https://www.gars.org/presentations/2021-05-18%20-%20Workshop%20-%20Intro%20to%206%20Meters%20&%20Meteor%20Scatter%20Radio%20Sports%20-%20Bennett%20Smith%20WB5GVY.pdf

Another smaller piece on meteor scatter from the ARRL website:
https://www.arrl.org/files/file/QST%2520Binaries/nt0z.pdf

6m Moxon Antenna
https://www.jpole-antenna.com/2014/06/11/building-the-6-meter-moxon-antenna/

ARRL School Roundup
Riding on the coattails of the ARISS school announcement, here is another opportunity for us to keep in mind for the coming months.
https://www.arrl.org/school-club-roundup
There are two School Club Roundups during each school year in October and February. Each 5-day event runs Monday through Friday from 1300 UTC Monday through 2359 UTC Friday. A station may operate no more than 6 hours in a 24-hour period, and a maximum of 24 hours of the 107 hour event.
~~**October Session:** The third full school week of October.~~
February Session: The second full school week of February.

~~**October Session: October 20-24, 2025**~~
February Session: February 9-13, 2026

ARES CONFERENCE

November 22 Ohio ARRL ARES Conference has come and gone. Another item on my to do wish list that I was unable to attend. The post write up is here: https://arrl-ohio.org/wp-content/uploads/2025/11/PS_11-22-2025.pdf. The ARRL (which I'm writing a bit about for an upcoming newsletter) has a big push to revamp ARES in 2026 and overhaul the how and embrace some of the newer modes. A refresher, if you will, on emergency communications.

SKCC QSL Design Contest and Straight Key Month

https://www.skccgroup.com/k3y/k3y-qsl-vote.php

If your creative side needs an outlet and you are a member of the Straight Key Club, this might be something for you to enter. Even if you aren't interested in the design contest we can all get in on straight key month.
K3Y QSL Card Design Contest

We are inviting SKCC members to create QSL card designs for the 2026 Straight Key Month event. Submitted designs will be displayed here so that members can vote for their favorites starting in mid-December. The most popular design will become the official K3Y QSL card of the January Straight Key Month event. Others will be featured in the SKCC 2026 print calendar.

About me:
I was licensed at 12 years old in 1988 and off air until 2025 when I tested for my Technician and General. I've jumped feet first into the radio game doing everything from casual contests to exploring the newer digital modes. It is all new to me again. Outside of radio I coach and race triathlons, bike races, and play a little baseball and have written for more than a few of those related organizations. I live with my wife and family in Columbiana County.

Mahoning County ARES Update

ARES Update Nov. 30th 2025
The week of Thanksgiving this year was a very active week for Mahoning County Amateur Radio Emergency Services (ARES) Members.

Saturday, at 12:50 pm November 23rd an explosion that damaged over a third of the 7 story Phoenix House Apartment building began a multi-day activation for our local ARES group.

Members began checking into the ARES Emergency Net shortly after 1 pm and ARES was formally activated at 2:04 pm.

That Saturday was a very long day as many ARES members worked into the evening along with First Responders to assist over 100 Phoenix House Residents make their way to hospitals, an Austintown shelter and eventually temporary housing at area nursing homes and hotels. Many of the residents were disabled and needed assistance with their pets, belongings and medications. It was a very challenging afternoon and evening.

Our ARES Volunteers responded quickly to a very difficult situation on Saturday with a total of 23 operators. That's an amazing accomplishment by itself. Then Mahoning County ARES Members continued to provide many additional communications and support services on Tuesday November 25th and Wednesday November 26th as our Community assisted Phoenix House residents in recovering some of their personal belongings from the damaged building for what looks to be an extended stay in their temporary locations until repairs are completed.

This is a great example of what Amateur Radio does for our Community. We want to thank the following 26 Mahoning County ARES Members for their efforts over this three day activation.

