

From the NCARC President

Joe Hawley KDØTYU
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Well, it's hard to believe that summer's almost gone. However, at the Northern Colorado Amateur Radio Club, we've got a few things planned that you might be interested in. First, this coming weekend, on September 16th, is our Annual Picnic. This will take place at the Loveland North Shore Park Pavilion #2. It is the only place I know where you can get a free lunch. More information is on the website if you care to check it out.

On October 28th and November 3rd, we will have our annual Technician class. We've done this class for about seven years, and it seems more fun every year than the last, it's a course for amateur radio enthusiasts and a chance to become licensed. We will have a full day of class on October 28th from 8:00 am to 4:00 pm and on November 4th, we'll have ½ day of class and a testing session in the afternoon for anyone who would like to take the test. All of this is free, and we also throw in lunch.

We are also working with six other clubs to organize the Peak-to-Peak Highway special event. Even if you're not a general or extra-class licensee, please join us, you can see what a Special Event is all about. The event will honor the 105th anniversary of the Peak-to-Peak highway, and the color should be nice by then.

That's all for now; more information will come on Special Events by November's meeting.

Public Affairs Office

Dave Winnett WØDDZ
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Numbers as of September 12, 2023

YouTube

Views (last 28 days): 2,088
Watch time (hours, last 28 days): 283.3
Subscribers: 2,665
New Subscribers (last 28 days): 17

Facebook

Members: 569
New Members: 10



Club Meeting – PICNIC!!

Saturday, September 16, 2023

LIVE and IN PERSON at

North Lake Park

also called

North Shore Park Pavilion No. 2

**2750 N. Taft Ave
Loveland, CO**

Topic:

Meet your fellow radio aficionados in person!

NCARC will provide hamburgers, hot dogs, chips, and sodas

Please bring a dish to pass!

Next meeting:

October 21, 2023

Tech Report

James Cizek, KIØKN
techchair@ncarc.net

September 2023

Horsetooth

Everything at Horsetooth is running nominally. We are still having some trouble with the controller locking up once in a while because of the latency to Lee Hill that occasionally shows up. Once a PC replacement is in place there, this should go away! In the meantime, please do let me know if you hear the courtesy tone missing on either the 447.275 or 145.115 repeaters. Thanks! One of our cameras (the pan/tilt/zoom) went offline last month. Thanks to Greg, NØEMP for going up to investigate. I expect we took a close-by lightning strike and it erased the cameras settings (including its IP address). Once restored, everything was operational again.

Buckhorn

The 447.700 repeater has been replaced! RMHAM donated a UHF Motorola MTR 2000 to NCARC. This repeater is a match to the repeaters we have at Horsetooth. Once we find a VHF, we will replace that one too, to match everything. The new UHF no longer has the power fade problem, it's currently set at about 85 watts. The new repeater has a preselector filter on the RX side. So far, I've not heard any of the digital/intermod type noise that was plaguing the old repeater. If you hear any of that, please report it to me via the webpage. Thanks!

CSU-VARA

The VARA FM node had some issues after a Microsoft patch cycle recently. I've fixed that issue and the node is back online.

Microwave Backbone

A security vulnerability was published recently for the operating system that our microwave radios and routers use. I have recently patched our entire network with a new long term support version where it will stay for the winter.

Red Feather

One of our members has recently discovered and had a chat with someone that lives near the Red Feather / Crystal Lakes area that has land that would work well for a repeater. The board is working on contacting the owner to see if something can be worked out for us to have a new repeater there... stay tuned!

RMHAM/Colorado Connection

A new repeater has been placed at Buckhorn West to fix the 146.730 VHF Colorado Connection. The power amplifier on the old repeater had failed. Although RX sensitivity on Buckhorn in the VHF band is difficult from the broadcast noise, this repeater is working pretty well.

Treasurer's Report

Darren Kalmbach KCØZIE

treasurer@ncarc.net

August 2023

Account	Checking	Raffle	Savings	PayPal	Total
Beginning Balance	\$7,352	\$2,783	\$1,110	\$7,406	\$18,650
Deposits	\$5,000	\$0	\$0	\$104	\$5,104
Transfers	\$0	\$0	\$0	\$0	\$0
Withdrawals	\$169	\$0	\$0	\$4	\$173
Ending Balance	\$12,183	\$2,783	\$1,110	\$7,506	\$23,581
Outstanding Items	\$0	\$0	\$0	\$0	\$0
Net Balance	\$12,183	\$2,783	\$1,110	\$7,506	\$23,581
Net Change	\$4,831	\$0	\$0	\$100	\$4,931

Expenses: Storage

Revenue: Memberships, donation

Membership Activity:

August 2023: 243 (4 new)

August 2022: 227

Did You Know?

A regular contribution from Bob Schmid, WA9FBO

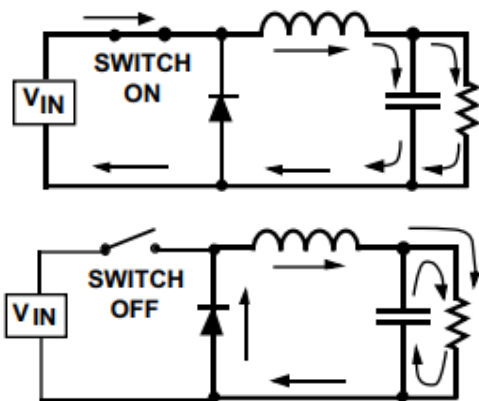
The Buck Regulator

Let's say you've built a project that requires +5 V at 1 A and want to power it from a +13.8 V supply. What kind of regulator would you use?

