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- Via WWW.AC6EE.ORG
- Mail:

Tehachapi Amateur Radio Association (TARA)
P.O. Box 1681
Tehachapi, CA 93581-1861

A Word

Dan Mason, AB6DM, President

Greetings, TARA friends.

We have a doozy of a newsletter this month, so I'm going to keep this short. I'm also straying from this month's theme as the thing I want to tell you about is semi time critical.

Now's your chance to participate in the Military Auxiliary Radio System (MARS). This is where amateur operators get to do COMMS with the US military to practice communications with others in combination during a national crisis. Some of you more experienced hams may be saying, "Isn't MARS dead?", or, "I thought the USAF quit MARS". Well, it's not dead just yet, and the US Army still does it. They are doing weekly exercises for the next few weeks on 60 Meters that you can get in on. Here are two articles that will tell you everything you need to know:

MARS Announces Schedule of Dates for 60-Meter Interoperability
02/03/2021

The Military Auxiliary Radio System (MARS), has announced dates in 2021 during which MARS members will operate on 60 meters for interoperability with the amateur radio community.

All exercises will begin on channel 1 as the initial calling channel and move to other 60-meter working channels as may be appropriate. Some dates coincide with quarterly Department of Defense Communications Exercises (COMEX). <http://www.arrrl.org/news/mars-announces-schedule-of-dates-for-60-meter-interoperability>

National Institute of Standards and Technology (NIST)

WWV and WWVH announce Military Auxiliary Radio System (MARS) and DoD exercises. Founded in 1925, MARS is an organization established by DoD that trains volunteer "Hams" to provide contingency high-frequency radio communications assistance in times of natural disasters and other urgent situations, also assist by providing humanitarian assistance, disaster relief, morale and welfare communications.

The MARS exercises take place several times per year. The WWV and WWVH announcements provide information to "Hams" participants regarding the purpose, dates, times and locations of the exercises and other information.

WWV airs MARS announcements on the 10th minute of each hour, and WWVH uses the 50th minute. Each announcement will air for about two weeks, prior to and during each exercise.

<https://www.nist.gov/pml/time-and-frequency-division/radio-stations/wwv/wwv-and-wwvh-digital-time-code-and-broadcast>

Till next time, 73,
Dan Mason - AB6DM
Tara President for 2021-2022

RadioActive!

Phil Dolber, W6WBT, 1st Vice President

This month Ray W6QPA our 2nd Vice President is trying something new with the club newsletter. The March Dummy Load has a theme... Off-grid Power.

In keeping with this theme I encourage members to think about alternative power not just in terms of a solution to our power companies turning power off whenever they feel there is a high fire risk, but take the opportunity to apply this to all remote amateur radio operations. And not just emergency operations, any remote off-grid operation such as: Field Day, UHF/VHF contests from a mountaintop, Summits On the Air (SOTA), National Parks On the Air (NOTA), Over-landing, CONOPS, hidden transmitters for Transmitter Hunting to name a few. I'm sure you can come up with others that meet your amateur radio and outdoor interests.

I know many of us have our go kits we are proud of and these are important projects for emergency communications however, other than practicing for that emergency, we don't spend a lot of operating time in real emergencies.

I suggest we use every field operation as a practice for an emergency by using the ideas and lessons learned from each off-grid station we assemble to improve our technical and troubleshooting skills in the field. And when we operate, use best on the air practices just like we would when doing EMCOMM for a served agency. Get used to using the International Telecommunication Union (ITU) Phonetic Alphabet, so that it becomes second nature and we don't resort to making up our own or using police calls or CB lingo during EMCOMM drills, Nets or Incidents.

If you have participated in formal EMCOMM training, think back to the protocols and procedural words you learned and if practical, implement them in your remote operations and community service operations. Go easy, we don't want to turn every operating event into an EMCOMM drill, but there are many good practices we can put to use in all of our amateur radio communications making us better communicators.

So, join the fun of putting together an off-grid solution and share with us how you accomplished it. Whether it is for home backup power, Go Kit power or alternative power for another amateur radio activity share your ideas, what worked and what didn't, so we can all benefit from your experiences.

