



# CONNECTIONS *news*

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Summer 2022, Vol. 28, no. 2

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Dave Felice, editor

## A Message from Our Director

♪ *Summertime and the living is easy* ♪

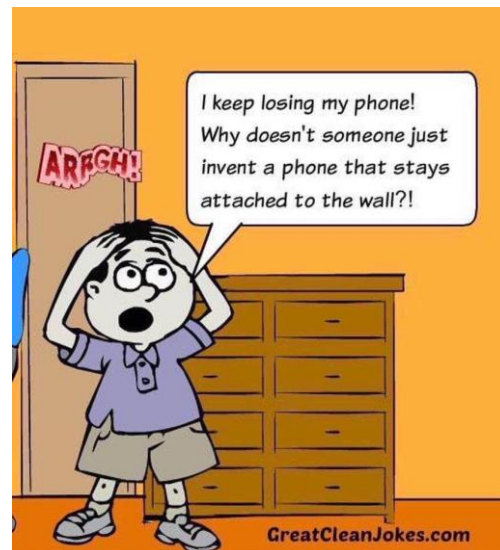
We have all been very busy in Denver and Seattle. Once again, we participated in the National History Day Colorado with judging and a special award for the best project having to do with telecommunications. Congratulations to Finn Spangenberg for her wonderful web site about Sesame Street.

We received a lot of the Pioneer artifacts as they moved out of their office in Denver. We are also able to give tours again in Denver and have several booked. Seattle volunteers are moving and grooving and fixing up the museum.

We welcome new editor, Dave Felice. Dave is on the board of The Telecommunications History Group. We hope he enjoys this new venture for us.

Enjoy Summer, and thanks so much for your support.

Cheers,  
Renee Lang, Managing Director



# Telecommunications History Group

## 2022 Challenge Grant

In what is becoming an annual tradition, one of THG's supporters has again offered to double your contribution to support our ongoing work.

The good news is that both of our museums, in Seattle and Denver, are open again. Visitors are starting to come back, and our one-of-a-kind archive is seeing interest from researchers again too, so we anticipate that those sources of donations will be back to normal this year. But as always, we must rely on our members to help us keep the lights on and the phones ringing.

In the Challenge Grant, every donation you make between now and August 1, 2022 will be matched one-for-one up to a total of \$20,000.

In addition, if you contribute at least \$60, THG will count \$35 of that as a renewal of your membership for 2022 — and the grant will match your total contribution (including the amount applied to your renewal).

You may use the enclosed envelope to send a check, or you may make your donation online at <http://www.telcomhistory.org/challenge/>

Everyone at THG wants to thank you in advance for your generous help!



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## Capehart Collection closes with big auction

By Sarah Autumn

*"History never looks like history when you are living through it,"  
Common Cause Founder John W. Gardner.*

The huge Capehart Communications Collection in Corsicana, Texas is closed now, with the final stroke of an online auctioneer's gavel.

*Connections News* readers may remember the Summer 2019 story about the Capehart Collection. In the first half of that year, THG acquired two frames of panel switching equipment from Don and Rita Capehart and installed them in our Seattle Museum. Since then, Don and Rita decided they could no longer maintain their massive collection and so they sold off everything, including their home and warehouse, so they could move into a smaller home and live closer to their family.

Their effort culminated in three large auctions in the fall of 2021. THG bid on several interesting items we wanted for our collections in both Denver and Seattle. The largest item was *an entire aisle* of additional panel switching equipment.

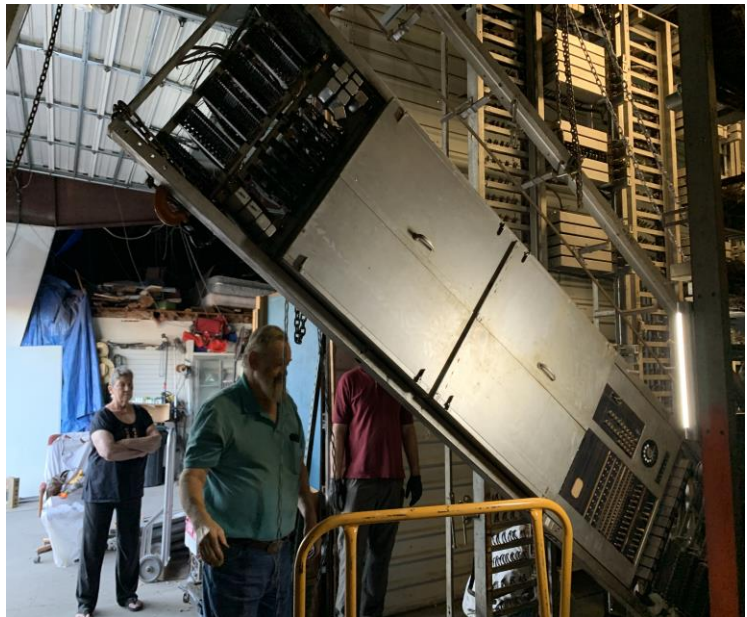
(Remember that THG owns the last working panel switch in the world). The newly won parts will serve as spares, which are available no place else, to keep our panel system running and enthralling museum goes for decades to come. Some of the other equipment we won can be used for displays, especially for the panel switch's 100th birthday coming up in early 2023.

