Cupertino ARES/RACES
Year-End Review

December 5, 2019
Jim Oberhofer KN6PE

Topics for tonight

The top 8 changes/updates for CARES and Citizens Corps operations…

8. PSPS: Our New Normal

7. City ARK changes

6. Packet Operations Update

5. Field Comm Ops Update

4. Mike-Mike Reporting

3. Comm 469 Updates

2. Type IV Credentialing

1. Enhanced ARK Communications

#8

PSPS: OUR NEW NORMAL

#8 PSPS: Our New Normal

- Wildland fires have become common in Northern CA over the last several years.

- Years of drought have contributed to huge areas of forest land being littered with dying or dead trees.

- Weather patterns are changing and show larger seasonal swings than those to which we have been accustomed.

- The area within PG&E's service area considered by CA to be at high risk of wildfire has grown from 15% in 2012 to more than 50% today.

Its all about the winds, …
#8 PSPS: Our New Normal

- PSPS Triggers: NWS Red flag Warning, sustained winds, low humidity, dry fuel condition, on-the-ground observations.

- The top four wind gusts by County recorded for the Oct. 9 PSPS were:
  - 77 mph: Top wind gust, Sonoma County, 10-Oct 4:05 a.m.
  - 75 mph: Top wind gust, Contra Costa County, 10-Oct 3:20 a.m.
  - 61 mph: Top wind gust, Tehama County, 10-Oct 6:27 a.m.
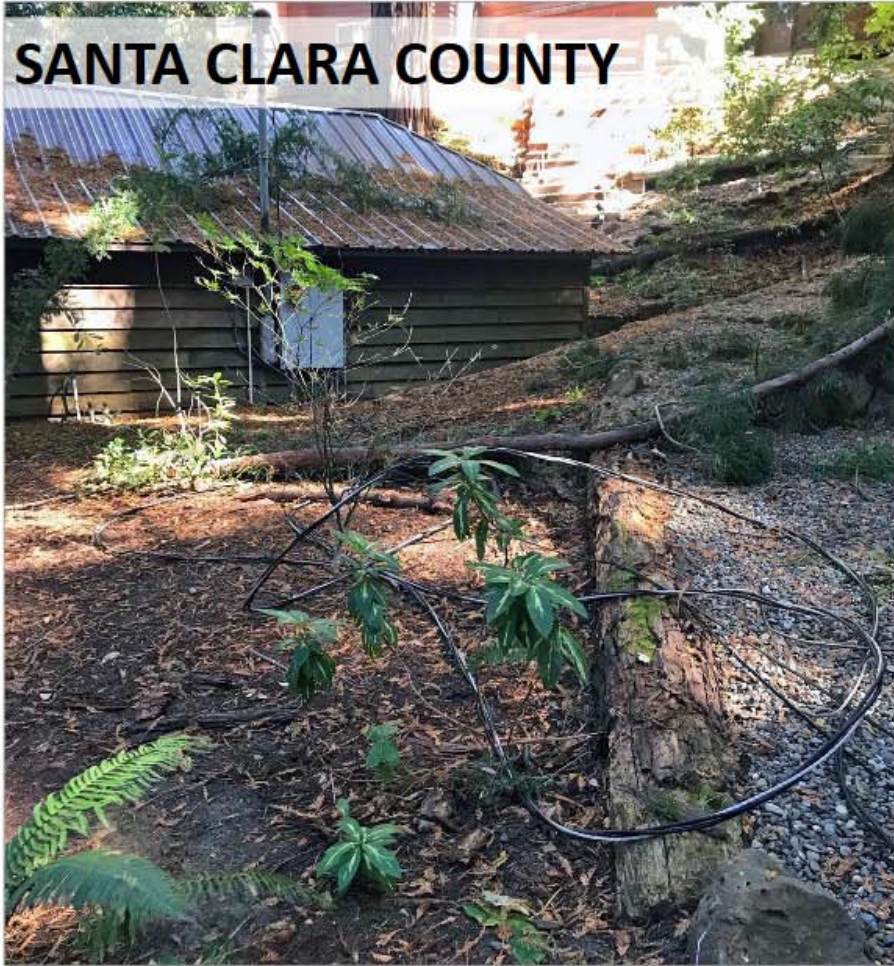 - 61 mph: Top wind gust, Tulare County, 9-Oct 3:10 p.m.