One choice is the common 7805 linear regulator, but it's not very efficient because it operates like a variable resistor. The +13.8 V supply would need to provide $13.8 \text{ V} \cdot 1 \text{ A} = 13.8 \text{ W}$ with 36% of the power going to the load ($5 \text{ V} \cdot 1 \text{ A} = 5 \text{ W}$) and 64% being wasted by the regulator ($8.8 \text{ V} \cdot 1 \text{ A} = 8.8 \text{ W}$). That regulator will need a good heat sink! (Sometimes designers put a fixed resistor in series with the regulator to offload some of the power dissipation.)

A better choice might be one of the popular buck regulators, such as the LM2575. It's offered by several manufacturers and is 80% efficient. And unlike a linear regulator, its efficiency doesn't decrease much as the input-to-output voltage ratio increases. A heat sink may not even be needed. Your design becomes more reliable because less heat is generated, and if less heat means omitting ventilation holes, the product can be better sealed against dirt.

The LM2575 can operate from as little as +8 V while supplying +5 V, so in a pinch your project could operate from a 12 V battery long after the battery is considered depleted. The regulator's maximum input is +40 V.



A basic buck regulator consists of a switch (a power MOSFET), a diode, an inductor, and a filter capacitor.

When the switch closes, current starts to flow from V_{IN} , through the inductor, and into the filter capacitor and load. The inductor's magnetic field increases, storing energy; this process creates a voltage that opposes ("bucks") the input voltage, causing the output voltage to be lower than the input voltage. During this time the diode doesn't conduct because it is reverse-biased.

When the switch opens, the inductor opposes the change in current by reversing the polarity of its voltage drop. It releases energy by supplying current to the filter capacitor. The current path is through the diode, which is now forward biased.

The switch opens and closes at a constant frequency. The duty cycle, which is the ratio of ON time to OFF time, sets the ratio of output voltage to input voltage. A control circuit varies the duty cycle to accommodate varying input and load conditions.

For best performance, use the suggested components and layout published in the regulator IC datasheet.

Get the Goods!

The [NCARC Store](#) is open for business! We have stickers, t-shirts, patches, water bottles and keychains. We still have monogrammed clothing too.

<http://www.ncarc.net/?q=node/424>

It's Never Too Late to Renew!

Renew your NCARC membership.

It's quick and easy.

[Click here!](#)

It's also never too late to start planning for Christmas: Santa on the Air

The Longmont Amateur Radio Club and the Northern Colorado Amateur Radio Club will again participate in the Santa On The Air program, and we need your help. We're looking for individuals who want to play Santa and his Elves.

The Longmont Amateur Radio Club has run this event for many years and can supply any training you would need to perform these duties. This is an excellent opportunity for the two clubs to work together to bring holiday joy to everyone. If you are interested in helping us out, please send Joe Hawley an email: president@ncarc.net. *(Editorial note: I was an "Elf" last year and it was great fun!)*

Peak-to-Peak Highway Special Event

On September 30th, the Northern Colorado Amateur Radio Club and five other radio clubs will host a special event for the 105th anniversary of the Peak-to-Peak Highway. The Peak-to-Peak Highway begins as state highway 7 in Estes Park, brings you past the tiny town of Allens Park on state highway 72, then heads to Nederland. From there, it goes south onto state highway 119 through Blackhawk, into Clear Creek Canyon and ends at Interstate 70.

There will be 5 or more clubs participating, and each club will have two or three predetermined sites along the trail. The event will last eight hours, with operators working two-hour shifts. This special event will encompass HF on three modes: SSB, CW, and FT8, and various frequencies. Special event QSL cards will be sent to each contact.

If you are interested in participating, [click here](#) to sign up. Or email Joe Hawley at president@ncarc.net for more information!

Amateur radio operators are needed for a real-world science experiment during upcoming solar eclipse events

From The ARRL Letter July 20, 2023

Members of the Ham Radio Science Citizen Investigation (HamSCI) will be making radio contacts during the 2023 and 2024 North American eclipses and probing the Earth's ionosphere. The Solar Eclipse QSO Parties (SEQPs) are set to be fun and friendly with a competitive element, and all amateur radio operators and shortwave listeners are invited to participate.

The upcoming eclipses (October 14, 2023, and April 8, 2024) provide unique opportunities to study interactions between the sun and the ionosphere. As participants and HamSCI members transmit, receive, and record signals across the radio spectrum during both eclipse events, valuable data will be created to test computer models of the ionosphere. Learn more at <https://hamsci.org/projects>. ARRL is a partner with HamSCI for the SEQP.

Upcoming Ham Radio Events

NCARC Club Picnic: Sep 16, 2023, Loveland, CO. [More info here.](#)

Equinox Marathon, ½ Marathon, 5 Mile: Sep 17, Poudre Canyon, Fort Collins, CO. [More info here.](#) Contact Marty KØMLG

Red Feather Jamboree: Sep 22-24, 2023. Red Feather, CO. [More info here.](#) Contact Brian NØBCB

Blue Sky Marathon: Oct 21, 2023, Fort Collins, CO. [More info here.](#) Contact Darren KCØZIE

NCARC Technician Class and Testing: Oct 28 and Nov 4, 2023, PVREA Community Room, Fort Collins, CO. [More info here.](#)

From the Editor

Ann Donoghue KØARD
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I hope to see you at the picnic! It's a great time to actually "see" each other and put faces to call signs!

Please send your articles, ideas for articles and announcements for inclusion in the newsletter.