Dave KD8NZF	Pete KG4HRT
Ron KE8TNW	Dean W8YSU
Rob KE8OKO	Rich KB8GAE
Fred WB8LVP	Dave KE8UWV
Bob KE8HHH	Mark W4ZIP
Mike W8XLR	Roy K3BBC
John WB8B	Frank WB8YHD
David KF8BFD	Nancy KD8QNY
Bill KE8BFQ	Allan KE8ADY
Scott KE4UHC	Allison KE8SKL
Darrin N8DMC	Mark KF8EIQ
Dave KE8YJX	Ed W8EJW
Ken WD8JZP	Adam KC8YEO

If you're interested in joining Mahoning County ARES please visit our website http://mahoning-ares.org/ or email mahoning.ares@gmail.com

Getting in Tune with Your Antenna: What Do Antenna Matching Devices Do?

by Mark Haverstock, K8MSH

If you've ever spent time tinkering with radios—whether ham, shortwave, CB, or even more exotic setups—you've probably heard about antenna matching devices. These gadgets,

often referred to as antenna tuners (or more accurately, antenna coupling networks), play a crucial role in ensuring your radio and antenna work together in harmony. But what exactly do they do, and why are they so important?

Awkward Relationship—Radios and Antennas

Every radio transmitter is designed to work with a specific load impedance, most commonly 50 ohms in modern amateur and commercial gear. This isn't arbitrary—it's a balance between power transfer, efficiency, and coaxial cable design. However, an antenna rarely presents a perfect 50-ohm load across all frequencies. Even a carefully cut dipole might only show a near 50-ohm impedance at its resonant frequency, but at other frequencies the impedance can swing wildly—say 12 ohms on one band or 200 ohms on another.

When there's a mismatch between the transmitter's expected load of 50 ohms and the antenna's actual impedance, a couple of things happen:

1. **Reflected Power (SWR)**—Instead of all the power flowing smoothly into the antenna, some of it bounces back down the feedline toward the transmitter. This reflection creates a standing wave pattern, measured as the Standing Wave Ratio (SWR). A perfect match is 1:1, but anything much above 2:1 starts causing concern.

2. **Stress on Equipment**—High SWR can make transmitters unhappy. Many modern radios have protection circuits that reduce power output when they sense high reflected energy. Older gear might overheat or even fail under high mismatch conditions.

3. **Losses**—Reflected power bouncing back and forth in the feedline causes additional resistive and dielectric losses. That means less of your transmitted energy actually reaches the antenna for radiating.

Antenna Matching Devices to the Rescue

Mismatches waste power and can damage your equipment. How do you avoid them? Enter the antenna matching device (a.k.a. tuner). This device is an adjustable network of inductors and capacitors that transforms the impedance of your antenna system to a value compatible with your radio. It doesn't really tune the antenna itself — it just makes the transmitter think it's seeing a 50-ohm load.

Think of it like an interpreter between two people who don't speak the same language. The antenna says, "I'm presenting 200 ohms at this frequency," and the radio says, "I only understand 50 ohms." The matching device steps in and says, "Don't worry—I've got this."

How They Work

Most antenna matching devices use one of a few standard circuit configurations:

- **L-Network**—The simplest form, using one inductor and one capacitor.

- **T-Network**—Very common in modern tuners, using three adjustable components (two capacitors and one inductor). Offers broad matching capability.

- **Pi-Network**—Similar to what's used in older tube transmitters, with a capacitor-inductor-capacitor layout.

By adjusting these reactive elements, the device can transform a wide range of impedances to the 50-ohm standard expected by the transmitter.

Some tuners are manual, requiring you to twist knobs while watching an SWR meter until you achieve the lowest reading. Others are automatic, with relays or motorized components controlled by a microprocessor that searches for the right match in a matter of seconds.

Power Still Has to Go Somewhere
One common misconception is that an antenna tuner improves an antenna's efficiency. That's not entirely true. The tuner doesn't magically turn a short, inefficient antenna into a full-sized dipole. It simply provides an impedance match, allowing the transmitter to deliver power without interruption.

