

The logo for Warren County Ohio TELECOM features a stylized graphic on the left consisting of several overlapping, curved lines in shades of blue, orange, and grey. To the right of this graphic, the words "Warren County - Ohio" are written in a black, cursive script font. Below this, the word "TELECOM" is written in a large, bold, black, sans-serif font.

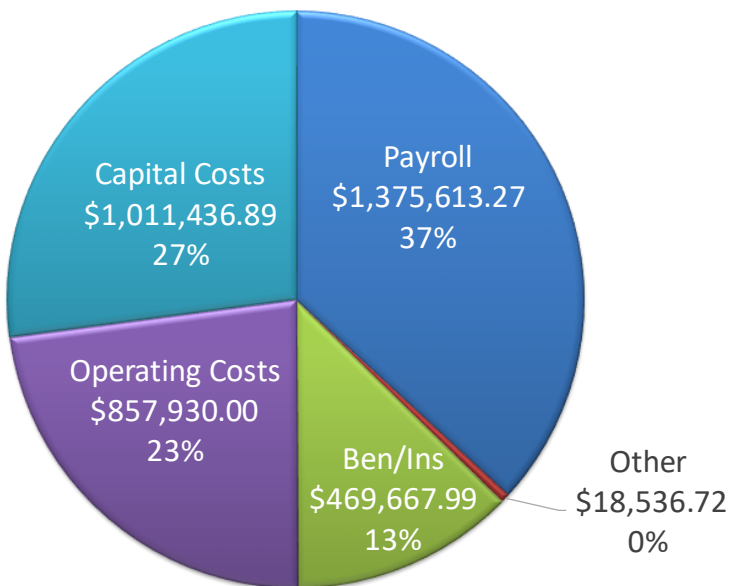
Warren County - Ohio
TELECOM

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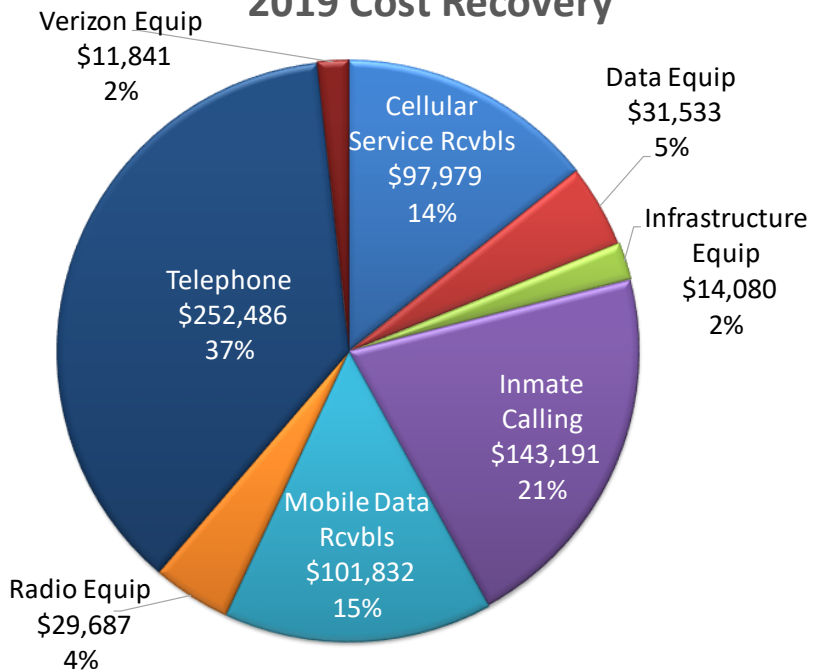
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2019 Expenditures



2019 Cost Recovery



2019

was another year of challenges... even worse than 2018 for vendors failing to keep their promises.

Our Project Implementation Team (PIT) for Central Square (#ProjectTriTech) is using its expertise to guide the vendor through making a usable product for our customers as it wasn't until late 2019 that Central Square took us seriously and attempted to match our efforts. Behind the PIT, we have extremely talented and dedicated team members keeping the new and old backend systems updated, modified, patched for security, and configured for our customers. The unexpected duration of #ProjectTriTech has taken its toll on our staff as they're having to simultaneously manage two systems. We could double our staff size and still be stressed with keeping up on the amount of work. Everyone is doing behind-the-scenes work that most system users will never know about or appreciate... but their hard work is enabling Telecom to deliver the best possible system that no other Central Square customer in the United States has. Our system *will* be the best they have to offer and has been promised to be a showcase for Central Square's products.



Telephone and 9-1-1 systems were also not immune to failure in 2019. Our phone vendor, on several occasions, failed to deliver calls to us from the public. The county could dial out, but no one could dial in for days at a time. We discovered the hard way that all of the phone companies we deal with have forgotten that 9-1-1 lines are required to have backups... and the backup can not share the same cables as the primary circuits. Read more about that on page 8.

Efforts were increased at our radio system tower sites, replacing aged microwave links, completing building maintenance punch lists, and enhancing systems to better adapt and recover from potential emergencies and equipment failures. Our site improvements are making the radio system and all that it supports more resilient in the event of a disaster.

Computer systems are used for everything these days including the telephone and radio systems. Anything that uses a computer to operate (*and that is just about everything*) is under constant attack and requires more updates and patches to stay secure. Patches used to be a once-a-month outage and are now required almost daily.

I am so proud of my Telecom staff! They *show up* ready to make a difference and to overcome the shortfalls of our vendors. They *step up* to conquer day-to-day issues that would stump and grind a vendor to a halt. You will *not* find a better, more caring team of individuals working to keep the Public Safety Network on the air and at full power! They are the awesome people working behind the scenes to keep things working for our citizens, for our public safety agencies, for our county coworkers, and for you!

A handwritten signature in black ink that reads "Paul Kindell".

serving Warren County Since 1989

THE Warren County · Ohio TELECOM CREED

OUR MISSION

Established in 1985, Warren County Telecommunications has evolved into a 24/7 technology support provider for our customers in the public safety and government communities. With expertise in secure Data and Radio Systems, Public Safety Applications, Telephone, Training, and Administrative Support, we strive to provide reliable solutions that are in alignment with Warren County initiatives and leadership goals.

In support of this mission, we will:

- Partner with our customers to understand their needs.
- Provide leadership, planning, and training for the effective use of emerging technologies.
- Demonstrate technical and operational excellence through a commitment to professionalism and continuous improvement.

OUR VISION

Warren County Telecommunications will be recognized as a high-performance team providing technical excellence that advances our customers in alignment with Warren County's mission and goals.

OUR CORE VALUES

Our Core Values drive and guide us as we serve our customers. As members of Telecom, we are committed to:

- **Collaboration:** We are dedicated to a constructive, team-oriented environment, gathering varied perspectives, sharing knowledge, leveraging unique skills, and building effective partnerships.
- **Continuous Improvement:** We strive for operational excellence through the on-going development of our individual team members and technology.
- **Innovation:** We encourage creative and critical thinking.
- **People:** We respect, care for, and actively listen to our coworkers and agencies.
- **Service:** We push our limits to provide consistent, agile, reliable, and accessible services to all.
- **Transparency:** We maintain open communications and ethical business processes to be accountable in our interactions and our work.

OUR DECISION CRITERIA

Is it good for Warren County?

Is it good for our Customers?

Is it good for our Tax Payers?

307 years of combined service to Warren County

powered by



Paul Kindell, Gary Estes, Paul Bernard, Gary Hardwick, Dustin Flint, Jeff Cegin, Joseph Newton, Garrett Wilson, Jimmy Hollin, Allison Lyons, Kristy Oeder, David Shiverdecker, Mike Callahan, Debbie Griffith, Rhonda Bernard, Corey Burton, Don Sebastianelli, Glenn McKeehan, Joshua Moyer, Jeremiah Marcum, Dan Bunning, Becky Trovillo, Jessica Johnson, Philip Bomer.

[1 New Team Member: Philip Bomer, Technician]



Telecom Excellence Award

In January 2019, the first annual #TelecomExcellence award was presented to Technician Corey Burton for his performance in 2018. Burton was nominated by his Supervisor, Glenn McKeehan who helped present the award at a department luncheon.



Our future Central Square Suite (formerly TriTech) is a combination of several platforms and products, meant to work together and increase productivity and interoperability between our public safety agencies.

- **Enterprise CAD:** Call Taking, Law & Fire Dispatching, Mapping/GIS, Reporting, CAD Browser
- **Inform Mobile:** Fire & Law Enforcement Mobile, Web-Based Reporting
- **Inform IQ & Analytics:** Query, Searching, Reporting, Dash Boards
- **Inform RMS:** Records Management, Master Indexes, State Reporting, Citations, Case Management, Property/Evidence, Civil, Warrants, Inform IQ & Analytics
- **Inform JMS:** Jail Booking, Release, Kiosk, Weekender, Visitation, Prisoner Release, Inform IQ, Analytics

JAN	LRMS group continued to regularly meet
FEB	Central Square staff on site for discussions with RMS' Core PIT reps—WCSO, Springboro PD, Mason PD, Turtlecreek Twp Fire
MAR	
APR	Progress on Property & Evidence Module
MAY	Hosted Enterprise CAD AVL Information Session for user agencies. Core LAW PIT members continue to meet.
JUN	
JUL	New ECAD Map layers pushed to MDCs including Mileposts and the United State National Grid Zones 16-17.
AUG	Revealed Law Enforcement's mobile environment + updated forms: Traffic Stop, Tow Request, Modify Login, Unit Availability.
SEP	LAW PIT met to discuss several items.
OCT	New Mobile UX announced to end users for consideration.
NOV	CAD Upgrade jumping us from version 5.8.23 to 5.8.34 including the new Mobile UX.
DEC	Central Square on site for final push of project. Announced Technical Sign-off Date of February 18, 2020 with anticipated May 2020 go-live.