The challenge was how to get it all back to Seattle.

While the auctioneer was willing to ship some smaller items, the larger things were designated for pick up only at the Capehart's warehouse. Not to be deterred by mere distance and a mountain range or two, volunteer Matt Mullins and I went to Corsicana in late 2021 to retrieve everything.

Rather than load up the large and heavy frames as complete pieces, the plan was to disassemble them and load the parts into boxes on a rented truck, to make them easier to transport and store.

Matt and I planned to spend a week disassembling and loading all of the items, and as it turns out we needed all the time! Panel switching equipment was overbuilt to a point that would be unbelievable if you didn't see it with your own eyes. Over the course of a few days, we removed thousands of screws and fasteners, only to find more screws underneath them. Like a 10-ton jigsaw puzzle, each piece fits a particular place, and must be specifically adjusted to work properly. After this experience, I now more fully appreciate why it took teams of 100 or more installers more than a year to build a new panel office and put it into service.



*Don Capehart lowers a towering switch panel as Rita watches*



*Volunteer Matt Mullins disassembles a complex frame of panel equipment*

frame on down and put it in the truck.” I said okay, thinking it would be fine, and not paying enough attention to where Don was pointing. After Don and Rita left, we put the chain hoist up on the scaffolding and began to lower the frame. It wasn’t long before we realized that we had gotten ourselves hopelessly stuck! The frame had lowered down and wedged itself into the aisle, in a way that we couldn’t move it or turn it to get it back up in the air. After a few hours of unsuccessful floundering, we went to lunch, then to the hardware store to get more supplies, hoping that we could get the frame unstuck.

When Don came home in the late afternoon, he walked up to us and said “What the heck are you two doing? I told you to attach your hoist to the point up there!” He pointed to the plainly obvious place to attach a hoist that we had somehow missed. Don and his son Shawn climbed the ladder, repositioned the frame, and lowered the 1000-plus pounds of it gracefully to the ground as if it weighed mere ounces. It was truly a sight to behold.

By the beginning of the following week, we were packed and ready to hit the road. The drive back to Seattle was pleasant and mostly uneventful. It was challenging to return our rented car at the airport, because we had to navigate the parking lot in our 26-foot truck. In Seattle, many other volunteers helped with unloading everything into the museum’s offsite storage facility, and volunteer Eric made a lovely set of wheels for the heavy panel frame.

In addition to the panel equipment, we also picked up several other interesting or useful items, such as a spare card punch for our No. 5 Crossbar switch, a Western Electric receipt from the early 1900s, a memory card loader for our 1ESS switch, and a Western Electric stretcher, used to carry injured employees out of the factory. We also acquired books, documentation and other interesting papers for our library.

While we worked continuously through the week, Don, Rita and their family worked alongside us to move their personal items to their new house. The single loading bay was buzzing with activity because other auction winners had arrived to collect their purchases as well, and trucks had to take turns backing in, loading and quickly getting out of the way for the next person.

As always, Don and Rita were the most kind and delightful hosts. It’s no exaggeration to say that Matt and I felt like family the entire time we were there. Visiting the Capeharts isn’t so much a business trip, as it is a family reunion. Don loves to smoke his cigars and tell stories of his time at Western Electric, installing telephone offices, and he’s still got the knack for it, after all these years.

In the middle of the week, they had to leave for the day to go do some things at their new house, while Matt and I had to take down the one large frame that we decided to keep in one piece.

Don came up to us in the morning and said “Now you just hook your hoist to that point up there, and lower the

It was bittersweet for us, as it certainly was for Don and Rita Capehart, to see their life's work of collecting sold and go to so many different new homes. But we were certainly glad we got to participate in the process. Almost everything found a buyer, including a few items that we know went to the personal collections of THG members. So it should all continue to be preserved.