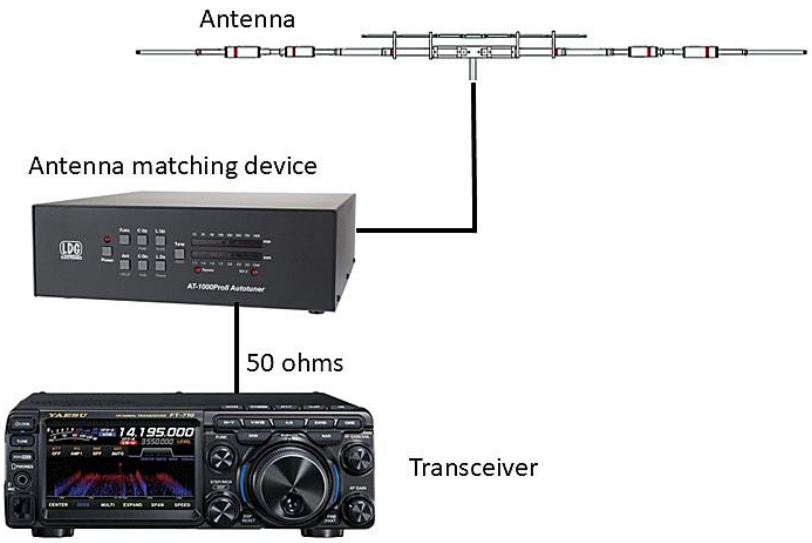
If your antenna is severely undersized or lossy, much of that power may still be wasted as heat in the tuner, feedline, or antenna system itself. In other words, an antenna tuner can't turn a coat hanger into a high-gain Yagi.

Benefits of Antenna Matching Devices

1. **Frequency Agility**—A single antenna can often be used on multiple bands if paired with a tuner. For example, a 40-meter dipole might also work on 15 meters using a tuner. This is especially valuable for hams with limited space who can't put up a separate antenna for every band.
2. **Protecting the Transmitter**—Even modest mismatches can stress your radio. A tuner provides a safeguard by ensuring the transmitter always sees the load it expects.
3. **Flexibility**—Portable and field operators often use end-fed wires, random lengths of wire, or compromise antennas. A matching device enables these imperfect antennas to radiate more effectively.
4. **Efficiency Gains in Some Cases**—While a tuner doesn't improve a poor antenna, it can reduce losses in the feedline by matching closer to the antenna rather than forcing high SWR through long lengths of coax. Remote tuners located at the antenna feedpoint are especially useful for this.

Types of Antenna Matching Devices
There are two basic designs, each with their own advantages:

- **Manual Tuners**—Simple, reliable, and often less expensive. Requires operator skill and time to adjust.
- **Automatic Tuners**—Convenient, fast, and user-friendly. They're included in many modern transceivers or available as external boxes.



Autotuner as matching device transforms antenna impedance to about 50 ohms to match transceiver.

Some high-power manual versions are built like tanks with large roller inductors and capacitors that can handle thousands of watts. Automatic tuners are often more compact in size and will easily fit on a desktop. Smaller portable versions like the mAT-TUNER mAT-10 QRP and Icom AH-705 tuners will fit in a shirt pocket.