Project Implementation Team (PIT)

Under the Project Management of Deputy Director Gary Estes, Telecom experienced an amazing partnership with agency-appointed Record Management System representatives from local law enforcement agencies. This group pictured to the right (Aaron Yeary of Mason PD, Kathleen Farmer of WCSO, Jenny Embleton of Springboro PD, Rhonda Bernard of Telecom, Lt. Nick Marconi of WCSO, and Lt. Brian Payne of WCSO) have worked tirelessly and meticulously to design, test, and troubleshoot all things Law Records Management. Meeting weekly at Telecom, they never let off the gas to keep this portion of #ProjectTriTech moving forward.

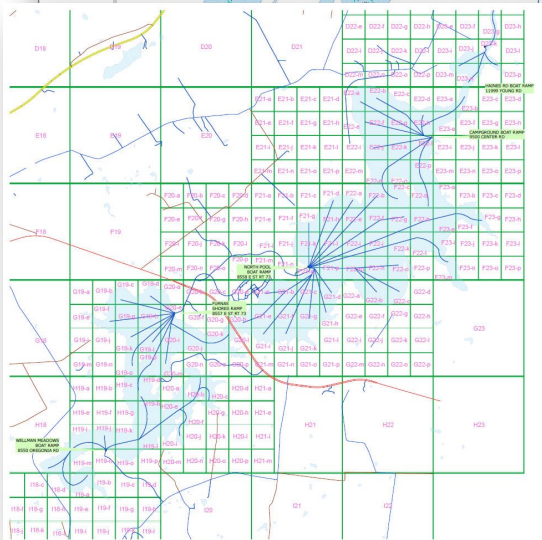
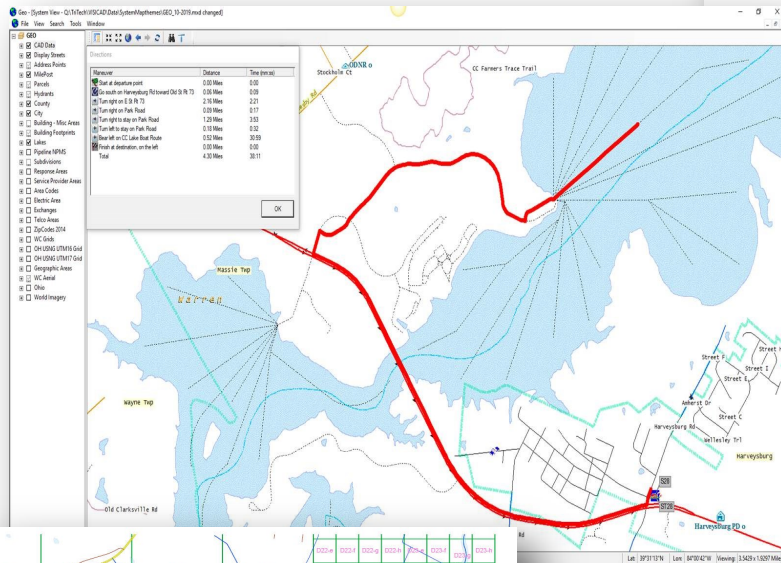
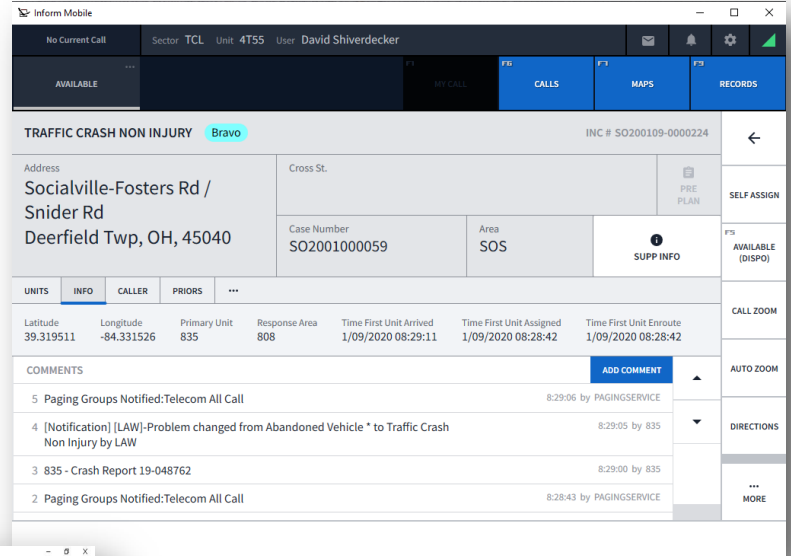
Other key partners are Clearcreek Assistant Fire Chief Tim Simpson who is a weekly face in our halls. He has been the main voice for fire service configurations and considerations. From Emergency Services - Director Melissa Bour, Operations Manager Jesse Madden, and Training Coordinator Samantha Hall have been co-shouldering this project and staying atop of all dispatcher-related components with weekly work sessions in Telecom and regular attendance at PIT meetings.



Due to vendor delays we missed our latest October 2019 go-live goal. TriTech was absorbed by Central Square, causing our products to experience some unexpected changes. Although not live, we do have TriTech loaded onto 86% of law and 77% of fire mobile data computers. Getting the program into their hands now gives them plenty of time to experiment and learn the new features, while we improve it along the way.

Mobile Environment Change

- Mobile UX was released since our last annual report, causing our PIT to pivot and make decisions regarding with which to proceed.
- Unlike the 'old mobile' environment, Mobile UX will auto-scale with whatever device it is running on. This is huge for our technicians who will now only need to configure one layout!
- Enhanced map functionality still rings true with our field units gaining a much improved experience—seeing other units converge on the same incident, dynamic routing based on road closures and configured speed limits, etc.



“Think Outside the Box”? How about “Think Outside the Boat”?

Most Telecom customers are familiar with map grids; primarily used as the page reference for the PDF “Bingo Map” and verbalized in Fire/EMS dispatches. They help narrow down an incident’s location to approximately 1 sq. mile. To help locate boaters on Caesar Creek Lake, we are implementing more detailed map grids in the upcoming Enterprise CAD (ECAD) system. Each grid on the lake has been subdivided into (16) smaller 1200x1300 ft cells which will allow a dispatcher to announce a more exact location of the Call for Service.

“Roads” were drawn on the lake itself connecting each of the smaller grids to a boat ramp. Using ECAD’s routing function, a responding unit will be routed to the boat dock closest to the incident location. Once at the boat dock and in a boat, the routing will continue to guide the responder to the location by showing the route on their MDC.

With the improvement in 9-1-1 Phase 2 caller location features, the incident can be plotted on the map with greater accuracy. With a better location, help can be directed more efficiently and quickly.

February 2019

our Technology Integration Center (TIC) #2 received a 9-1-1 console, integrated with the MCC7500 radio console into the headset.

Three additional computer monitors created a full functioning CAD console as well. Because of this new equipment, TIC #2 is now a backup dispatch station should they need to abandon the communications center.



Telecom Uncovered Phone Service Provider Shortcomings



An unprecedented series of unfortunate events happened in 2019 with three separate fiber cuts causing outages to Warren County's 9-1-1 service. Our first outage on July 15th was due to bridge work in Beavercreek. Our second outage on July 23rd was due to a fiber move in Lebanon. The third outage on September 26th was caused by directional drilling in Bellbrook. This affected all WIRELINE 9-1-1 calls into our PSAPs.

Telecom quickly contacted our phone provider each time and reminded them our design was supposed to be redundant (two complete circuits) and diverse (nothing in common with the first path and separated geographically). Our motto is no single point of failure. What we learned is that our phone service provider combined our circuits on the same fiber, causing both to go down when the fiber was cut. Cincinnati

Bell and AT&T did not have diverse circuits to our provider. Telecom led the charge to uncover this provider shortcoming and we held them accountable to correct it. When contacting our phone service provider's help desk didn't incite action, our Director escalated the troubleshooting to Ohio's 9-1-1 Administrator, the Public Utilities Commission of Ohio, and the Federal Communications Commission.

One alarming discovery was that per the FCC, the phone companies are supposed to audit 9-1-1 circuits each year and certify they are redundant and diverse. That was not happening with any of the companies that we could find.

Primary System In 2019, Telecom's Primary System ran as expected with no changes beyond standard updates. A process improvement this past year was working with Lebanon and Franklin PSAPs to test their systems via microwave. Our standard mode of connectivity is fiber; but should that go down, it's important to know that microwave will continue 9-1-1 services for our citizens.

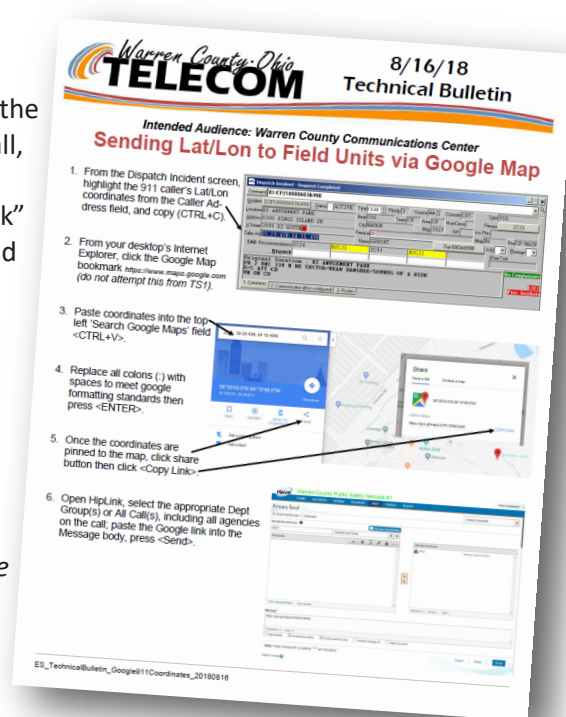
Secondary System Housed at our disaster recovery site, it is online at all times. Should the primary system go down, the secondary system picks right up. It also provides connectivity to our secondary connection to the telephone company in the event that the primary system goes down.