*Sarah carries a frame section for loading*



*A homemade device permits easier and safer moving for heavy panels*

*When Don Capehart retired from Western Electric Company in 1989, asking about history gradually led to one of the world's largest individual collection of telecommunications artifacts and documents. "I decided to create my own history," said Capehart.*

*Capehart began packing things in a 14-foot box truck, and quickly realized he'd need more space. He acquired a sprawling soft drink bottling plant and warehouse on South Ninth Street in Corsicana, a community 50 miles south of Dallas in East Texas.*

*Eventually, Capehart would have more than 200,000 items in his massive collection. One of his favorite pieces is an emergency communications console for President Lyndon Johnson. The console was installed in an Austin basement for Johnson's use while visiting Texas.*

*The collection featured equipment and documents from the 19th century to present day. There was a 1917 sewing machine, 1889 switchboard, and a 1920 motion picture sound system, all produced by Western Electric when the company made almost everything powered by electricity. Capehart collected items from Western Electric's past from all over the country, Europe and South America.*

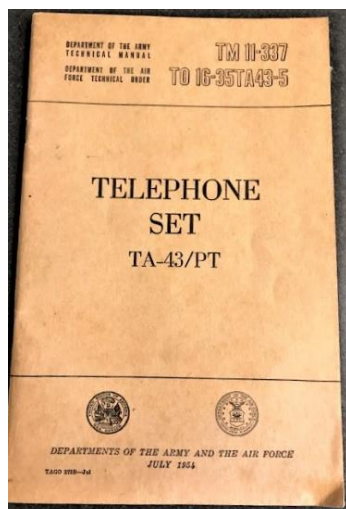
*Proud of working for Western Electric, Capehart credits his time with the company for the opportunity to visit all 50 states and 91 countries. He says Western Electric's development and studies resulted in all of today's technology for satellites, radar, transistors, fiber optics, and cellular phones. He said he wanted people to know Western's history and the company's contributions to modern life.*

*Capehart started to consider selling the collection about five years ago, hoping someone would keep everything together in Texas. That didn't happen. Reportedly, larger institutions such as the Smithsonian said they would evaluate the collection as a donation, if Capehart packed and shipped the material. Even after three online auctions, Capehart said "sadly" some items had to hauled to the dump.*

*The collection described as amazing and unique is now scattered around the country. Don and Rita Capehart have moved to their country home and plan to travel.*

## Communication Duty with the National Guard

By John Swartley



Like most other technological advances, military communications are significantly different than in my time with the National Guard.

Digging through my collection recently, I found an Army manual on the TA-43/PT field telephone I used with the Kansas National Guard.

In January 1956, I found out the National Guard was looking for bodies of any shape or form, so I signed up. I

was not yet 18 years old, so my father had to sign a release. Photo on the right is of me getting ready for my first summer camp.

National Guard training camp was in Camp McCoy Wisconsin. We loaded a troop train along with all the equipment, howitzers, trucks, and other supplies. The tracks joined the Mississippi River at St Louis and we followed it for many hours, winding along this great river was quite an experience for me. At camp, it seems like I spent a lot of time on KP, hauling heavy boxes of ammo and some basic training time.



At the time, the Garden City National Guard Unit had 105 track howitzers and I had my heart set

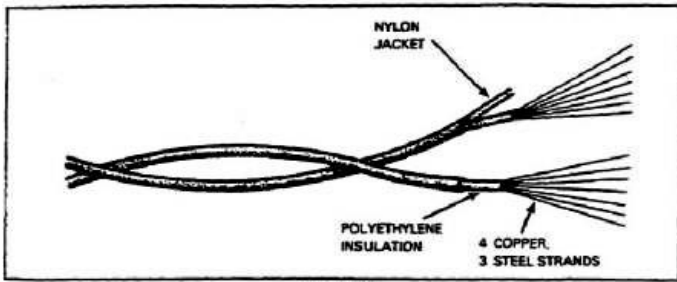
on learning to drive one of the big guns or one of the big army trucks. I was wrong. My superiors hung the 310-wireman title on me and assigned me to the communication section. This was three years before I started for Bell.

Our mission was to go into the location the guns were to be stationed. We would set up a communication network ahead of time. On the above left was our RI-159/u wire laying reel. On right are TA-43 telephones which we connected to a central switchboard.

Our WD-1/TT wire had three steel and four copper strands. To splice the wires, we would tie the steel wires in a

square knot and wrap the copper strands around the knot and cover with tape. The challenge was the wire had to be strung high enough in the trees or buried to keep people from tangling up in it. We had to remove all the wire before we moved to the next location.





