

January
2020



www.marcwireless.org

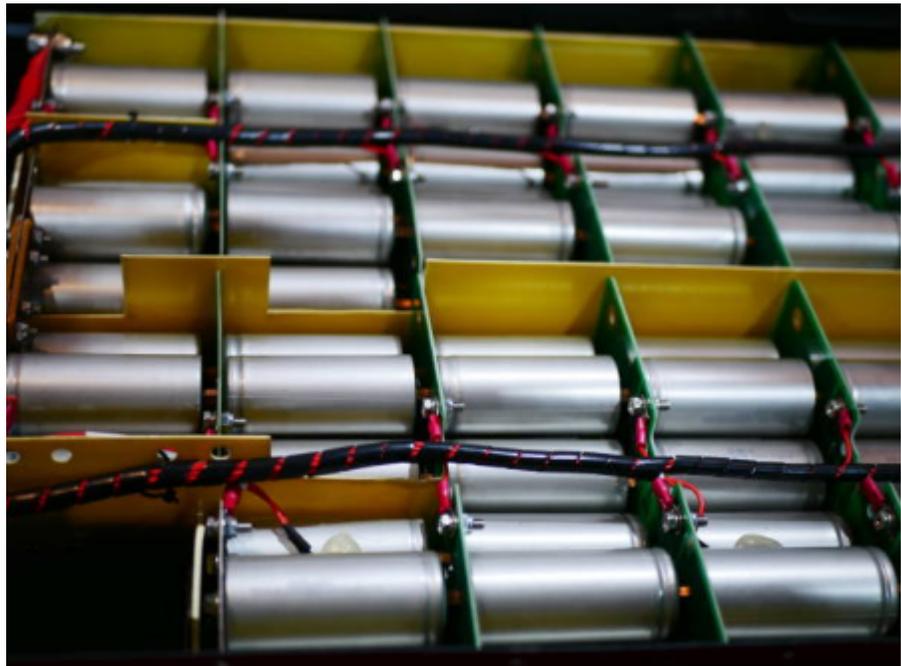
Now Collecting Club Membership Dues

The McMinnville Amateur Radio Club yearly dues are now being collected by our Treasurer. If you have *any* changes to either your address, email address, phone #, or call sign, you should fill out the membership application form on the last page.

Bring your check and completed form to a meeting, or mail to:

The McMinnville Amateur
Radio Club
PO Box 891
McMinnville, Oregon 97128

For additional
information concerning
the membership dues,
see page 3.



Lithium Ion Batteries for Off Grid Operations

Continuing with the topic of my solar/battery generator research, I am now presenting some of the information I've gleaned on the topic of Lithium Ion batteries.

Similar to lead acid batteries, 12 volt lithium ion batteries are made up of multiple cells, and each cell has anode and cathode plates with an electrolyte between the plates. They also are made for purposes like the lead acid starter and deep cycle batteries. Again like lead acid batteries, there are multiple types of Lithium Ion batteries, but there are two that are more common. The ones we often see used in small rechargeable products are the Lithium Cobalt Oxide (LiCoO_2 , "LCO"). Lithium Iron Phosphate (LiFePO_4 , "LFP") are more often found in automotive and professional power tool applications. Their names are based upon the material used in making the cathode (positive plate). Both use forms of metal backed carbon for the anode (negative plate).

All quality multiple cell lithium battery have a built in battery management system. Unlike SLA batteries, the individual cells of lithium ion batteries will not charge at the same rate, and require cell balancing to prevent from overcharging a cell when there are other cells that charge at a slower rate. Overcharging lithium ion batteries can quickly damage them and can be dangerous. To get the most life out of a lithium ion battery, the more complex active charging battery management also balances the battery cells during discharge. When discharging, battery management system that rely on active balancing will draw the power on discharge evenly across cells, and will shut off all discharge once the voltage drops near levels that can cause damage. Passive cell charge balancing wastes power in resistors to prevent overcharging, active charge balancing routes the power to the slower charging cells. Protection of the cells comes at a cost as they can add up to 3% per month on the self discharge rate.