Countywide Participation Telecom is the point-of-contact any time a 9-1-1 call cannot be completed within Warren County. Through our troubleshooting, we decide if the problem resides within the 9-1-1 system or if it is due to a phone carrier having issues. If an issue escalates, we submit a help ticket with the responsible company (AT&T, CenturyLink, INdigital, Verizon, etc.) This gets all Warren County government buildings and the Lebanon + Franklin PSAPs on their radar so that our problem can be resolved.

UPDATE: Telecom's Time-Saving Process For First Responders Attempting to Locate Cellular Callers

- In the Field: In 2019, Wayne Township's Fire Department was dispatched to the "Horse Beach" at Caesar Creek Lake for a disabled boat. On this particular call, it was getting dark which makes it a lot harder to locate boats on the water. Wayne Twp asked dispatch if they were able to send "the Google Link" from the caller's Phase II coordinates. Dispatch obtained the coordinates and sent the Google link to all Wayne Twp crews. Using the link, crews easily accessed the area of the lake where the boat's cellular service pinged and aided the disabled boater.
- On the backend: An update from our 9-1-1 vendor who hopes to incorporate this idea into their product...

"The function we identified for you did not make it to the Texty Road-map... It was close, but we had some other function and fixes that trumped what we discussed and then some. Though it does not spell anything for our desire or commitment to do it... (It just put us into this year, 2020. We are working on winning a project for another network to do a PSAP oriented Communications Portal. Though that isn't exactly using the mechanism we discussed, it is a general aggregation product for unregulated communications and... the technology to include your function would be simple reuse of a framework paid for and prioritized by larger need at the vendor. [The] load on our development team has surely delayed the natural process of getting a new function like [Telecom's suggestion] into our existing products. As other plans for a new product emerge... that can be construed as having overlapping function with yours, this status could easily and quickly change.



More than **82** agencies & **60** school buildings within Warren County utilize our Digital MARCS P25 Radio System.

Countywide Participation Per the Board of County Commissioner's Radio Distribution Policy, all public safety agencies within Warren County are provided radios to utilize the countywide radio system. The obvious benefit of this is interoperability between agencies. Several other agencies such as Transit, Engineers Office, Public Works, and the Water Department also use radios on our system.



Regional Participation

Interoperability with neighboring counties: we share an interoperability package with neighboring counties who want our talkgroups for the purpose of mutual aid. Our 83TAC talkgroups work on MARCS towers within our county and one-county surround, allowing neighboring counties to hear our traffic from their station or bay.

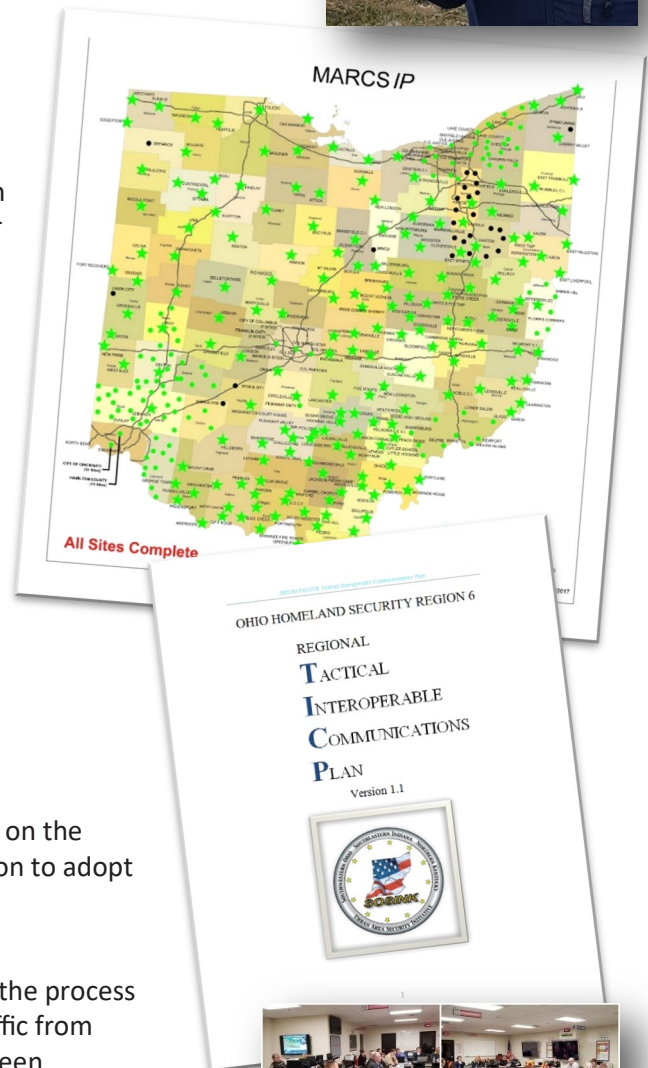
Statewide Participation

Interoperability with the State: if a large-scale emergency occurs, we have the same talkgroups as agencies in Cleveland or Toledo who could come to our aid and communicate with our first responders. This is possible because of our relationship and participation on the state of Ohio's MARCS system. The Ohio Department of Natural Resources (stationed at Caesar Creek) and the Ohio Department of Rehabilitation and Correction (prison probation officers) both have our talkgroups for communication with Warren County agencies.

RTICP: Telecom's Director & Community Manager maintain a 100-page Regional Tactical Interoperable Communications Plan (RTICP) that outlines how counties in Southwest Ohio will communicate with each other on the MARCS radio system. The Warren County Commissioners passed a resolution to adopt the plan in 2018, and other counties have followed suit.

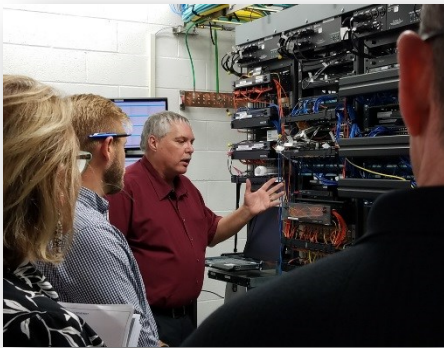
Strategic Roaming: Director Kindell is an active member of the Statewide Interoperability Executive Committee (SIEC). In 2018, the committee began the process of protecting the State's radio system capacity by reducing unnecessary traffic from transient commuters. The draft of a statewide Strategic Roaming plan has been developed, which recommends that local channels (such as Police and Fire Primaries) only work in and around one's county where daily business is conducted.

Federal Participation Largely due to Caesar Creek State Park, we share our talkgroups with Army Corps of Engineers and Coast Guard Auxiliary, should local departments need to work with them on a response.



From the Radio Shop

107 radio repairs, **126** aligned radios, **54** radio template changes, **216** alias changes, **19** new radio templates making our total number of maintained templates **407**, **12** Hot Box deployments, and **626** programmed radios for **135** non-unique agencies (some agencies were programmed multiple times).



Radio NOC & Infrastructure

1 Network Operations Center (NOC) provides the prime site control of the radio system and the interface to the State system. In the event that we lose contact with Columbus, the Radio NOC takes over control and Warren County can operate in Site Trunking; still maintaining our local talkgroups. Each rack is fed by two UPS power supplies, offering a high level of redundancy. **9** Radio



Tower Sites + **1** Data Tower with equipment, shelters & emergency power. **16** Dispatcher Consoles.



7.6 million
radio calls

call = 4 seconds or longer

4.6 million

push-to-talks initiated by someone keying a radio. The system generated

1.3 million

additional tower transmissions which included station identifiers and outer-county agencies transmitting from our towers due to strategic roaming guidelines.

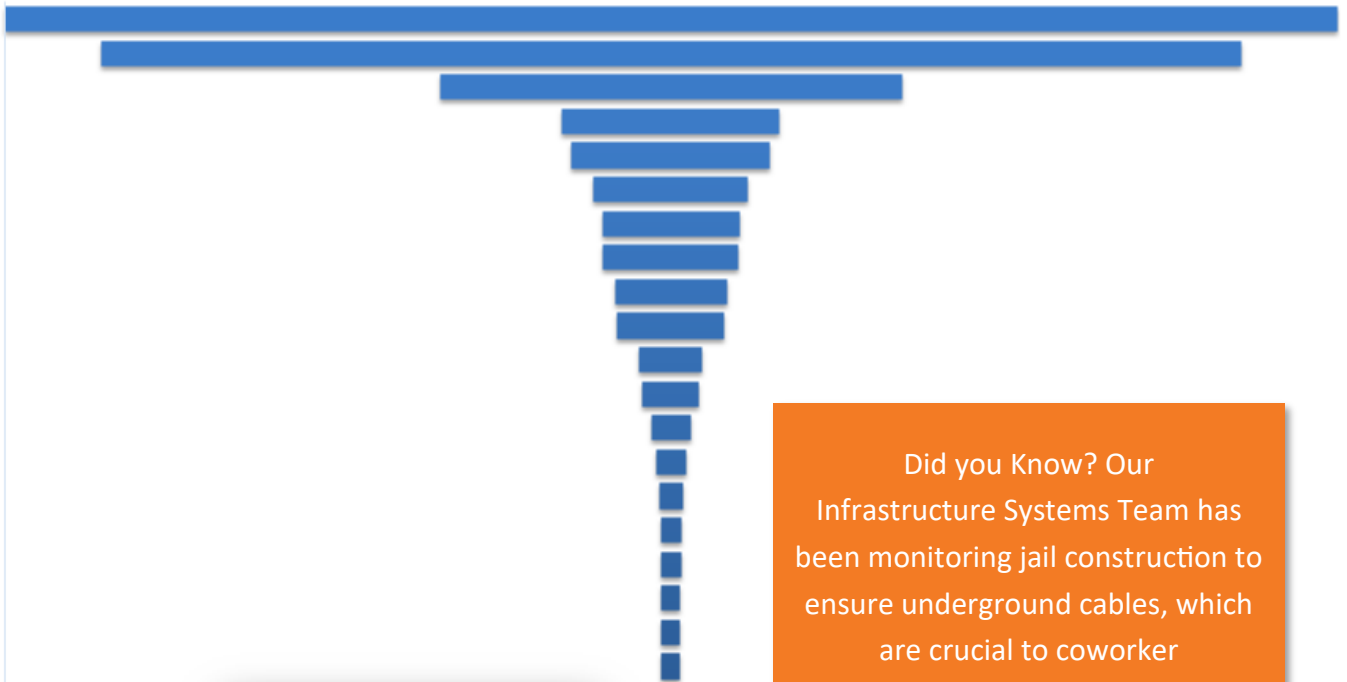




1141 phone users (+99 from 2018) with **893** voicemail boxes (+81 from 2018) generated **1,430,307** phone calls (-42,320 calls from 2018), totaling **62,677** recorded hours!