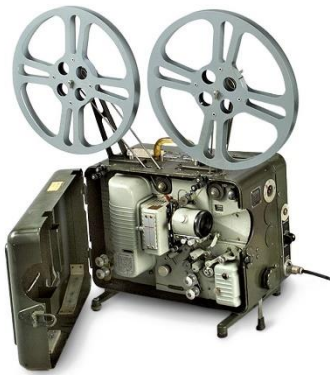
WD-1/TT



Our TE-33 tool kit, with knife and pliers

Our communication section was assigned a two-and-a-half ton truck. When we were on maneuvers there was enough room to make conformable beds for all the crew, and we stayed dry. I guess this was my first experience “RV-ing” it.

In time we changed from 105 self-propelled howitzers to 155 towed howitzers. While we were convoying, I did get a chance to drive the big five-ton trucks that pulled the guns. My military driver’s license designated I was qualified to drive a three-quarter ton, two-and-a half ton, five-ton truck, jeep, and operate a movie projector. Only a few of us in the communications section were trained and licensed to operate a projector.



Most of our communication equipment was still the WWII issue. As I wander around with my cell phone being able to talk to anywhere in the world, I remember our backpack radios weighed 38-pounds and contained 18 tubes. The Company Commander’s jeep had several combinations of radio components.

The army had developed smaller SCR-536 handy-talkies radios with a lot shorter range than the backpack radios. The use of the hand-held radios is where the term walkie-talkies originated.

As the licensed projector operator, I saw all the many military training films available. The one that really sticks in my mind was in 1956 military film explaining how the U.S. was sending troops to South Vietnam as advisors only. We all know how that turned out.

In October of 1962 we spent over a week, fully loaded, and ready to roll in the armory in Garden City. It was very frustrating unable to leave the armory, and no one would tell us why. It was not until we unloaded and were released, did we learn about the Cuban Missile Crisis.

I stayed in the National Guard for 10 years, resigning when I transferred to Boulder in 1966. When we were activated, Bell would pay the difference between my military pay and company pay. On our annual two-week summer camps, I was able to see a lot of the country I would have never experienced otherwise.

### ***Your telephone story is important***

*If you have a story you'd like to share, an idea for a story, or something you'd like to see, send e-mail to [telcomhist@aol.com](mailto:telcomhist@aol.com) with the word Editor in the subject field.*

## What's old is new again in power

By Dave Felice

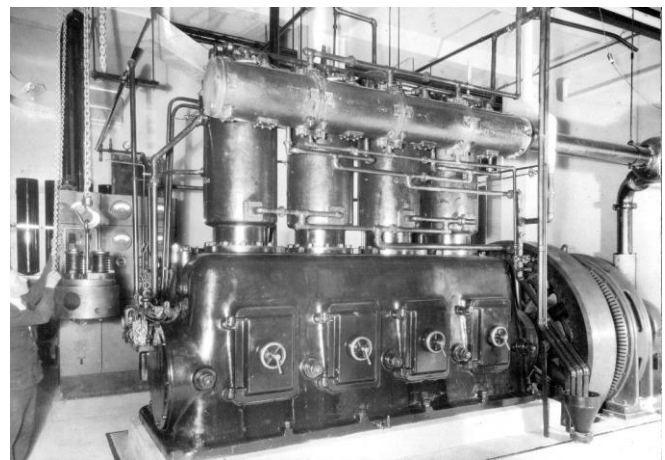
Homeowners and businesses are increasing their reliance on a process which has been part of telephony almost since its inception.

Storms, wildfires, and other disruptions of commercial electrical power are resulting in rising sales of generators and alternative power sources nationwide. And users of cell phones, digital television, and other electronic services are realizing how reliant they really are on a complex and sophisticated power supply system.

“We have been seeing the increase of demand over the last 2-3 years due to a mix of the pandemic (people being home more) and increased demand on the Puget Sound's electrical system,” says Natalie Walters of Washington Generators in Kent. “Any Western Washington resident familiar with power outages knows working from home during a power outage is nearly impossible.”



*1920's Central Office battery room and generator*



Central Offices, and now most cell towers, have an emergency power, usually a diesel generator. People are re-learning that wired telephones still work when commercial power goes out, so there's increased interest in having at least one "land line" phone available in case of emergency.

Veteran Central Office Technician Greg Finney of Denver describes a typical installation: “Under normal conditions we receive AC power from Excel Energy (the local power company). This powers all the lights, pumps for the air conditioning and heating systems.