When comparing self discharge rates, LCO and LFP batteries have a similar storage discharge rates of 1% per month. The discharge rate of an SLA battery is close to 5% per month. But factoring in the power draw of a multi-cell LFP battery management system, the total discharge rate can be near 4%. But unlike the SLA battery the LFP battery's management system will shut off all use of the battery which essentially disconnects the cells, so it falls back to the 1% rate until recharged. The SLA batteries continue to lose charge at the same rate and can easily fall into the damaging low charge range. For SLA batteries this range is at best 50% of a full charge for a deep cycle and 70% of a full charge for a starter battery. Since the LFP cells don't become damaged until below 20% of full charge, there is a longer time between when charging can be necessary to prevent damage while storing a battery.

Due to the different materials of LFP batteries have a much higher energy density. This higher energy density allows for smaller and lighter batteries. On average, a LFP battery is about about two thirds the volume of an SLA battery. When it comes to weight, a marine grade 100ah group 31 deep cycle lead-acid battery weighs in at 75lbs. A similar capacity LFP battery weighs only 28lbs.

Another advantage of the LFP battery is that its discharge curve is much flatter than a SLA battery, making them more useful for voltage sensitive equipment like radios. All my radios state not to be used when the power supply voltage is under 11 V. A 230 amp hour SLA battery when a 10 amp load is applied will be under 12.5 volts after only 4 hours. The Flat curve of the LFP battery keeps the voltage above 12.5 for 9 hours, which corresponds to when the battery maintenance system shuts it down.

The charge cycle is much faster for LFP batteries, as it only takes about half the time as it would take a SLA battery. Though, special chargers are required for LFP batteries. They require a Constant Voltage – Constant Current Charging solution. For the bulk load period they require a constant current (CC) with the voltage limited until the battery voltage achieves a predefined safety limit. At this maximum charging voltage, a constant voltage (CV) cycle begins. Then, the charging voltage is kept at the maximum charging voltage, while simultaneously, the charging current is exponentially reduced. The charging process ends when the charging current achieves a small preset current.

A key item here. No load should be applied to the battery while it is charging, as any parasitic load will confuse the charger. While LFP batteries can have a small charging memory, if you charge empty batteries to 40-60 percent and store in a cool location for long term storage, they can lose most of this memory. But if you are in use – store – use cycle, with short store periods, charge the battery to about 90% for storage, then top off just before use. This should give you the greatest longevity on the battery.

The Lithium Cobalt Oxide (LiCoO₂, "LCO") batteries can be quite dangerous when the battery becomes unstable from overcharging or damage. Instability can lead to thermal runaway in which flaming gases are vented. Because of this, devices containing lithium-ion batteries may be transported in checked baggage, but spare batteries may be only transported in carry-on baggage, and must be protected against short

circuiting. The LCO batteries used in consumer electronics are now using a polymer electrolytic rather than a liquid electrolyte. While they still can have catastrophic failures with gross mishandling, they are considered safer.

LiFePO₄ batteries are deemed to be much safer as they have higher thermal and chemical stability. The lack of cobalt removes the negative thermal coefficient which encourages thermal runaway. If damaged, the oxygen released is at a much slower rate lessening the chance of fire. While LiFePO₄ batteries come with a fair amount of environmental baggage they are still far greener than conventional batteries. Unfortunately batteries in general are an inherently dirty business and LiFePO₄ is among the least dirty off batteries currently on the market.

In a one time price category, Lead acid batteries are the clear winner. A group 31 size deep cycle 100 amp hour lead acid battery will cost from \$150 to \$300. A similar sized and capacity LiFePO₄ battery will be in the \$750 to \$1,000 range. But with higher longevity of LiFePO₄ batteries, from a solar power study, the price comparison between LiFePO₄ and a flooded Lead Acid battery the \$/KWH were nearly identical for the standard lifetime of a LiFePO₄ battery. Though when compared to the more expensive gel lead acid battery, the LiFePO₄ is near half the \$/KWH of the gel lead acid.