Then maybe a future Dummy Load theme can be Remote Operations. Then we can all share how we got RadioActive with what we built.

Note: ARES suggests the use of the International Telecommunication Union (ITU) Phonetic Alphabet and the International Civil Aviation Organization (ICAO) phonetics for Numbers. The ITU version is more for international clarity.

For more information about the differences in the different phonetic alphabets I recommend this Wikipedia article: https://en.wikipedia.org/wiki/NATO_phonetic_alphabet

This is the ARRL Web Page for the ITU alphabet:

<http://www.arrl.org/quick-reference-operating-aids>

EDITORS' Note:

Thanks to all of you for sending in your "Off-Grid Power Solutions". I hope you all enjoy seeing these solutions as much as I have. For April let's make the theme "Portable/Transportable Antennas". Please consider sending in photos and a description of your Portable/Transportable Antennas so we can all learn more about this area of our hobby. Thanks in advance ... Ray, W6QPA

Off-Grid Power Solutions

RV Upgrade to Lithium Ion battery & Solar Charging

Mike Woodward — KN6ILG

You have been there- running the heater off and on overnight and trying to use the dinette radio and forced to fire up the Generator at night. Simple fix is “Buy a 12 volt 100 AH Lithium Ion Battery”, upgrade to on-board Converter/Inverter and install a Solar system. Well, I did a fair amount of research and found that there is so much out there that it boggles the mind. I finally decided on the following systems and installed them in/on my 2000 Lance Camper.

- **Dakota Lithium 12v 100Ah Deep Cycle LiFePO₄ Battery** \$899.00
 - Built Dakota tough, this 12 volt lithium battery packs a big punch. Engineered with Lithium Iron Phosphate (LiFePO₄) technology this battery has twice the power, half the weight, and lasts 4 times longer than a sealed lead acid battery – providing exceptional lifetime value. 100 Amp hours of capacity provides a full day of power for high amp draw trolling motors or for long days on the open road in your RV. Ideal for deep cycle applications like trolling motors, solar energy storage, or boating, where you need lots of power for a long time.
- **Renogy 100 Watts 12 Volts Monocrystalline Solar Starter Kit** \$159.22
 - Ideal output: 500Wh per day; can fully charge a 50Ah Battery from 50% in 3 hours (depending on the availability of sunlight)
- **Renogy Bluetooth Module RJ12 Communication Port Compatible Rover/Wanderer/Adventurer Charge Controllers, BT-1 RS232** \$37.99
- **Progressive Dynamics PD4645LIV** \$307.00
 - I bought from E-trailer which did not have a box metal box. If you want the metal box be sure and ask for it.
 - Upgrades the converter in your 45-amp WFCO RV power center to a lithium battery converter charger
 - Works with WFCO WF8945
 - Converter charger changes AC shore power to DC power to quickly charge your RV batteries
 - Provides continuous power to your DC breaker panel to run 12V loads
 - Works with lithium iron phosphate batteries.

Total \$1403.21

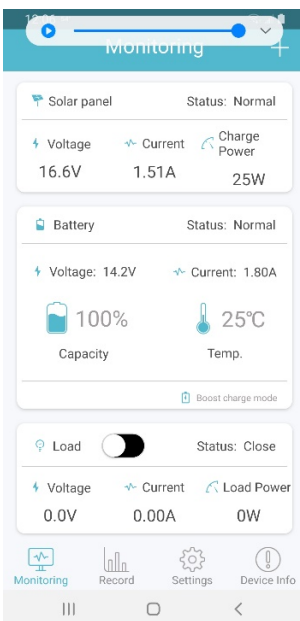
Installing these systems took some time but was doable by this 75-year-old guy with poor knees. I began the project R&R'ing the battery. The Dakota L.I. was a drop-in in the same battery box - no mods required except a small hole in the back of the battery box in order to accept the positive and negative leads from the solar controller.

Next, I tackled the solar panel install on the roof. Biggest 2 issues there were finding studs under the all-aluminum roof and then figuring out how to get the 2 leads down to the interior of the camper and then to the Solar controller. Once I had the plan it was not too hard but took time to figure out the best way to fish the leads down the Refrigerator vent and then into the interior in trying to assure reasonable aesthetics on the install.