“(Commercial electricity) also powers the rectifiers that charge the on-site batteries. Should we lose the power from Excel, the diesels will start and take over providing power to all the essential systems that are required to keep the customers in service.”

With electrical power constantly flowing through the batteries, a change to battery power is hardly noticeable. The batteries run the essential systems until the big generators start. Diesel fuel from huge tanks can keep the generators going for up to several days if necessary.

A small amount of Direct Current (DC) is routed to the wire pair of a land line phone. As long as the telephone line is intact, the phone has enough power to be operable. (The button lights on a Trimline® phone might not work, however.)

In the earliest days of telephony, phones got current from a Central Office common battery, usually zinc-carbon cells, which powered carbon microphones. Phones had a hand-cranked type of generator, known as a magneto, which produced an alternating current (AC). The magneto current



would signal the Central Office for service or ring bells on a party line. By the 20th Century, motor-driven generators in exchange offices provided current and magneto sets were phased out. Some smaller magneto systems are still in use today.

Telephone voltage requirements are lower, DC can cover long distances, and many phone lines are either buried or low on poles, so service disruption is minimized.



*Contemporary batteries and generator*

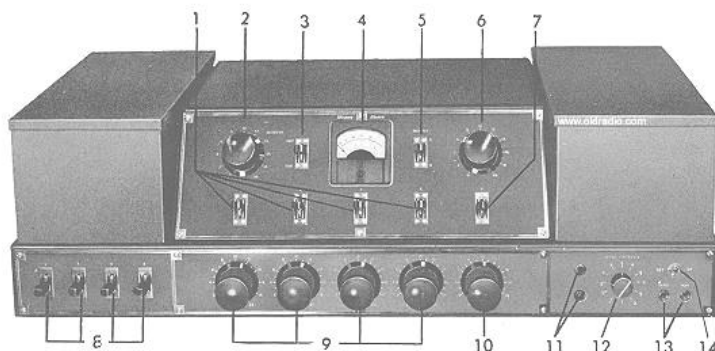
Hurricane Sandy, in 2012, revealed deficiencies in back-up power on the cellular network. Lack of power at some cell sites disrupted emergency services in Connecticut.

Now, even in dense urban areas, there are generators of all sizes fueled by diesel, oil, gas, or propane. Some systems have battery storage. Other installations may be augmented by solar or wind or be a hybrid of one or more methods.

“We can continue to see greater demand for standby generators due to the increased ownership of higher-powered items such as electric vehicle charging stations at people's homes,” comments Natalie Walters. “Washington Generators have been installing home standby generators for the last 11 years. Generators for homes typically are powered by solar, natural gas, or propane. The diesel standby generators are designed for commercial sites.”

Amazon has 20 "pages" listing various types of generators. Ford Motor Co CEO Jim Farley recently used an electric truck to provide power for an event in the Detroit area.

Alternative power demonstrates reliability of telephone service. Electronic devices make power convenience more important than ever.



- |                                  |                                 |   |
|----------------------------------|---------------------------------|---|
| 1. Keys for Microphone Switching | 6. Mixer for Incoming Lines     | 11. Lamp and Push Button for Signalling |
| 2. Monitor Gain Control          | 7. Key for Talkback             | 12. Plate Current Selector Switch       |
| 3. Monitor Transfer Key          | 8. Program Line Keys            | 13. Test and Headphone Monitoring Jacks |
| 4. Volume Indicator Meter        | 9. Mixers for Microphone Inputs | 14. Main Power Switch                   |
| 5. Output Switching Key          | 10. Main Gain Control           |   |

*In addition to telephone equipment, Western Electric made extremely high-quality audio products, such as this 1937 Type 23 broadcast mixing console. One of these mixers was in service at KUAD in Windsor, Colorado as late as 1970. (Courtesy of Barry Mishkind, www.OldRadio.com)*

## **Random Telephone Observations**

### **Universal Service isn't**

Latest Census Bureau data (from American Community Survey) show there are 1.2 million households in the U.S. with "no telephone service available." The survey asks: Can you or any member of this household both make and receive phone calls when at this house, apartment, or mobile home (cell phones, land lines, or other devices).

### **Telephone is less important**

Comedian Gary Gulman describes phone as "a seldom used app on my device." The Apple company gets credit for changing mobile technology in 2007 by introducing a single hand-held device with a camera, computer, *and* phone. Now, 85 percent of Americans own a device known as a "smart phone." Ownership is 95 percent among those aged 18 to 49.