Membership Dues and Information Due by March 1, 2020

Included in this newsletter is an updated 2020 membership application form. Dues are to be paid by March 1st in order to stay current and receive future correspondence. If any of your information has changed such as address, email, phone number, classification upgrade you must complete an application. It is still preferred that everyone complete a form. Here's why:

We've added a new line to the application in which you have the option to have (or not have) your name, call sign, email & phone number published to the membership.

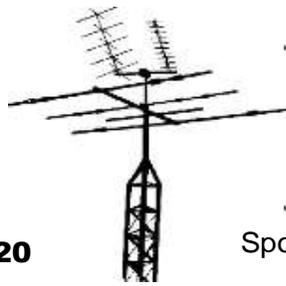
This request is a result of several members wanting to contact other members by email or phone as well as facilitating our weekly nets. (Your mailing address is already public information since it appears with your call sign information on call sign look up sites.)

If you're renewing your membership you don't have to provide anything other than your name, call sign, circling "do" or "do not" and your initials in the box on the form, **unless** there has been a change in your class, or contact information. If you have already sent in your form or renewed without completing an application form Jayne Wolf will be contacting you for your permission to publish your name, call sign, phone number & email to the membership.

The membership list will be published after March 1st. If you have any questions please contact Jayne Wolf at Jayne.Wolf@MARCwireless.org

The 40TH Annual Salem

Saturday, February 15, 2020



Hamfair

Sponsored by the Salem Repeater Association

OREGON'S BIGGEST & BEST COMPUTER & ELECTRONICS SWAPMEET



Hamfair Ticket door sales start at 7:30 AM. Doors open at 9:00 AM

Polk County Fairgrounds – 520 S. Pacific Hwy West, Rickreall, OR



RAFFLE PRIZES

1. **Kenwood TH-D72A** 144/430 MHz 5W DUAL-BAND FM/APRS HANDHELD TRANSCEIVER WITH PROGRAMMING SOFTWARE
2. **ICOM ID-4100A** DUAL BAND VHF/UHF DSTAR MOBILE TRANSCEIVER WITH PROGRAMMING SOFTWARE
3. **Yaesu VX-6R** 144/220/440 TRI-BAND HANDHELD TRANSCEIVER WITH PROGRAMMING SOFTWARE
4. **Yaesu FT-60R** VHF/UHF HANDHELD TRANSCEIVER WITH PROGRAMMING SOFTWARE

2020 Salem Hamfair Registration

Number of Persons Attending:
\$8.00 each (\$10.00 at the door)
Children 12 and under FREE with a paid attendance adult.

Required Entry

Swap Tables DO NOT include pre-registration; all participants must pre-register

Powered Tables @ \$21 each
Non-powered tables @ \$ 18 each

NO MIXING TABLE TYPES
All tables must be either powered or non-powered.

For questions, call Chris Portal
W7CLP at 503-779-6998
OR email: hamfair@w7sra.org
Recorded calls returned after 5 PM