Non-Commissioner Funded Cellular Receivables totaled \$97,978.70

- CHILD. SERVICES
- WATER
- WCEO
- PARK
- HUMAN
- OHIOMEANSJOBS
- FAM ABUSE
- SOIL & WATER
- ARMCO
- HEALTH
- MARY HAVEN
- SOLID WASTE
- DOG WARDEN
- TITLE CLERKS
- LEPC
- TITLE (FRANK)
- TITLE (MASON)
- PLAN COMMISH
- EMERG MGT
- OMB



Did you Know? Our Infrastructure Systems Team has been monitoring jail construction to ensure underground cables, which are crucial to coworker communications, don't get cut or damaged during the build.

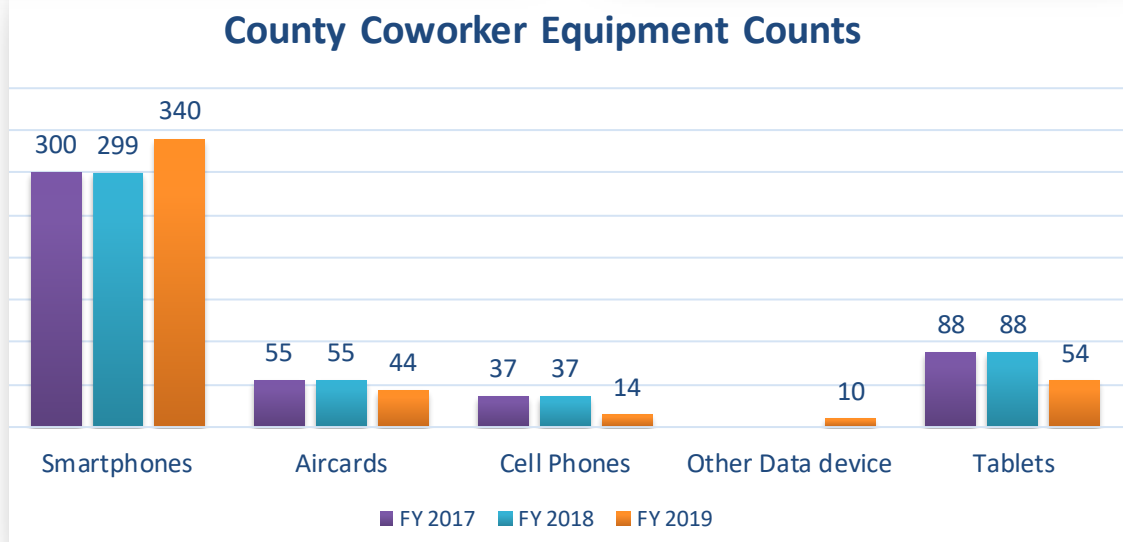
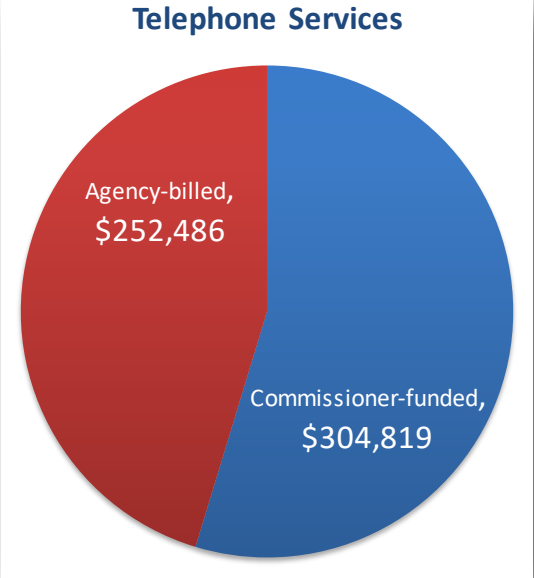
On August 27th, our department leadership & Garrett Wilson who has been intimately involved in the excavation and ground work for the new jail, attended the Warren County Jail Groundbreaking Ceremony. Several former elected officials, county officials, and law enforcement personnel were in attendance.



Telecom manages all County coworkers' cellular bills on one account which gets Warren County a bigger discount (fiscal stewardship of taxpayer dollars). We essentially replace the functionality of a Verizon store as all coworkers come to us for phone upgrades, accessories, and plan changes.

576 work orders were completed related to email and county directory changes, VZW account changes (data plans, hotspot, removal/ addition of an employee), accessory purchases (cases, screen protectors, chargers), phone purchases (free upgrades, replacements for damaged phones, new hires), etc.

We had 7 requests for Mitel phone classes, reaching 30 County Coworkers.



Cellular Stats

- 82** new
- 18** replaced
- 146** upgraded
- 306** accessories
- 104** cancellations

After a brief partnership with the Office of Management and Budget to share the responsibility of Switchboard, Telecom took it back over full-time, averaging 28 calls per day.



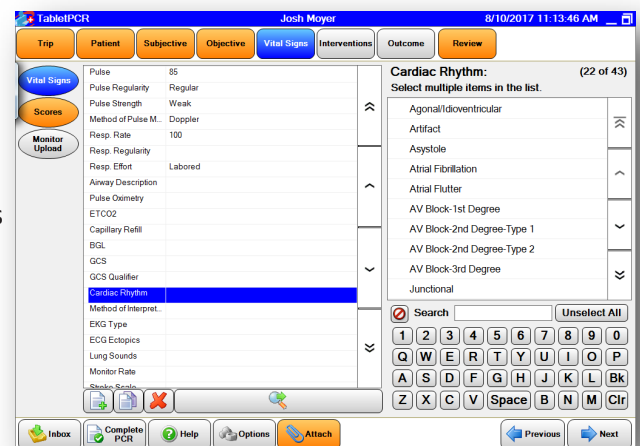
LRMS Law Records Management System is a function devoted to the management of law enforcement information throughout its life cycle... from the time of creation or inscription to its disposition. This includes identifying, classifying, storing, securing, retrieving, tracking, destroying, or permanently preserving records. It also entails solutions for incident reporting, data analysis, training, medical records, personnel management, and risk management. Most of this year's work continued to be #ProjectTriTech. Our Analyst has continued to receive invaluable help from her core LRMS agency partners—WCSO's Kathleen Farmer, Nick Marconi, Brian Payne; Springboro's Jennifer Embleton; and Mason's Aaron Yeary.



Response & Crime Analysis The record data we house on behalf of public safety agencies is used to analyze responses and crime statistics.