A Practical Example

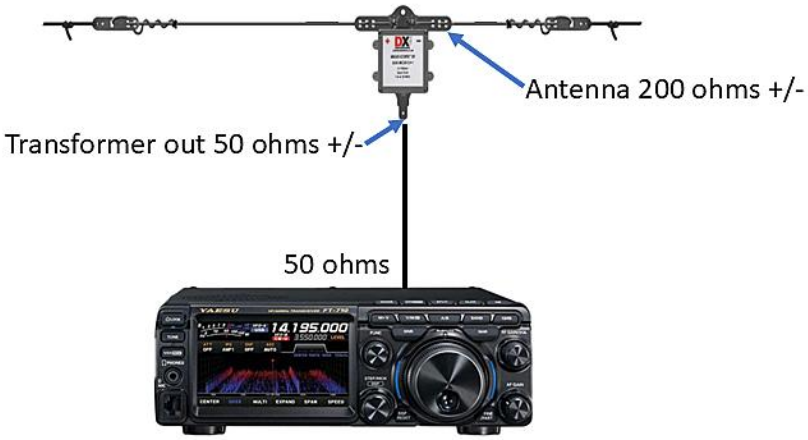
Suppose you've strung up a 66-foot wire as a makeshift dipole. At 7.1 MHz (40 meters), the antenna is near resonance and measures approximately 50 ohms—perfect. But switch to 14 MHz (20 meters) and, suddenly, the antenna's impedance looks like 200 ohms. Your radio starts reducing power to protect itself.

Insert an antenna tuner between the radio and antenna. You twist a couple of knobs—or push a button on an automatic model— and the device rearranges its capacitors and inductor values to present 50 ohms to the radio, while actually feeding 200 ohms to the antenna. Your radio stays happy, and the antenna radiates on 20 meters.

Transformers

But wait—there's more. Tuners aren't the only solution.
When you hear "Transformers," your first thought might be Optimus Prime, but in the ham radio world, transformers aren't giant autobots. They're little devices that match your 50-ohm radio to the impedance of your antenna.

Take the 4:1 balun for example. It's the go-to transformer for the Off-Center Fed (OCF) antenna, which often has a feedpoint impedance around 200 ohms. Adding a 4:1 transformer at the antenna feedpoint smooths out the situation by stepping down the 200 ohms to a more manageable 50. Bonus: OCF antennas can cover multiple bands (80, 40, 20, 10 meters), so you're getting more bang for your buck.



OCF antenna using 4:1 matching transformer.

If you're running a random wire, you'll want to reach for a 9:1 UNUN (that's unbalanced to unbalanced). Why? Because these "random" wires have impedances in the neighborhood of 450 ohms. The 9:1 UNUN takes that high impedance, converts it, and hands you an impedance your external antenna tuner should be able to handle to get to 50 ohms for your transceiver.

LDG Electronics 9:1 UNUN

Important Fact: *Random wire lengths aren't actually random. You don't want them to be multiples of 1/4 or 1/2 wavelengths because that's when your wire refuses to play nice with your tuner. You can find lists online with the best measurements to use. For example, 74 feet gets you mostly solid coverage from 80-10 meters.*

Loading Coils

Imagine you're operating SOTA. There's no way you're going to hike to the summit with a 40-meter vertical antenna and radials, but you'd really like to operate on 40 meters. You need something compact, lightweight, and capable of making enough QSOs to make your activation worthwhile. Enter the loading coil, the adrenaline shot your antenna needs to act like it's longer than it actually is.

Here's how it works: Short antennas are convenient but naturally a bit "capacitively challenged." A coil adds inductance, balancing things out so your antenna pretends to be full-sized. Your transmitter sees a resonant load and sends your signal skyward.
But where do you attach the coil? You have several choices:

- At the bottom of the antenna—easy, but less efficient.
- In the middle—a more intelligent choice that boosts current where it matters.
- At the top—the most efficient method. It moves the coil to the high-current radiation point, reducing losses and increasing efficiency.

DIYers often make coils with taps and clips, because nothing says "ham ingenuity" like walking into your backyard with pliers and moving a clip on your antenna one inch while your neighbor pretends not to stare. Modern portable antennas make this easier with fancy sliding collars, letting you tune faster and get more valuable airtime. Examples include the REZ Ranger Antennas and the Chameleon PRV.