RV Camping @ \$25 per night

Send form to:
Salem Repeater Association
P.O. Box 722
Salem, OR 97308

Checks payable to: Salem Repeater Association

NAME _____

CALL _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

EMAIL _____ PHONE _____

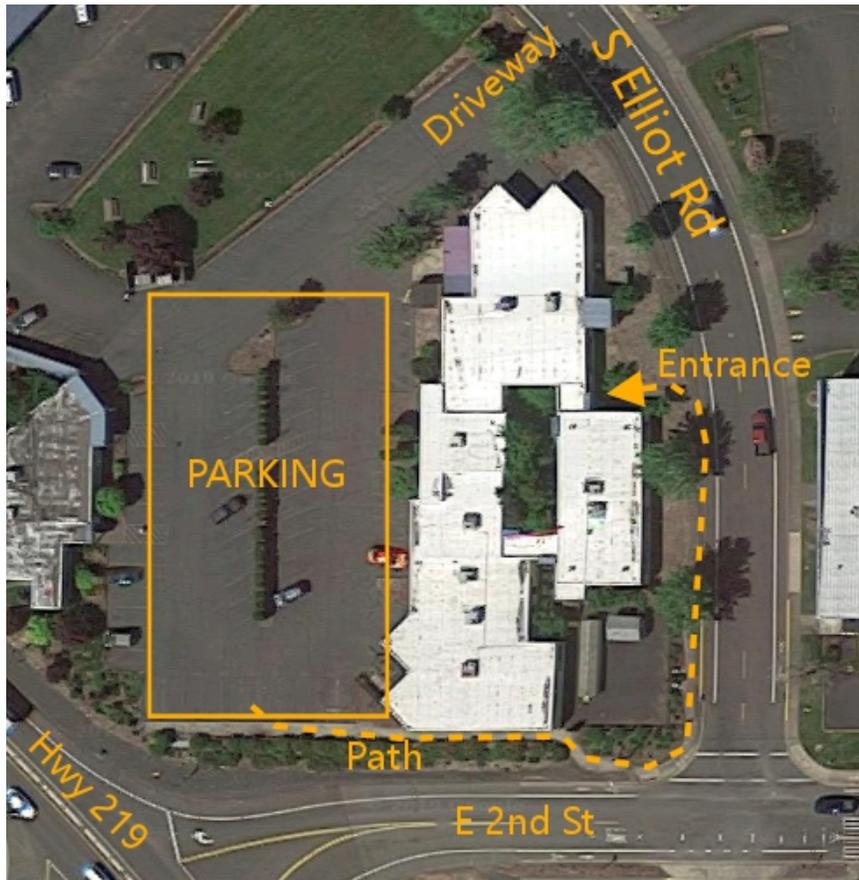
Amateur Radio General License Class

Who – Amateur Radio Group of Oregon

What – General weekend license class & testing

When – Saturday & Sunday, March 14th & 15th

**Where – Chehalem Valley Innovation Accelerator
125 S Elliott Road, Newberg OR 97132**



**Contact
Rusty
O'Shaughnessy
K7RMO
(503) 610-1231
k7rmo@arri.net**



Learn - Grow - ConnectSM

Registration deadline is February 15th to allow for pre-class homework completion.

The fee for this class is \$99. Testing is always free.

YCARES Emergency Frequency List

The list of frequencies provided here are published to all Hams to be informed of where communications operations will occur within Yamhill County during emergency operations. All ARES members should have the repeaters and simplex frequencies programmed into their primary hand held VHF/UHF radio. MARC members are encouraged as well. Simplex Frequencies can change or added due to conditions and needs. Know how to add and change simplex frequencies in VFO Mode on your radio!

Priority	Mode	Frequency PL Tone	Offset	Call
Primary	Repeater	441.800 MHz 114.8 Hz	+5.0 MHz	W7YAM
Secondary	Repeater	146.640 MHz 100.0 Hz	-0.6 MHz	W7RXJ
Tertiary	Repeater	442.550 MHz 114.8 Hz	+5.0 MHz	KOINK
Primary	Simplex	146.400 MHz	VHF	
Secondary	Simplex	147.520 MHz	VHF	
Primary	Simplex	432.150 MHz	UHF	
Secondary	Simplex	431.150 MHz	UHF	
Eola Hills	WinLink	144.920 MHz	VHF	W7YAM-10
EOC	WinLink	144.960 MHz	VHF	W7YAM-11
Eola Hills	WinLink	441.050 MHz	UHF	W7YAM-12
Newberg Dundee	Winlink	145.080 MHz	VHF	W7OWO-10

Local Nets

MARC Net			YCARES Net			
Monday January 6 th	7:00 pm	146.640 - PL100	Monday January 6 th	7:30 pm	441.800-PL114.8	Jayne/KI7MZP
Monday January 13 th	7:00 pm	146.640 - PL100	Monday January 13 th	7:30 pm	441.800-PL114.8	Paul/KE7IQL
Monday January 20 th	7:00 pm	146.640 - PL100	Monday January 20 th	7:30 pm	441.800-PL114.8	Jeff/NI7X
Monday January 27 th	7:00 pm	146.640 - PL100	Monday January 27 th	7:30 pm	146.400 Simplex	Jenny/KE7FLV
Monday February 3 rd	7:00 pm	146.640 - PL100	Monday February 3 rd	7:30 pm	441.800-PL114.8	Darrell/KK1NP
Monday February 10 th	7:00 pm	146.640 - PL100	Monday February 10 th	7:30 pm	441.800-PL114.8	Norm/KF7PPQ
Monday February 17 th	7:00 pm	146.640 - PL100	Monday February 17 th	7:30 pm	441.800-PL114.8	Alan/KF7PPS
Yamhill County Weather Spotter Net			CERT Net			
Sunday January 19 th	6:00 pm	146.640 - PL100	Sunday January 19 th	7:00 pm	146.640 - PL100	