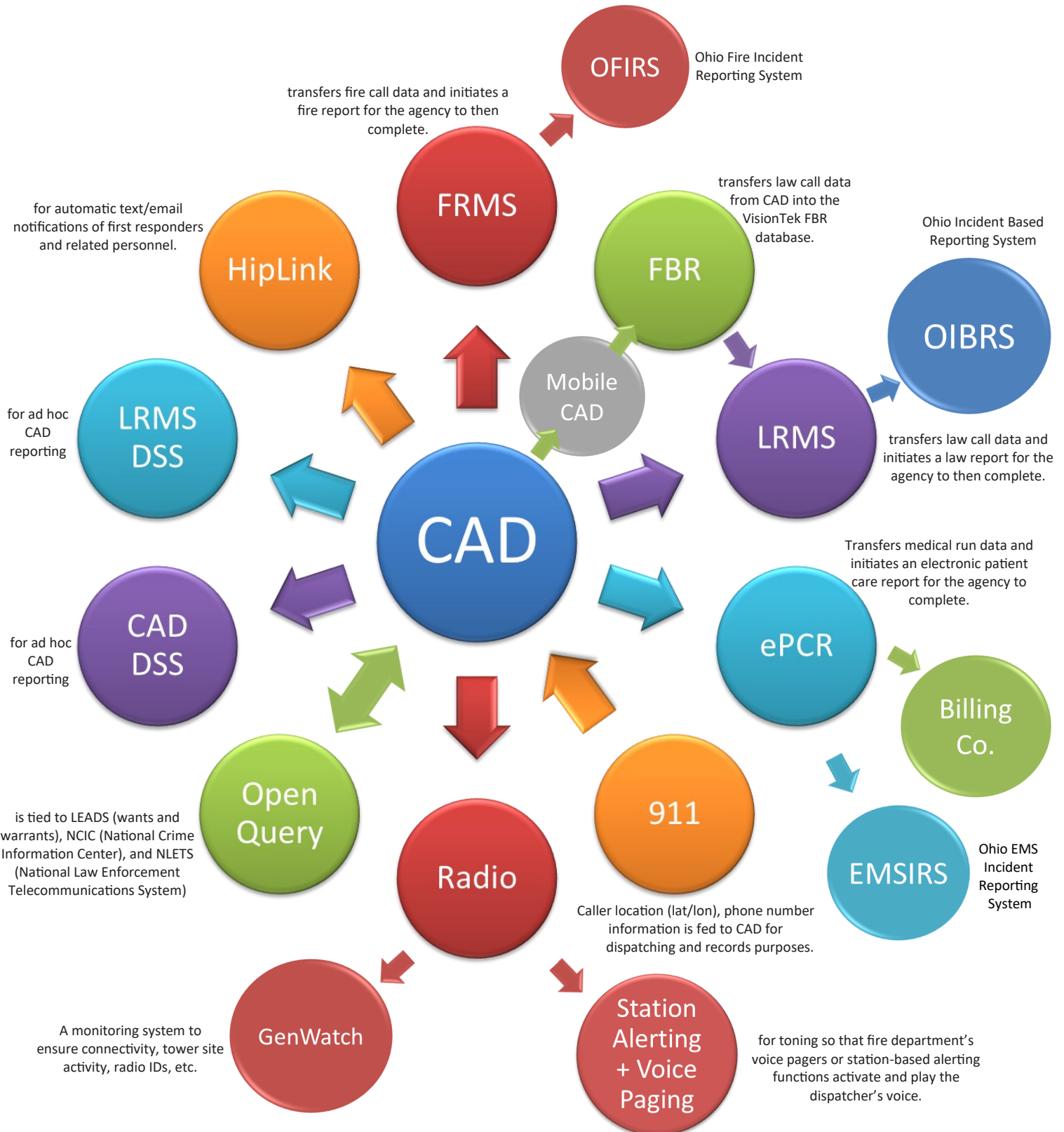
FRMS Fire Records Management System is utilized by all Warren County-dispatched Fire agencies. Telecom hosts the backend system in our Data Center while each fire department manages their own data and records. In the 1990s, a consultant studied the local fire services' technology and his recommendation was a consolidated countywide FRMS. The benefits would include cost-sharing, knowledge-sharing, assurance of NFIRS compliance, and eligibility for grant funding. Quite possibly the biggest benefit of our existing FRMS is that it's tied into our CAD system, since we host both FRMS and CAD. Information can flow out of CAD and into our agency's FRMS, saving them data entry and increasing data accuracy (especially incident times).

ePCR Electronic Patient Care Reporting is a sister product of our existing FRMS. By sticking with one vendor, the flow of information between FRMS and ePCR is more fluid and reliable. ePCR is utilized by all Warren County-dispatched EMS agencies. Not only does Telecom host the data but we have a dedicated analyst who works on behalf of our customers with the vendor, the state, and the billing companies. He helps modify agencies' ePCR workflows and helps improve their Quality Assurance process (checking for mistakes before the report is ever sent to the State or billing company.) In 2018, Clearcreek Twp Fire & Union Twp Fire have taken a much more active role in their QA process, thus taking advantage of our analyst's services. ePCR has an annual licensing cost which is initially covered by Telecom before being cost recovered; each agency paying their portion based on number of utilized licenses.



Monthly & Yearly Reports Each month, Telecom uploads 10 radio reports, 15 CAD reports, and 11 911-Phone reports to an online retrieval site. These reports are meant to aid agencies in analyzing run counts, common incident types, call volume trends, and radio traffic trends. Several Chiefs rely on these to gauge staffing needs and to support funding requests from their trustees or city managers.

Interfaces are essentially pipelines between two or more systems allowing information to flow between them. Below is a diagram of our active interfaces to and from CAD along with their purposes.



23 Dispatch CAD Workstations receive physical cleaning maintenance on a rotating schedule, each getting cared for 4 times per year. It takes one hour to clean one station, clocking 88 total hours per year maintaining this customer’s investment. The Telecom Integration Centers are located in our basement and contain all systems and programs available in the ECC (9-1-1, Radio, CAD/Mapping.) If Emergency Communications Operators need to abandon the ECC, they can report to Telecom and resume all necessary functions.

Radio Dispatching Telecom builds new console configurations as necessary. The Radio Team’s daily Keep-the-Lights on responsibilities include checking all communication lines that run between the ECC and prime site (9-1-1, radio) and the connection with MARCS which ensures we stay connected to the state radio system.

CAD Computer Aided Dispatching is the heart of the system where calls for service originate. In the late 80s, Dispatch’s original method of call taking was writing everything on cards and log sheets and referring to a large map book. To create a post-incident report, people had to dig through boxes. The introduction of CAD provided a database of addresses and an electronic depository of all calls for service. Eventually, mapping was integrated cluing a dispatcher into incident location and agency with jurisdiction.

HipLink After years of relying on a traditional phone tree, Telecom enhanced Dispatch’s method of calling out Road Crews with HipLink. Incorporating 2-way paging, road crew members now receive the alert to their phone and can reply to dispatch acknowledging the notification and stopping the escalation process. We’ve also added school administrators to HipLink, allowing them to receive early notifications of road crew call outs, as this often results in delayed or closed schools. They’ll also know about calls for service at their school buildings.



Thanks to our FREE EMAG (Enterprise Messaging Access Gateway) from Verizon Wireless, our HipLink messages hit Verizon in under 1 second, ready to be shipped to our customers.

Mapping Telecom receives parcel, oddly shaped subdivisions, building footprints, and updated city boundaries. We then tighten it up for the purpose of public safety response needs to create the Dispatcher-facing map. This will also feed the agency-facing map once #ProjectTriTech (Central Square) InformMobile is live. Telecom maintains the source map used by CAD which directs the program to the appropriate responding agencies, aids in address verification, and is customized by agency and beat/response region.



PSAP/9-1-1 The Commission provides PSAP services to all communities except Lebanon and Franklin via Emergency Services. A Public Safety Answering Point (PSAP) is a call center responsible for answering calls to an emergency telephone number (9-1-1) for police, firefighting, and ambulance services. The Commission provides 9-1-1 services and support to all communities via Telecom’s 24/7 on-call staff.

Priority Dispatch ProQA is a nationally recognized tool used by dispatchers to consistently ask questions based on the caller’s emergency. Only Fire (EFD) and Medical (EMD) use this service. Telecom’s role is maintaining the backend servers on which ProQA resides.

Alerting

- **Voice Paging:** Telecom purchases and provides fire pagers to any Warren County-dispatched agency who requests them. The radio consoles in Dispatch generate a two-tone sequential tone to activate the voice pagers and house systems of the proper agency and play the dispatcher’s voice with relevant incident information. They also open up for the countywide all-call “long B” tone. To expedite mutual aid (early notification), we provide Warren County tones for outside agencies’ pagers who request them (e.g. Goshen for Hamilton Twp incidents, Loveland-Symmes for Deerfield Twp incidents).
- **Station Alerting:** A pager built into the fire station receives tones from the ECC. Telecom maintains an accurate paging database which the CAD system relies on to automatically encode the tones. Dispatchers can also manually alert a station. Telecom ensures triple redundancy with ECC consoles, backup system, and MIP 5000.

Dispatch Problem Reports (DPRs)

A 24/7 open line of communication exists between the Emergency Communications Center (ECC) and Telecom. Dispatchers are able to submit any problem, big or small, to Telecom. Our team members receive email alerts and if serious, Telecom’s on-call personnel will be paged out to troubleshoot and escalate if necessary.

320 DPRs
were opened
& closed in
2019

Interfaces

- CAD > VisionTek: the conduit between police and fire/EMS' Mobile Data Computers and Dispatch (Premier CAD).
- FBR > LRMS: so that field-based report (FBR) data can be usable from the law records management system.
- BMV/LEADS: allows law enforcement to see license photographs, driving records, wants & warrants, vehicle registrations, etc.

259 Mobiles Imaged When you bring your MDC to Telecom for 're-imaging', it means our technicians are installing the Windows operating system and putting on required software all at one time. They're also installing TriTech onto machines so that users can begin testing the features!



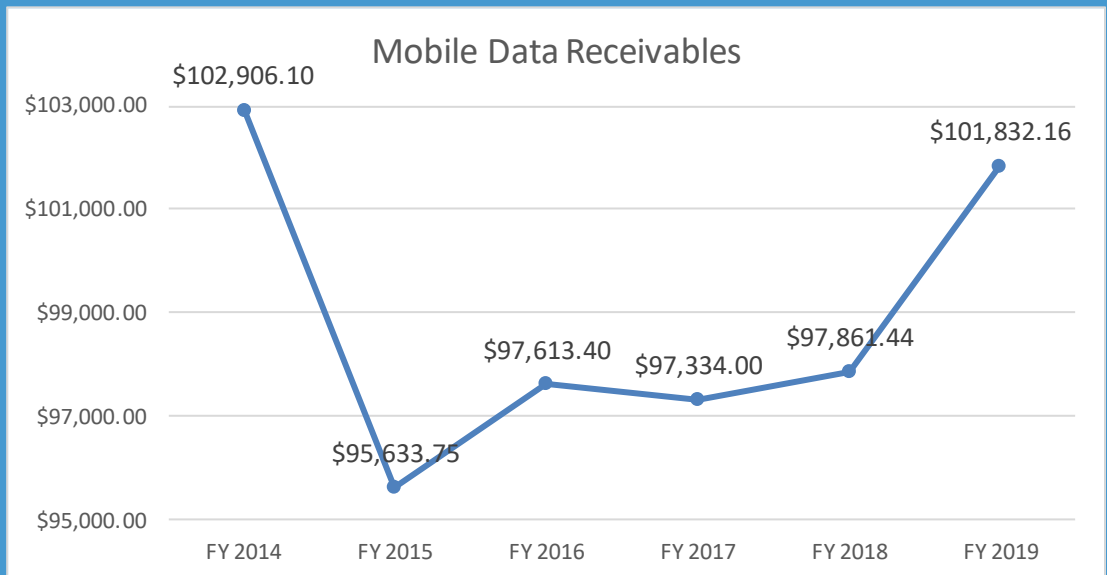
Mapping Warren County Dispatch mentions the "Bingo Map's" cell for each call to help a responding unit zoom into the geography of the incident. This map is maintained by Telecom to include all new roadways, hydrants, etc.