I then installed the Renogy Solar Charge controller and Bluetooth Module (photo on right). Important thing here is to be sure to check and double-check with your multimeter continuity of all wires - Pos to positive and negative to negative. It helps a lot to mark them with colored tape prior to fishing.

My plan was to R&R my old camper converter/inverter with the type compatible with a lithium-ion battery so that I would get a 98% charge instead of 80%. Turns out that after I installed the solar panel and controller which is wired direct to the battery, it appears that my battery is getting the charge delivered from the solar panel even while on shore power or generator. I'm sure for long periods of shore power hook up it will be better for the battery to receive a full charge only from the converter/inverter designed for a Lithium-Ion Battery offers on cloudy days. I will do that soon.



The Renogy Bluetooth Module RJ12 is really cool if you're into smart phone apps. I can monitor everything the solar system is delivering so I don't need to install this stuff up. I simply review from the app on my phone!

Bottom line, after the install I tested the system out on a recent trip to King of the Hammers off road event in Johnson Valley. The Battery always showed 100% for the 6 days I was off the grid. My heater was necessary at night but Batt still showed 100% in the morning. The Solar controller showed charging during the day and best of all my Yaesu 2980, needing over 13.8 V of power to deliver 80 watts of transmitting power had more than enough when needed!



I am now off the grid enabled within reason and very very happy with the results. These products discussed are totally awesome and work as advertised!

It may seem pricy but remember there are many many options in this Lithium Ion world. Start here, <https://dakotalithium.com/product-category/12v-lithium-batteries/>, and you will find the Lithium for your Ham needs, I did.

Whole House Solar

Dick Brown — W6SLZ

I installed the system in 1999.



The system will generate about 8KW per hour on a good day. I am generating 50KW plus per day now.

The inverters are Trace 40 / 48 which is 4 KW at 48 Volts DC

I have not paid an electrical bill since installation.

I do pay a monthly connection fee to Edison but the system generates more power than I can use which they pay me for, which more than pays for the monthly charge.



Most of my house runs on the inverters continuously. You will notice in the picture there is a 100 amp transfer switch that transfers the Oven, Washing machine and a few other items to the inverters on a power outage. Note 2 trace inverters 4 KW each in a 240 configuration.

There are 8 GPL batteries in series parallel for a total 510 amps at 48 volts which equals 24KW +.



Note that most battery connections between batteries are insulated copper tubing. If you look on-line, it will give you the amperage rating of copper tubing. This will run my house and radio equipment for a long long time on both 120 & 240 volts

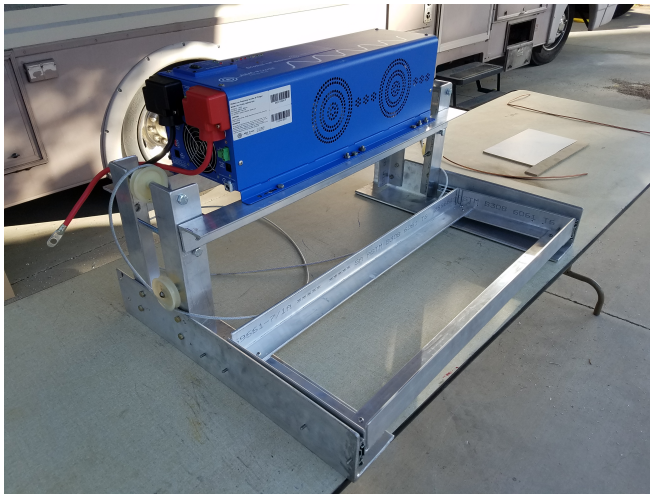
Any questions feel free to contact me.

RV Solar for Off-grid Camping

Eliot Hewitt — K6HWY

I have attached some photos of the solar system I put together for our RV.