The Great Tuner Misunderstanding
Let's finally debunk the classic ham radio myth: Tuners don't actually tune antennas. They don't magically stretch your wire to resonance or sprinkle it with magic RF dust. What they do is impedance translation—matching the antenna system to your 50-ohm radio, so that maximum power reaches whatever antenna you happen to be using.

Whether you're a ham operator working multiple bands from a city apartment, a shortwave listener optimizing reception, or a field operator tossing wires into trees, an antenna matching device is the bridge that makes mismatched systems work together.

So no, your "random" wire isn't random, your tuner isn't actually tuning, and your transformer isn't a robot. But together, they help beam your voice halfway across the globe…all while your spouse wonders why you spent Saturday rag-chewing instead of mowing the lawn.
(Article originally appeared in *On All Bands,* October 2025. Printed with permission of author and DX Engineering)

Swap & Shop

Submitted by Scott KE4UHC.

Selling for a daughter of a silent key.

Icom IC-740 $325

Icom IC-718 w/power supply $250

Kenwood TS-449s w/power supply {has some rust on case} $200

MFJ Deluxe versa tuner {have 2 different styles and can send pictures of each} $100 each

Johnson Viking match box $115

Pyramid power supply $75

Contact Scott at 727-591-5195 or ke4uhc@neo.rr.com

Amateur License Refresher

It's probably been a while since you took your Amateur License exam. Here are a few sample questions from the current question pools just to keep those synapses firing.

Extra Pool

E4B01
Which of the following factors most affects the accuracy of a frequency counter?
A. Input attenuator accuracy
B. Time base accuracy
C. Decade divider accuracy
D. Temperature coefficient of the logic

E4B02
What is the significance of voltmeter sensitivity expressed in ohms per volt?
A. The full scale reading of the voltmeter multiplied by its ohms per volt rating is the input impedance of the voltmeter
B. The reading in volts multiplied by the ohms per volt rating will determine the power drawn by the device under test
C. The reading in ohms divided by the ohms per volt rating will determine the voltage applied to the circuit
D. The full scale reading in amps divided by ohms per volt rating will determine the size of shunt needed

E4B03
Which S parameter is equivalent to forward gain?
A. S11
B. S12
C. S21
D. S22

General Pool

G8B01
Which mixer input is varied or tuned to convert signals of different frequencies to an intermediate frequency (IF)?
A. Image frequency
B. Local oscillator
C. RF input
D. Beat frequency oscillator

G8B02
What is the term for interference from a signal at twice the IF frequency from the desired signal?
A. Quadrature response
B. Image response
C. Mixer interference
D. Intermediate interference

G8B03
What is another term for the mixing of two RF signals?
A. Heterodyning
B. Synthesizing
C. Frequency inversion
D. Phase inversion

E4B01 (B)
E4B02 (A)
E4B03 (C)
G8B01 (B)
G8B02 (B)
G8B03 (A)

Upcoming Contests and QSO Parties

Dave Fairbanks N8NB

Source is www.contestcalendar.com

December 2025	
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Dec 2
+ Phone Weekly Test	0230Z-0300Z, Dec 3
+ A1Club AWT	1145Z-1300Z, Dec 3
+ CWops Test (CWT)	1300Z-1400Z, Dec 3
+ VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 3
+ Weekly RTTY Test	0145Z-0215Z, Dec 5
+ ARRL 160-Meter Contest	2200Z, Dec 5 to 1600Z, Dec 7
+ Phone Weekly Test	0230Z-0300Z, Dec 10
+ CWops Test (CWT)	1300Z-1400Z, Dec 10
+ VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 10
+ ARRL 10-Meter Contest	0000Z, Dec 13 to 2400Z, Dec 14
+ International Naval Contest	1600Z, Dec 13 to 1559Z, Dec 14
+ 4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Dec 15
+ OK DX RTTY Contest	0000Z-2400Z, Dec 20
+ RAC Winter Contest	0000Z-2359Z, Dec 20
+ ARRL Rookie Roundup, CW	1800Z-2359Z, Dec 21
+ Stew Perry Topband Challenge	1500Z, Dec 27 to 1500Z, Dec 28
+ Original QRP Contest	1500Z, Dec 27 to 1500Z, Dec 28