525 Two-Factor Authentication Tokens are used for MDC access + entry to the WCPSN portal which provides applications and virtual desktops. We have portal users across all the law and fire agencies as well as Telecom, Emergency Services, Warren County Water Dept, Child Support, and Warren County Human Services. The Portal was also used to facilitate the ShoreTel apps to non-county network users.



Verizon Mobile Data coverage is paid for by public safety agencies while Telecom manages the account on their behalf.

Agencies include: Clearcreek Fire, Carlisle Fire, Deerfield Twp Fire, Franklin Township Fire, Hamilton Twp Fire, Harlan Twp Fire, Mason Fire, Massie Twp Fire, Salem-Morrow Fire, Turtlecreek Twp Fire, Union Two Fire, Wayne Twp Fire, JEMS, Carlisle PD, Deerfield Twp WCSO post, Franklin PD, Hamilton Twp PD, Harveysburg PD, Maineville PD, Mason PD, Morrow PD, South Lebanon WCSO Post, Springboro PD, Waynesville PD, WC Emergency Services, Telecom, and WCSO Lebanon post.



Disaster Recovery is an ongoing project with the goal of geo-diversely locating our essential systems. In our 2019 budget, Telecom received \$100,000 in dedicated DR funds to continue expansion of our DR capabilities.

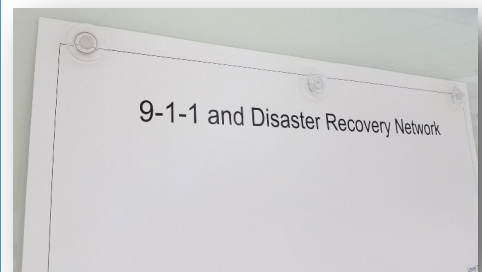
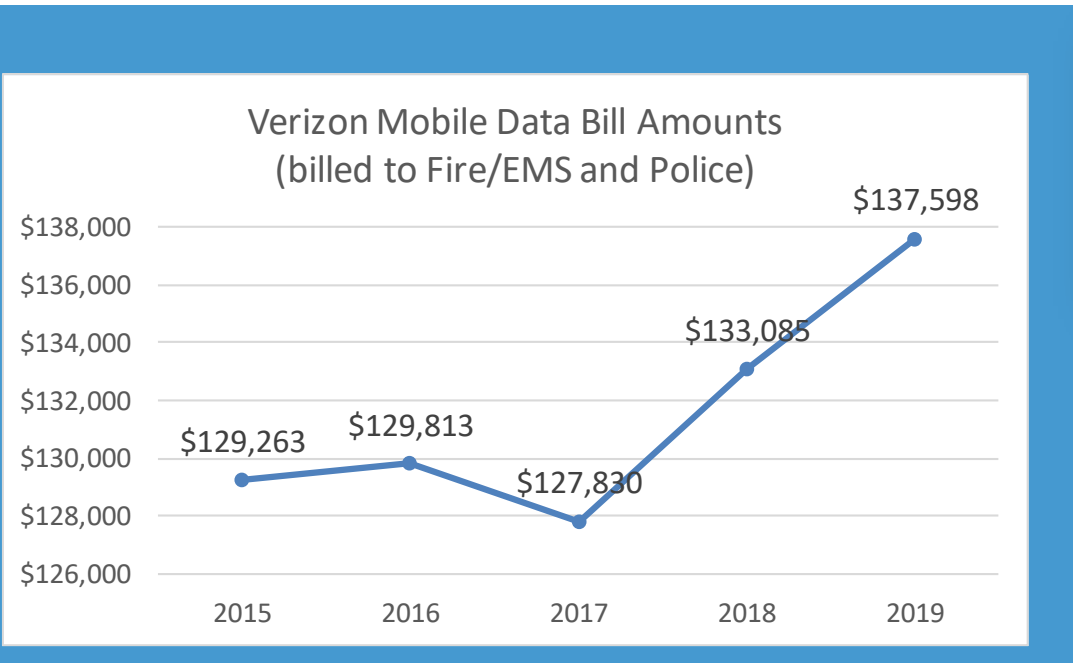
Phone In 2018, Telecom continued working on Disaster Recovery, snapping on capabilities such as the ShoreTel backup capability. In the event that the primary ShoreTel (Mitel) system goes down or we need to perform maintenance, the backup will keep our phones online. The DR site houses a backup for our conference bridge should Telecom’s office be compromised.



PSAP / 9-1-1 In 2017 we dropped an additional shelter at our DR site. In 2018 we rehabbed it and prepared it for equipment installation. In 2020, we plan to move the 9-1-1 secondary system to this new shelter which will better shield it from tower lightning strikes. It will also free up much needed space in the radio shelter. Not having all of our DR equipment at one location adds diversity and better protection.

Dispatch + RMS Services Telecom has seen major improvements with each new CAD suite brought online. The first generation was one PC which only allowed one dispatcher on a call for service at a time. The second generation product was enterprise-grade greatly increasing ease of dispatching. Our third generation set to come online in 2020 will add backup capability. A copy of our future #ProjectTriTech (Central Square) CAD system will be housed at our DR site should the primary system go offline. Our approach has always been proactive, methodically planning every scenario possible.

“The Vault” Team Members made **179** vault runs last year; where backup tapes are securely stored for the purpose of records retention and data recovery. These tapes include data for everything in the Data Center.



Physical Plant is any location that Telecom is responsible for, and includes buildings, rooms, and structures. Some common components of these locations include:

- **Building** This takes in to account the physical structure and can include anything regarding it, such as; doors, roof, rodent control, walls, etc.
- **Grounds** This includes access, driveways, walkways, grounds control (lawn, weeds, etc) maintained by Warren County Facilities Management.
- **HVAC** Telecom is responsible for ensuring that proper heating and cooling, along with Environmental Monitoring is taking place.
- **Power (Commercial and Backup)** Power is pivotal to any environment housing Telecom equipment and resources. Telecom utilizes battery, UPS, inverters, generators, and transfer switches as backup power should commercial power fail. This is important because if the local community experiences a power outage, Telecom's lights stay on, and this switch happens seamlessly.
- **Physical Security** Physical security of these location is important, and includes doors, gates, fencing, and related systems to make each site secure.



Main Physical Plant Locations

- **Data Center** (see more on the Data Center page)
- **10 Towers** - (3) legacy tower sites were inspected and routine maintenance performed to align them with current tower safety codes. They carry the main radio system, they hold the microwave antennas for backbone, and are the last mile equipment in that area. One site doubles as a Verizon platform. We're beginning to use the backbone system to extend the County VOiP phone system to county buildings not on the Justice Drive campus, where it's not feasible to run fiber cable.
- Zoar Tower received a storage shelter, eliminating the need and expense for storage trailers in the 500 Justice parking lot.



18 public safety-grade microwave links for the Data Backbone and System Control,

VoIP traffic, voice traffic, etc.) **44** Microwave links for Public Works Information Backhaul, handling the data's 'last mile' from our towers to end users (water tanks, wastewater treatment plants, well fields.)

The Data Center now has redundancy, true power systems, high availability for both hardware and software. This Center houses data for LRMS, FRMS, CAD, ePCR, AudioLog, ICS, ShoreTel/Mitel, and HipLink.

Security Telecom is held to the standards of CJIS (Criminal Justice Information System), LEADS (Law Enforcement Automated Data System), and CALEA (The Commission on Accreditation for Law Enforcement Agencies.) These drive how we store/retain/protect the data of our customers. We are periodically audited for security compliance and are constantly trying to stay ahead of the latest security risks.



Connectivity (LAN, WAN, VPN, Internet)

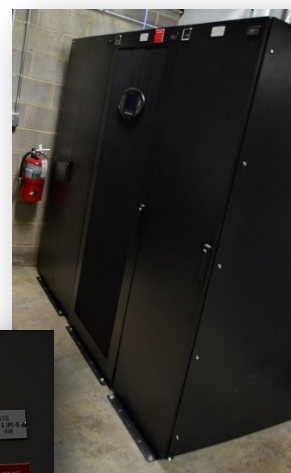
We use multiple connectivity methods to keep systems, applications, and resources easily accessible for our customers.

High Availability One of Telecom's goals is to eliminate as many single points of failure as possible, so that in the event of a system failure, our customers continue to operate as normal. With this in mind, many systems are redundant, so that in the event of a failure, resources are still available to our customers.

Backups Telecom utilizes several different backup policies and types to ensure that data is backed up for data recovery; and to meet archival requirements.

Testing

- Firewall System Failover Testing
- Internet Failover Testing
- Mobile VPN Failover Testing
- Data Restore Testing
- Virtual Machine Restore Testing



Telecom is a cradle-to-grave Technology Advisor for the (3) major aspects of the Warren County Department of Emergency Services: Emergency Communications Center (ECC), Emergency Management Agency (EMA), Emergency Operations Center (EOC).

ECC Organized by FEMA, IPAWS is the Nation’s alert and warning infrastructure. It provides an effective way to reach and warn the public about emergencies. IPAWS is used to send notifications for three alert categories– Presidential, AMBER, and Imminent Threat.