It is a Renogy system, 6 -100 watt panels with a smart charger controller,

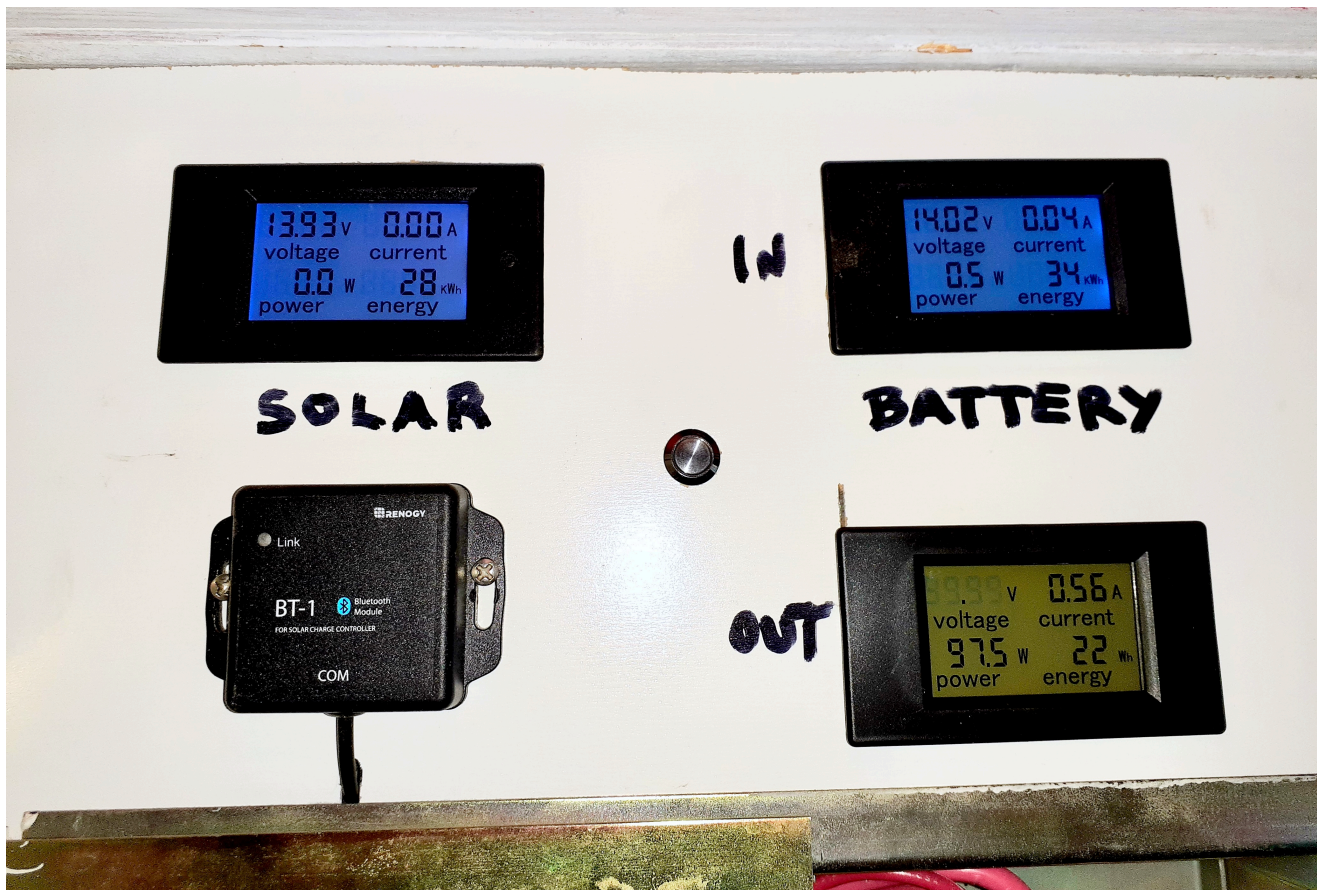


a 4000 watt inverter (which ended up being way over kill) and 4 - 232ah batteries for Costco.

The system cost right at about \$3500, way more than I wanted to spend but we wanted enough power to be able to live in the motorhome for months while boon-docking. The upside: I can run everything except the AC unit off of the batteries or inverter. The inverter is basically used for the microwave and TVs. However I plan on switching to 12 volt TVs at some point. The downside: that big inverter uses a lot of energy to run itself.