If you have a newsworthy small point of interest you would like presented in the MARC newsletter. Here is the place for them. Just send an email to me (Brian, W7OWO) my email address shown in the Club Officers call-out. Entries will be approved by the board.

*Special Services
Club*

About Us

The McMinnville Amateur Radio Club
PO Box 891
McMinnville, Oregon 97128

The McMinnville Amateur Radio Club (MARC) was founded in mid- 1981 by a group of Yamhill County area amateur radio operators who wished to share their common interests. An association was formed of men and women devoted to probing all facets of amateur radio.

2019 Club Officers

President	Anthony Perez, KI7ZBQ	anthony.perez@marcwireless.org
Vice President	Jeff Monahan, NI7X	jeff.monahan@marcwireless.org
Secretary	Jayne Wolf, KI7MZP	jayne.wolf@marcwireless.org
Treasurer	Katie Perez, KI7ZLL	katie.perez@marcwireless.org
Board Member	Craig Merrick, W7EEO	craig.merrick@marcwireless.org
Board Member	Fred Rodley, N0NNO	fred.rodley@marcwireless.org
Board Member	Brian Wright, W7OWO	brian.wright@marcwireless.org

January 1st Treasurer's Report

Account	Funds
Repeater Maintenance & Project Account	\$5,243.90
Education Fund	\$230.63
MARC Business Account	\$1,885.32
Total:	\$7,359.85

Local Open Repeaters

W7RXJ 146.640- PL tone 100 Hz
W7YAM 441.800+ PL tone 114.8 Hz
K0INK 442.550+ PL tone 100.0 Hz

Repeaters

If you have a newsworthy small point of interest you would like presented in the MARC newsletter. Here is the place for them. Just send an email to me at W7OWO@marcwireless.org. Entries may require Board approval.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Dec 29	30 Club Net YCARES Net	31	Jan 1	2 Board Meeting	3	4
5	6 Club Net YCARES Net	7	8	9 General Club Meeting	10	11
12 ARGO VE Testing	13 Club Net YCARES Net	14	15	16 Library Lunch	17	18 VE Testing
19 WX Net CERT NET	20 Club Net YCARES Net	21	22	23 YCARES Meeting	24	25 No Host Dinner Gathering
26	27 Club Net YCARES Net	28	29	30	31 No Host Dinner Gathering	Feb 1
2	3 Club Net YCARES Net	4	5	6 Board Meeting	7	8

Regular Events

Monthly YCERT Net,
3rd Sunday at 7PM on
146.640- PL 100

Monthly MARC Board
Meeting, 1st Thursday
of every month at
China House in
McMinnville, next to
Bi-Mart. Starts at 7PM

Monthly MARC Club
Meeting, 2nd Thursday
of every month, starts
7PM at the OSU
Extension Service
Office 2050 NE
Lafayette Ave,
McMinnville

Monthly No Host
Dinner Gathering, last
Friday of the month.
Location to be
determined during Board
Meetings, starts at
6PM

Monthly library lunch.
Bring your lunch at
11:30 am on the 3rd
Thursday in the
Carnegie room at the
McMinnville Library,
225 NW Adams St

YCARES Monthly
Meeting, 4th Thursday
of each month. Meet at
the Lafayette
Community Center.