EMA Telecom calibrated EMA’s weather station which supplies a real-time data feed of weather- related stats (wind speed, temperature, barometric pressure, humidity, etc.) The data is specific to our county and useful in an emergency. Example: a chemical spill requires evacuation of all businesses and households down-wind. Referencing this weather station allows Emergency responders to calculate that square mileage.

EOC (2) 800MHz radio stations to communicate with the State in the event of an EOC activation and for regional communications. Telephones are directly connected to the 911 system. In the event of a widespread storm, Emergency Services can ship non-emergency calls to personnel in the EOC for call-handling with the simple push of a button on their 911 console. Telecom responds to EOC activations to support Emergency Services’ efforts.

Warren County Facilities Management and Telecom were both involved in the new Jail and Juvenile builds.

Warren County Sheriff’s Office (Jail Management System) When we go live on InformJMS (TriTech/ Central Square), Telecom will house JMS data. A major feature enhancement of InformJMS will be the ability to tie into RMS records for reporting and analysis versus the current process of logging into two separate systems.

Warren County Information Technology — Telecom and IT coordinated on the Warren County Jail and Juvenile Expansion projects. Director Cliff and Deputy Director Estes have also been sharing knowledge on Office 365 as both networks are moving in that direction.

State of OHIO MARCS Our Tier4 partnership provides our users with better portable coverage and expanded statewide capabilities. Plugging into the State saves our tax payers roughly \$250,000 per year in maintenance cost and we have a direct line to the MARCS 24/7 Help Desk.

Public Safety Agencies are a key reason for Telecom’s existence, growing from a telephone service to a 24/7 public safety technology provider. Some auxiliary services we provide are:

- **Committee Representation:** Telecom is active in Communications Work Group, Warren County Police Chiefs Association, Warren County Fire Chiefs’ Association, and the Emergency Communications Workgroup. Our Community Manager is Recording Secretary for three of these groups; not only helping them keep timely records but aiding Telecom to stay at the forefront of meeting public safety needs, adjusting our technologies to fit their strategic missions, and maintain relationships with our customers.
- **Large-scale mapping:** station radius maps, topography maps, re- sponse zone maps, etc.
- **Engraving** of accountability tags, incident status boards, incident sta- tus boards, and miscellaneous signs/tags.

ENGRAVING	2019	2018	2017
Accountability tags	1408	2639	1623
Status Boards	0	0	1
Passports	90	70	47
Other	315	22	33
Total:	1813	2731	1704



Bene-FIT Fair Each fall, our Support Services Team spearheads a raffle basket. This year’s theme was ‘Bee My Honey Date Night!’ packed full of (14) items including gift cards to the movies, restaurants, Full Throttle, and The Escape Room!

Warren County 9/11 Remembrance Ceremony

On September 11, Telecom joined hundreds of citizens, students, county coworkers, and public safety personnel for the 2019 Ceremony, organized by Robin Kiley of Stand 2 Serve. Our Community Manager assisted Kiley with promoting and photographing the event. Standout moments included Donovan Elementary students singing, “We Remember,” Clearcreek Fire District’s Chief Steve Agenbroad’s account of his cohort hiring his first firefighter who wasn’t alive for 9/11, prayer by Springboro Police Chief Jeff Kruithoff, and poems/artwork from Lebanon & Kings students.



Christmas Child Sponsorship

Jessica Johnson is definitely our in-house philanthropist! Several coworkers and a coworker’s church helped a 4-year old named Olivia experience the joy of Christmas.

Hoxworth Blood Donation Telecom team members donated blood, either when sponsored by Warren County or on their own time: Becky Trovillo (6x), Don Sebastianelli (4x), Allison Lyons (2x)



Continuing Education

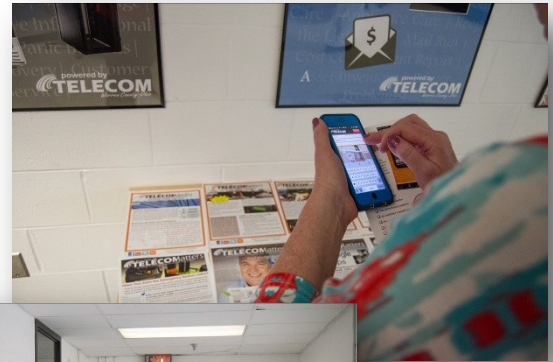
Here are just SOME of the continuing ed courses our team members took part in:

- Criminal Justice Information System Security & Awareness Training
- Countless hours of Central Square training: Enterprise CAD, GIS Link, CAD Custom Reporting, Programming in C#, System Administrator
- CCNA— Cisco Certified Network Associate

In an effort to stay connected with our customers, colleagues, and coworkers, Telecom hosted an Open House on April 16th during National Telecommunicators Week. Vendors like Mobilcomm, Motorola, and Verizon were onsite, facility tours were conducted, and several first-time guests saw all that Telecom has to offer.



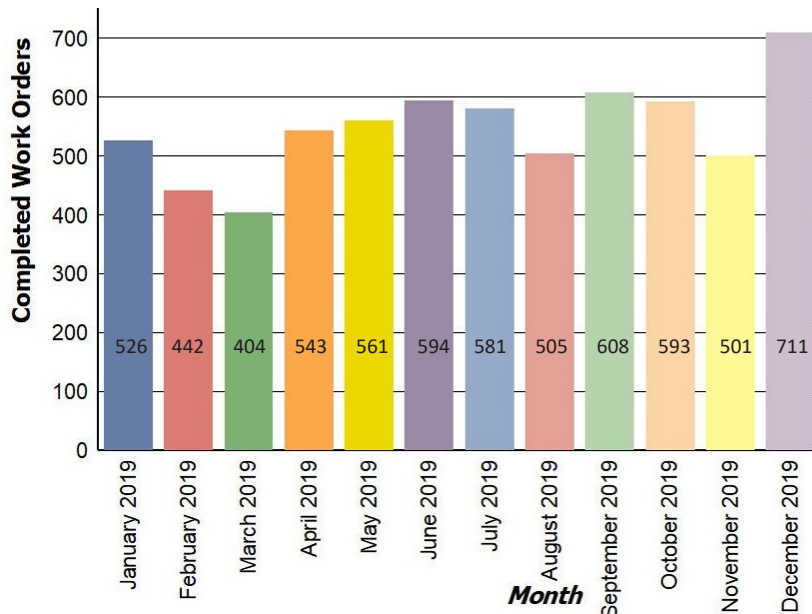
OPEN HOUSE



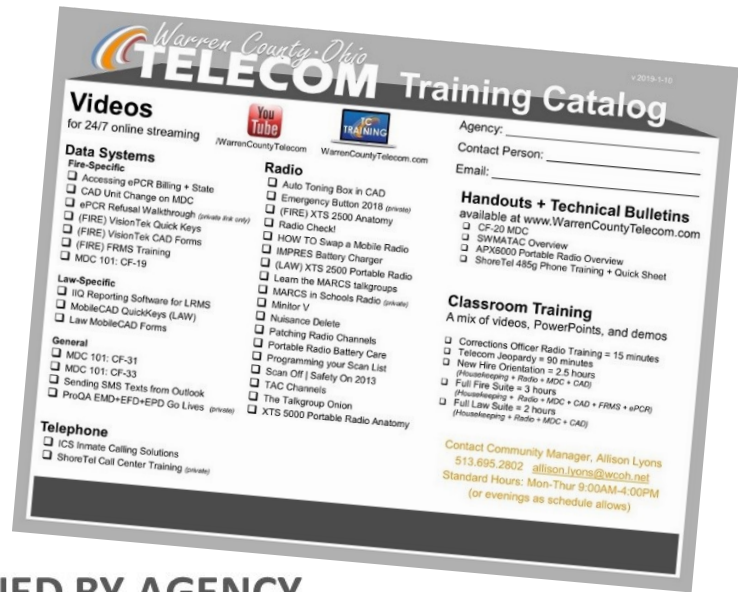
HELP DESK / WORK ORDER SYSTEM

All Telecom team members manage customer service tasks in the work order system. This ensures no request gets lost in the shuffle and our customers can get progress updates via email. All customers are encouraged to email help@wcoh.net with their service requests

Telecom completed **6,569** work orders in 2019 with **1,422** tracked hours!