We run my mom's CPAP machine and oxygenator at night off of the inverter. The inverter doubles the power usage. It would use less energy to run both off of 12 volts eliminating the



inverter. Also even while running the medical equipment off of 12 volts, the 4 batteries run down to the minimum discharge voltage before the night is through. We actually need more amp hours (more batteries) to successfully run her medical equipment all night, or use the generator.

The last potential drawback, which I haven't experienced yet is that the solar charger I am using, potentially may cause radio interference while on the air with Ham radios. That is still on my wish list.

Backup Batteries

Neil Record — W6GRA

These are the batteries that I use to power the Wi-Fi, telephone, Internet and computers when we lose power. They are both about 24AH, and cost around \$200-250. They will run our Comms for several hours.

Very handy when SCE shuts off our power during those PSPS events, which we've experienced several times during the last two years.

We use them mostly at night, to keep our Comms running, after we shut off the generator and go to bed. I won't run a generator while we are asleep, for safety reasons. So these batteries will keep our telephone, Wi-Fi and Internet on during the night.



Portable Solar Power Bank

Ray Gretlein — W6QPA

In 2017, while moving to Bakersfield and between houses, I got the bug to build a portable station. I operate mostly QRP, so for power a 12 volt battery with solar recharge would work well. We fly to visit one of our sons in Portland, OR so I also needed to size the battery to be below the airline and TSA lithium battery restrictions which limit the battery to 160 watt hours or less.



I selected the Bioenno 12 volt 12 Ah lithium iron phosphate (LiFePO₄) battery. It is installed in a Harbor Freight “Apache” waterproof case, along with the charge controller, Anderson Power Pole connectors, a power meter and a USB charge port. If I were to do this again, I would use their smaller lighter charge controller, the MPPT controller is really only needed for multiple PV panel arrays.



For PV panels I selected the Bioenno 60 Watt panel. This will recharge from depleted with about 4-5 hours of sun. The “power bank” powers my KX-3, pan adapter, USB Signalink, Raspberry Pi and 10 inch monitor for a bit over 11 hours running digital modes 80% receive and 20% transmit and a bit over 8 hours with a 50%/50% receive/transmit. I’ve used it numerous times on trips and at Winter Field Day 2019, shown below.



A Simple Power Pack

Will Perry — WA6LDQ

If you live in the Tehachapi area you are pretty familiar with the power outages we've been experiencing for the past couple years. Many of us are better prepared for those outages now. I finally broke down and bought a small Honda generator in 2019. I highly recommend a generator with inverter technology for the best efficiency. There are several brands available. During a power outage I typically run the generator for 3 hrs on and 3 hrs off. The 2200 watts powers my refrigerator, furnace, TV, and any lights necessary. During the off periods I have been removing the Bioenno battery from my radio Go-Box and connecting a small 140 watt inverter to power my WiFi router. It only draws 1 amp from the battery. It seemed like a good idea to package these 2 items into one box for convenience so I decided to build a small power box.



I bought an aluminum instrument case measuring 9" x 5" x 6". This was just large enough to house the battery, the inverter, and storage for an ammeter to measure current externally.



I installed Anderson Power Poles, two USB charging ports with an internal voltmeter, an automotive power port, an AC socket and two switches on the front panel. The switch on the left turns on the voltmeter and USB ports since these draw about 20ma and would drain the battery in a few days. The switch on the right turns on the inverter. It all came together in one weekend. Most of the construction time was spent on the internal wiring. The small fuse box contains two spare 30 amp fuses and a tiny LED lamp that plugs into one of the USB ports.

No, it's not a Jackery, a Bluetti, or a Goal Zero, it's the "Perry Power Pack". It meets my needs for now and I already had most of the parts on hand. The Bioenno battery can be quickly removed and placed back in my Go-Box.

I can hardly wait for the next power outage!