DX Information
Source is www.ng3k.com

December

2025 Dec01	2025 Dec10	**Maldives**	**8Q7HT**	DL7MDX	DXW.Net 20250924
2025 Dec07	2026 Jan05	**Guatemala**	**TG**	LoTW	TDDX 20250605
2025 Dec10	2025 Dec17	**Palau**	**T88AC**	LoTW	OPDX 20250912
2025 Dec17	2025 Dec29	**Trinidad & Tobago**	**9Y9DX** NEW	LoTW	OPDX 20251122
2025 Dec21	2025 Dec27	**Bangladesh**	**S21DX**	LoTW	DXW.Net 20250920
2025 Dec21	2026 Jan02	**Surinam**	**PZ5OZ**	LoTW	OZ0J 20250728
2025 Dec26	2026 Jan03	**Azerbaijan**	**4K**	LoTW	OPDX 20251013
2025 Dec30	2026 Jan03	**Mariana Is**	**KH0**	LoTW	DXW.Net 20250826
2025 Dec30	2026 Jan03	**Monaco**	**3A**	LoTW	DXW.Net 20250324

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Website: The MVARA is on the web at www.mvara.org. It is the place to go for club events, classes, newsletters, VE exams, swap and shop, repeaters, history, documents, and contact information.

24/7 Club Connection: The MVARA is on groups.io at https://groups.io/g/mvara. Members are invited to hang out with us there and discuss any ham related topic that interest them such as, Club Activities, Parks on the Air, Solar Cycle 25, EmComm, Special Event Stations, Contesting, Public Service, and Swap and Shop. There is video on our website at **https://mvara.org/videos.html** that shows how to use and join the 24/7 Club Connection.

The ***VOICE COIL*** is the monthly publication of the Mahoning Valley Amateur Radio Association, Inc. (MVARA) and is intended to present news, issues and opinions of interest to MVARA members and the Amateur Radio Community. We encourage contributions of articles, letters to the editor, etc. and welcome newsletter exchanges with other clubs from around the country and around the world. Permission is granted to reprint material contained herein as long as proper credit is given to this newsletter and the author. Ideas for and contributions to the VOICE COIL should be submitted to: **mvara.w8qly@gmail.com**

Submissions must be received **no later than the 24th** of the month prior to the month of issue, unless otherwise specified. **Submissions should be in MS Word format or ASCII text—no PDF, please!** Material received after the deadline will be used in the next month's VOICE COIL if it is still current and /or newsworthy.

Swap and Shop Policies
Swap and Shop listings are open to all licensed Mahoning Valley Hams--you don't need to be an MVARA member. You can include a picture for your listing. Please submit your list to mvara.w8qly@gmail.com for placement in both *Voice Coil* and website. MVARA assumes no responsibility for transactions made or inaccuracies in ads. You are responsible for checking your ad and notifying us of any corrections. Ads will run for two consecutive issues unless we are notified otherwise.

The Mahoning Valley Amateur Radio Association, Inc, meets the second Thursday of every month. Location and time are subject to change. Dues are $20.00 per year, $10.00 each for additional family members. Contact Nancy, nanceanne34@gmail.com for details.

The club call is **W8QLY**; equipment operated under this call includes a two-meter voice repeater at 146.745 (-600, 110.9 PL).

Club email: mvara.w8qly@gmail.com

MONDAY NIGHT NET operates every Monday at 9:00. PM on 146.745 MHz.
SKYWARN NET - On 146.745 MHz as weather warrants.
ARES NET- First and third Mondays of each month at 8:30 PM on 146.745 MHz; prior to the Monday Night Net.

Disclaimer
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