### **A.G. Bell is the acknowledged inventor**

In 1871, Antonio Meucci filed a "caveat" (intent to seek patent) for a talking telegraph but didn't follow up. Early on February 14, 1876, one of Alexander Graham Bell's attorneys quickly completed documents at the Boston patent office. Later in the day, Elisha Gray filed a patent caveat for a similar telephone device. Bell's patent request was awarded on March 7. Gray's claim was rejected after a lengthy court case.

### **Phone goes to the world**

Alexander Graham Bell demonstrated the telephone in public for the first time at the Philadelphia World's Fair on May 10, 1876. The White House got its first phone a year later. On July 9, 1877, the Bell Telephone Company was established. Soon after, the first public phone lines were installed between Boston and Somerville, Massachusetts.

### **American writers help Swedish singers**

Prolific singer-songwriter Neil Sedaka teamed with lyricist Phil Cody to write the English words for "Ring, Ring (Why Don't You Give Me a Call)", recorded by the popular Swedish singer-musicians known as ABBA. Seeking a catchy pop tune for the 1973 Eurovision Song Contest, ABBA producer Stig Anderson turned to the Americans to provide words for his original Swedish music. The Sedaka-Cody lyrics tell of a woman sitting alone, waiting for a phone call.

### **Digital devices bring phone use explosion**

Media web site VOX reports latest available statistics reveal that two-thirds of Americans check their phones up to 160 times in a day. Heaviest usage is said to be among those under 40 years old, known as GenZ, GenX, and Millennials. VOX reports an average user checks the phone 58 times daily. Unlike the occasionally used hallway phone of previous generations, mobile phones have become an essential part of everyday life.

### **Phone numbers reflected in recorded music**

In the popular music era, several songs contained references to telephone numbers. Glen Miller had one of the earliest connections with "PENnsylvania 6-5000." Brenda Lee sang about "BIgelow 6-200." The Marvelettes were prominent with "BEechwood 4-5789." In "The Promised Land," Chuck Berry mentions Tidewater 4-1009. The Partridge Family recorded the lesser known "ECho Valley 2-6809." In the time of seven-digit dialing, Wilson Pickett had a song called "623-4789" and Tommy Tutone had "867-5309." Country singer Hankshaw Hawkins recorded "LOnesome 7-7203."

## Shopping Supports Telecommunications History Group



Just by shopping at King Soopers, Fred Meyer, or other store in the Kroger Family of Companies, you can easily support the Telecommunications History Group. Kroger is committed to community engagement, positive social impact and charitable giving at the national and local levels. Every community is unique, but Kroger's common goal is to partner with the neighborhoods the companies serve and help the people there live healthier lives.

The Kroger Community Rewards program makes fund raising easy by donating to local organizations based on the shopping you do every day. Once you link your Card to the Telecommunications History Group, all you have to do is shop at Kroger and swipe your Shopper's Card. Here's how it works:

### 1. Use a digital account.

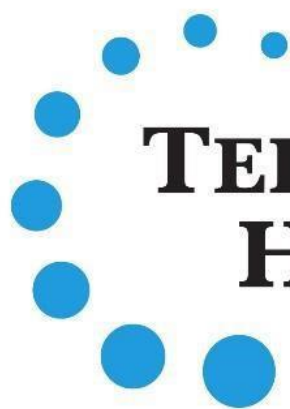
A digital account is needed to participate in Kroger Community Rewards. If you already have a digital account, simply link your Shopper's Card to your account so that all transactions apply toward the Telecommunications History Group. If you need an account, it's easy to register at <https://www.kroger.com/i/community/community-rewards>.

### 2. Link your Card to an organization.

- Selecting Telecommunications History Group for support is as simple as updating the Kroger Community Rewards selection on your digital account.
- Sign in to your digital account.
- Find Telecommunications History Group in the list of organizations online. Make sure you have selected a preferred store to see the list.
- Enter the name or NPO number of the organization you wish to support.
- Select the appropriate organization from the list and click "Save".
- Telecommunications History Group will also display in the Kroger Community Rewards section of your account. You can always review Telecommunications History Group under your Account details.

### 3. Telecommunications History Group earns.

Transactions using your Shopper's Card number will be applied to the program, at no added cost to you. Kroger donates annually to participating organizations based on your percentage of spending as it relates to the total spending associated with all participating Kroger Community Rewards organizations. If you have questions, contact Kroger Customer Service at <https://www.kroger.com/hc/help>.



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