Portable Comm Box

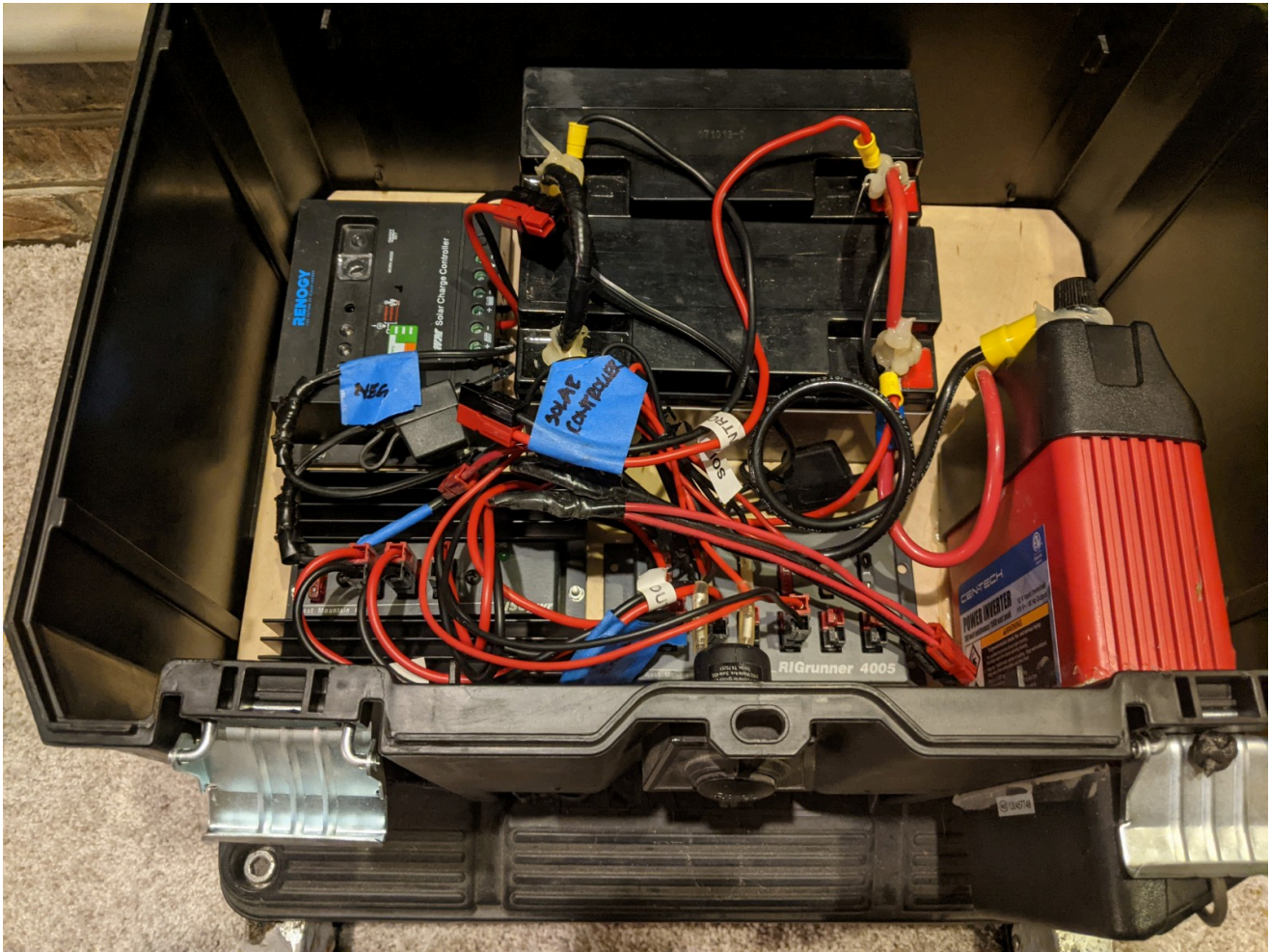
Charlie Flint — K4CMF

It's been a few years since these boxes were made, and it seems like each year something new is added.

The radio and power boxes are nested DeWalt tool boxes on a caster base, suitable to be rolled out into the yard or field day but not suitable for SOTA. In fact, I recently used this along with a 20 meter MFJ dipole on a painter's pole out in the yard to contact my friend Mike, AC6PC, from Greeneville TN to Stallion Springs CA. I was amazed I got him with 100 watts, as other adjacent signals were much stronger. I'm not much of a DX'er, but I do like talking with my friends.