Significant Event Items:

McMinnville Amateur Radio Club

- Monthly General Club Meeting, 01/02 7:00 pm
 - OSU Extension Service Office 2050 NE Lafayette Ave, McMinnville
 - Host: TBD
 - Presentation: Rusty – K7RMO
 - Technician Level Training Information Video
 - Radio/Antenna Issues Q&A
- Monthly Library Lunch, 01/16 11:30 am
 - Carnegie Room, McMinnville Library
- Monthly VE Testing, 01/18, 9:00 am
 - Lafayette Community Center
- Monthly No Host Dinner Gathering, 01/25, 6:00 pm
 - TBD during General Meeting
- Next Month's Board Meeting, 02/06, 7:00 PM
 - China House Restaurant, McMinnville
 - Arrive early and join many Board Members for dinner.
- Next Month's General Club Meeting, 02/13, 7:00 pm

Yamhill County Radio Emergency Services (YCARES)

- Monthly YCARES Meeting, 10/23 7:00 pm
 - Lafayette Community Center

Amateur Radio Group of Oregon

- Sunday January 01/19 3:30 pm
 - VE Testing
 - Registration Requested
 - Chehalem Valley Innovation Accelerator
 - 125 S Elliott Road, Newberg OR 97132

*MARC VE
Exam Session
Results*

New Technicians

Local VE Testing Locations

McMinnville Amateur Radio Club – VE testing via ARRL. Lafayette Community Center located at 133 Adams in Lafayette, Oregon. Monthly ARRL VE exams on the third Saturday every month, testing begins at 9:30AM. Contact Jeff Monahan, NI7X at 503-583-2733 or NI7X@oregon.com for more information.

Portland Amateur Radio Club is currently offering sessions on a request or by appointment basis. Contact Pete W7PR, via email w7pr@juno.com for more information.

Oregon Tualatin Valley ARC – VE Exam sessions are held on the first Saturday of each month except June at 1:00 PM at the Sunset Presbyterian Church 14986 NW Cornell Rd, Portland, OR 97229. Contact John Bucsek, KE7WNB, 503.803.6134, ke7wnb@gmail.com, to preregister.

Hoodview Amateur Radio Club offers one session at 9:00AM on the 3rd Saturday morning of every odd numbered month at Mt Hood Community College in Gresham. Arrive early as the doors close at 9:00am to Room HF1, the Horticulture Fisheries Bldg. Map available at club website http://www.wb7qiw.org/map_vetest.htm.

McMinnville Amateur Radio Club 2020 MEMBERSHIP APPLICATION

(A completed application form must be included with yearly dues)

Please print:

Name: _____ Call Sign: _____ Class: T G A E

E-mail address (required): _____ @ _____

Address: _____

City: _____ State: _____ Zip: _____ Phone #: _____ Home / Mobile (circle one)

Date first licensed: _____ / _____ / _____ Birthday: _____ / _____ / _____ ARRL Member? Y / N
month year month day

Renewal? Yes / No New? Y / N (New to MARC? You will receive a MARC Membership Badge!)

Annual Club Membership - **\$20.00** per person/family at the same address..... **\$ 20.00**

Your MARC membership begins from date of signup or renewal to December 31 of the same calendar year.

Additional Voluntary donation – for repeater support and club projects..... **\$ ____.**

Total \$ ____.

Additional Family Members:

(**ALL** family members must reside at the same address.)

Name: _____ Call sign: _____ Birthday: _____ / _____ Class: T G A E

E-mail address: _____ @ _____ ARRL? Y / N Renewal Y / N

Name: _____ Call sign: _____ Birthday: _____ / _____ Class: T G A E

E-mail address: _____ @ _____ ARRL? Y / N Renewal Y / N

Please include any additional family members on back.

I do / do not want my name, call sign, email & phone number published to the membership

Circle one

Initial Here

Signature of Applicant: _____ Date: _____

Make check payable to “MARC”. Give to Club Officer or mail application to:

McMinnville Amateur Radio Club

PO Box 891

McMinnville, OR 97128

Club meetings are the **second** Thursday of each month at 7PM:

OSU Extension Service Office

2050 NE Lafayette Ave

McMinnville, OR 97128

For Office Use Only:

Processed by Treasurer: _____ Secretary: _____

Date Received: _____

Cash/Check #: _____

Amount: _____

Receipt: _____