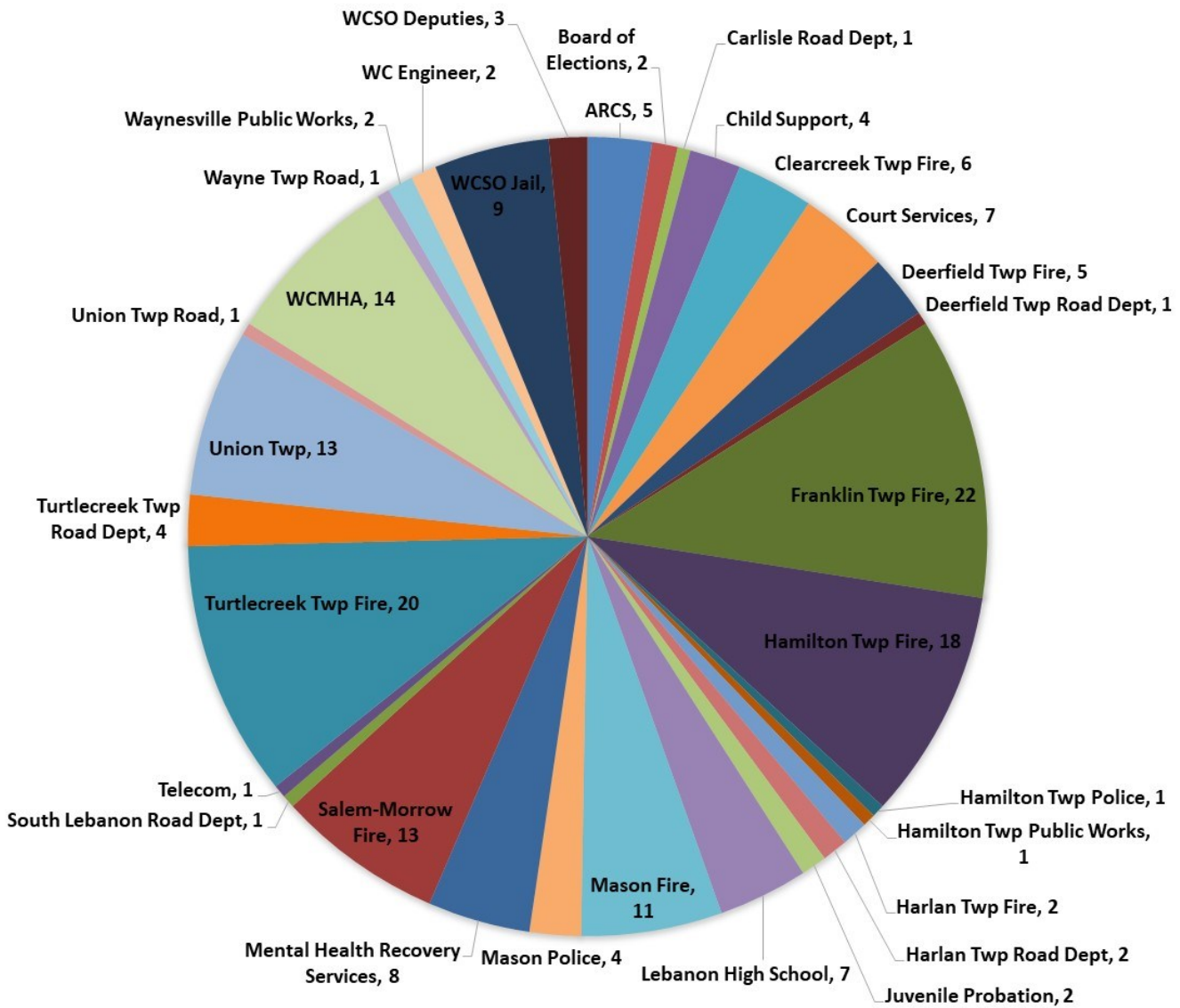
Telecom has offered end user training since 2006. Videos are available 24/7 from our YouTube channel and website plus classroom trainings are offered for several products and services. Trainees range from county coworkers to public safety and even state/federal agencies. In partnership with Emergency Services, Telecom even takes trainees on a tour of the Warren County Communications Center!



91.25 hours with **199** trainees

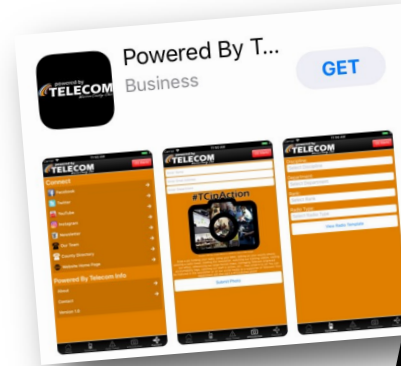
up from 74 hours & 162 trainees in 2018

OF PERSONS TRAINED BY AGENCY



#PoweredByTelecom

Collaborating with Warren County IT, we finalized an app for iOS and Android. Features include radio template lookup, newsletter, social media links, website browsing, weather, alerting, training videos, help ticket + photo submission, etc!



#TCKudos

To: Gary Estes and the entire WC Telecom Team Dept: all of Telecom
 From: Julie Duffy Date: 4/17/19

Thank you for...
 I thoroughly enjoyed visiting your department at yesterday's open house. Although I knew "of" your department, I truly had no idea about the depth of services that you provide, and the amount of personnel, equipment and space it takes to provide the services.
 There are numerous items that I could pinpoint as "wow" moments. But, if I could single out one particular thing, it would be the personnel. Particularly the amount of passion and dedication that I witnessed as I met everyone during my several hour tour. You can hide some dust bunnies when company is coming, but you can't fake passion. As both an employee and citizen of a Warren County community - thank you for hard work. It may not always get noticed, but it is definitely appreciated!

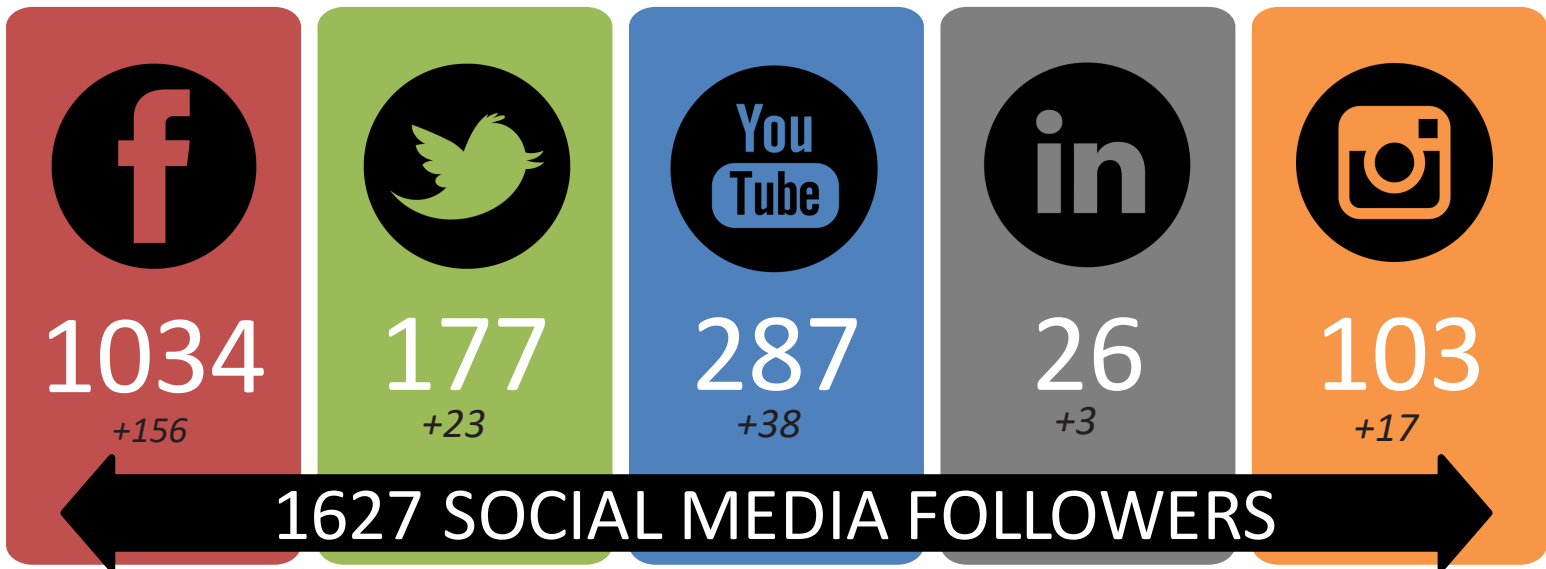
#TCKudos is our morale and recognition program. Since its inception, 63 kudos have been awarded, recognizing above-and-beyond efforts by customers, colleagues, and coworkers!

This is the 9th annual report designed and produced by Warren County Telecommunications' Allison Lyons, focusing on an illustrative, informative, magazine-style layout.

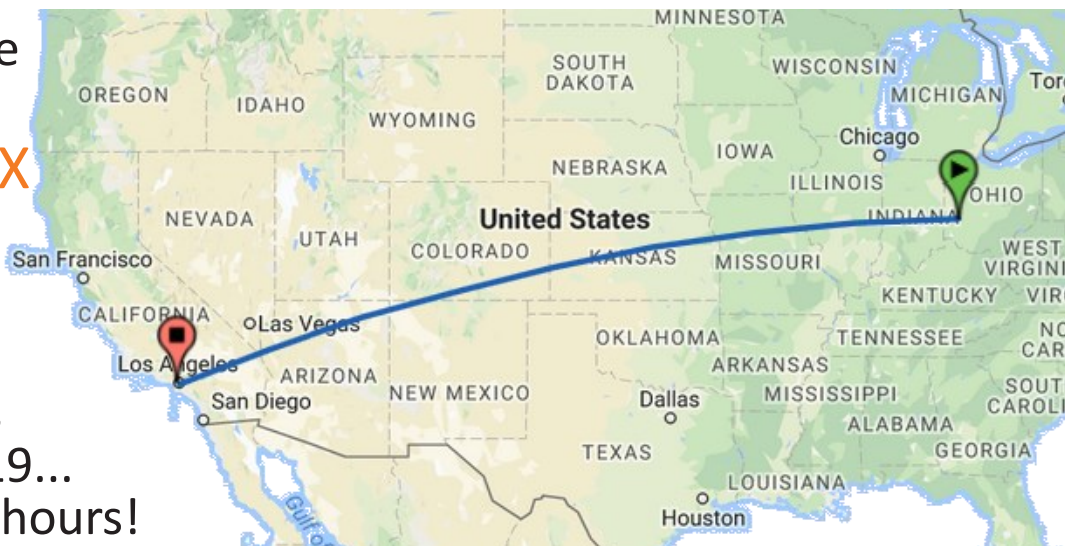


12 Issues of  **TELECOMatters**
our monthly newsletter of things that matter. all things Telecom.

19 Technical Bulletins covering Electronic Patient Care Reporting updates, Mass Casualty talkgroups, Backup Tones, Dispatcher procedures, and more.



You would have to take **170 direct flights** between CVG + LAX to watch the **38,671 minutes** of Telecom Videos our YouTube viewers watched in 2019... that's 645 hours!



Office
MO