The radio box contains a Yaesu FT-857D shack-in-the-box radio, an LDG YT-100 auto-tuner made to match the radio, and an LDG power and SWR meter courtesy of Will Perry. In the deck, there's a cooling fan, a CAT cable and keyer out cable. Below the deck is a [Powerwerks](#) switching supply.



The bottom box is the emergency DC power supply, with (2) 17 Ah batteries in parallel, a West Mountain Radio Iso-power charger that runs off 12 volts from a car and will stop charging before the car battery drains (never tested), and cheap PWM charge controller so I can charge from solar cells (but that creates noise so I would not charge while using the HF). It has 12 volt outputs through a cigar lighter and power poles, and 5 volts USB output through a cigar lighter adapter. All DC goes through a fused RIGrunner distribution board. The 400 watt inverter has its own fuse.

The boxes can be used together or independently. I need a labeler to replace my old call sign with K4CMF. Someday soon I'll show this at a local ham radio club meeting in Greenville, when they have them outside in better weather.

Oh yeah, Will made me envious of his rig, so I may need a third nested box to house a laptop.



ARRL Contest Calendar

This page provides a summary of events sponsored by the ARRL, the national association for amateur radio. The most current information is on the website at: <http://www.arrl.org/contest-calendar>

Apr 2021

ALL ARRL HAMFESTS & CONVENTIONS
CANCELLED

- 18 -- Rookie Roundup – Phone

May 2021

No ARRL Contest

TARA Calendar



This page is a summary of events sponsored by or involving our club.

All dates are subject to change. Please check the club [Facebook](#) and [website](#) for updates. In-person events are cancelled for the duration of the COVID-19 pandemic. If you have not received a Zoom invitation via email or or if you are interested in membership and would like to attend as a guest, please send an email to ac6ee@arrl.net, stating your name, callsign (if any), and interest in the Club, and we will send you the Zoom meeting invitation link.

March 2021

- 3rd, 10th, 17th, 24th, 31st – “Just Because” Net (W6SLZ VHF rpt, 146.70 - / 123.0)
- 4th – 19:00 PST, TARA Board Meeting, Via Zoom (invite via email)
- 11th – 19:00 PST, TARA Club Meeting, Via Zoom (invite via email)

April 2021

- 7th, 14th, 21st, 28th – “Just Because” Net (W6SLZ VHF rpt, 146.70 - / 123.0)
- 1st – 19:00 PDT, TARA Board Meeting, Via Zoom (invite via email)
- 8th – 19:00 PDT, TARA Club Meeting, Via Zoom (invite via email)

May 2021

- 5th, 12th, 19th, 26th – “Just Because” Net (W6SLZ VHF rpt, 146.70 - / 123.0)
- 6th – 19:00 PDT, TARA Board Meeting, Via Zoom (invite via email)
- 13th – 19:00 PDT, TARA Club Meeting, Via Zoom (invite via email)

Reference Information

Local Repeater Information				
TARA APRS Digipeater	144.39	No tone	AC6EE-3	APRS
BVS APRS Digipeater	144.390	No tone	WA6LDQ-3	APRS
BVS Repeater Backup Freq.	146.700 145.580	123.0 Hz Tone Simplex	W6SLZ	Open Machine
BVS Repeater	440.625	100.0 Hz Tone	W6SLZ	Open Machine
Tehachapi Repeater	444.225	100.0 Hz TONE	KG6KKV	Overlooks Bakersfield
Tehachapi Simplex	145.48	No Tone		Local Simplex
Tehachapi Simplex	146.54	No Tone		Local Simplex

In addition to the repeaters listed above the following repeaters, part of the Kern System, can be reached from locations throughout the Tehachapi area. They are linked together and more information may be found at <http://www.KernSystem.org>

KERN System Linked Repeater				
Frazier Mountain (8,000')	447.860	141.3 Hz Tone	KK6AC	Jerry Garis
Cummings Mountain (7,800')	442.95	141.3 Hz Tone	KI6HHU	Lee Bouchard
Double Mountain (8,000')	446.320	151.4 Hz Tone	KI6HHU	Lee Bouchard

ATTENTION:

For those interested in monitoring dispatch for the Bear Valley Springs Police Department

- KCSO Eastern Dispatch — 460.225
- KCSO East TAC — 460.125

All dispatch for BVSPD will be handled by the Kern County Sheriff's Department

Club & Other Websites	
TARA website	http://www.ac6ee.org
TARA Facebook	https://www.facebook.com/TARAtchapiamateurradio/
Antelope Valley Amateur Radio Club (AVARC)	http://www.k6ox.club/index.html
Bear Valley Springs Emergency Response Team (BVSERT)	The website is being refurbished.
Kern County-Central Valley Amateur Radio Club (KCCVARC)	http://www.w6lie.org
ARRL	http://www.arrl.org
West Kern County Amateur Radio Emergency Services (WKCARES)	http://westernkerncountyares.org/index.html

Officers & Committee Chairs			
Office/Committee	Name	Call	Email
President	Dan Mason	AB6DM	imprezaspeed@yahoo.com
1st Vice President	Phil Dolber	W6WBT	w6wbt@arrl.net
2nd Vice President	Ray Gretlein	W6QPA	w6qpa@arrl.net
Secretary	Vallerie Mason	KK6WLQ	val3mason@yahoo.com
Treasurer	Dick Brown	W6SLZ	db24130@sbcglobal.net
Web Page maintenance	Dan Mason	AB6DM	imprezaspeed@yahoo.com
FaceBook Maintenance	Travis Para	KK6OHZ	mightyspeedbimp@yahoo.com

Meeting and Club Membership Information

The Tehachapi Amateur Radio Association meets every second Thursday of the month at 7:00 PM (except for July - no meeting). Our meetings are held at the Mountain Aire Estates Activities Center, 600 South Dennison Road in Tehachapi, Ca. Drive in the entrance and the Activities Center is straight ahead.

During the COVID-19 pandemic, we are meeting via ZOOM. Invitations are sent to members via email each month. If you have not received a Zoom invitation or if you are interested in membership and would like to attend as a guest, please send an email to ac6ee@arrl.net, stating your name, callsign (if any), and interest in the Club, and we will send you the Zoom meeting invitation link.

Member Annual Dues: \$25.00/year

Additional Family Member: \$12.50/per person

Membership Application

On the last page of this newsletter is a copy of our Membership Application. Please share this with any friends, family or neighbors that are either Hams or may be interested in Amateur Radio. Applications are accepted at all club meetings if we are meeting in-person. Or you may mail your application along with the applicable dues to the club Post Office Box as follows:

Tehachapi Amateur Radio Association (TARA)
P.O. Box 1681
Tehachapi, CA 93581-1681



TEHACHAPI AMATEUR RADIO ASSOCIATION

P.O. BOX 1681
TEHACHAPI, CA 93581

MEMBERSHIP APPLICATION

Date of Application _____

MEMBERSHIP TYPE (Check all that apply)

☐ New Member

☐ Renewal

☐ Individual \$25.00 / Year

☐ Family \$12.50 / Additional Family Member / Year

APPLICANT INFORMATION

Call Sign		License Classification / License Held	
		<input type="checkbox"/> Technician <input type="checkbox"/> General <input type="checkbox"/> Extra	
First Name	Last Name		
Street Address			Apt. / Unit
City	State	Zip Code	
Home Phone Number		Cell Phone Number	
()		()	
E-Mail Address			
Background			
Have you ever been convicted of a crime, felony, etc.? If so, please provide details below:			
<input type="checkbox"/> No <input type="checkbox"/> Yes Details:			
Other Memberships			
<input type="checkbox"/> ARRL <input type="checkbox"/> ARES <input type="checkbox"/> RACES <input type="checkbox"/> CERT <input type="checkbox"/> OTHER _____			
Family Members in Household (Fill out only if completing a Family Membership)			
Call Sign	Class (T/G/E)	First & Last Name	Age
Amount Paid	Cash / Check	Date	Approval

Applicant Signature: _____

Date: _____

Revised October 12, 2017