Ref: https://www.pgecurrents.com/2019/11/15/damage-and-hazards-found-after-safety-shutoff-show-potential-wildfires-were-averted/
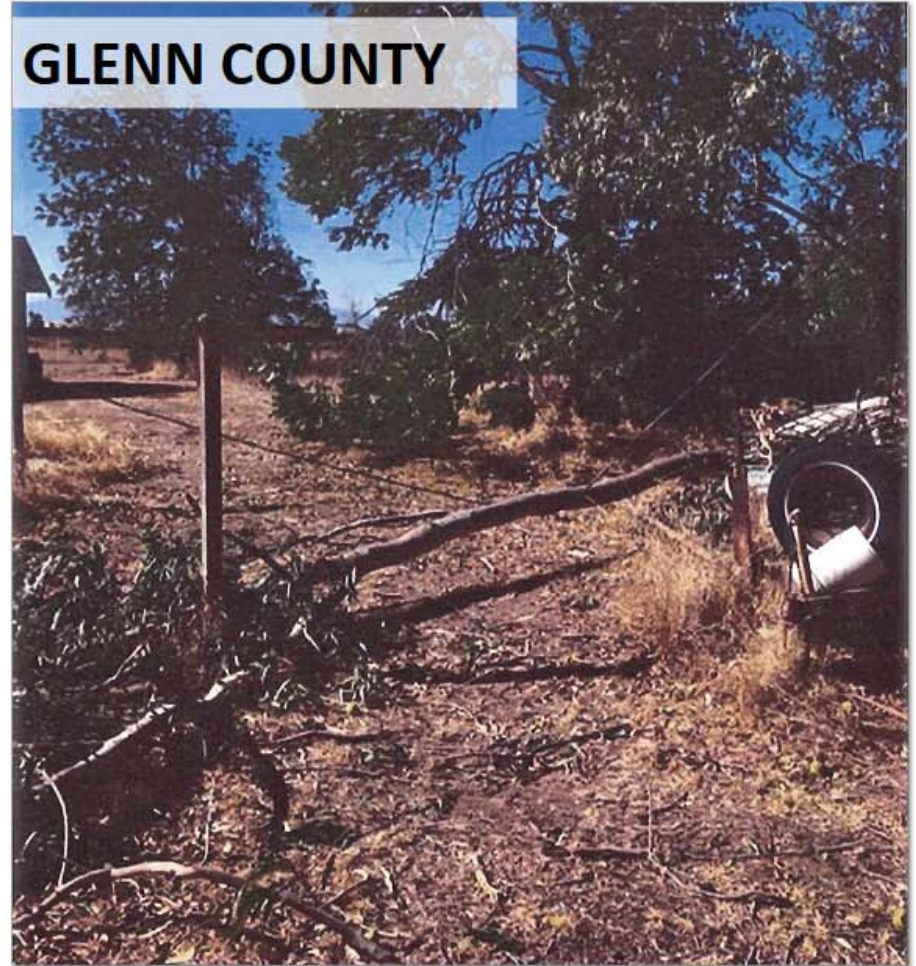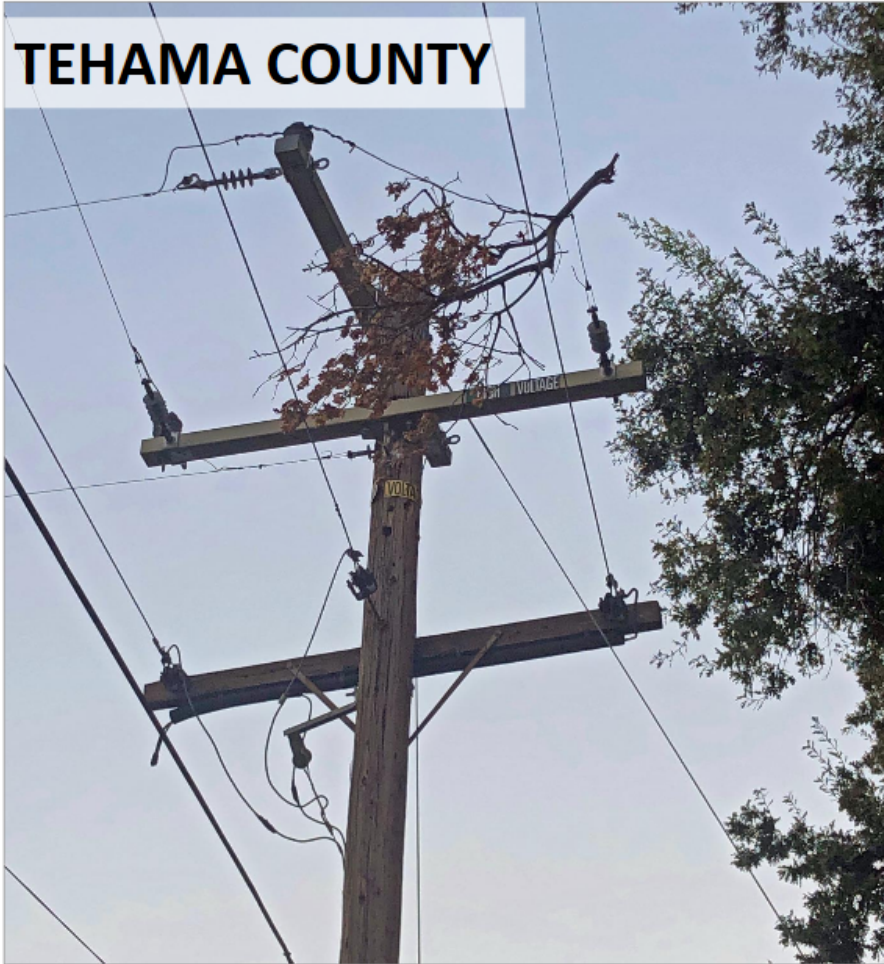
DAMAGE/HAZARD INCIDENTS

SANTA CLARA COUNTY

GLENN COUNTY

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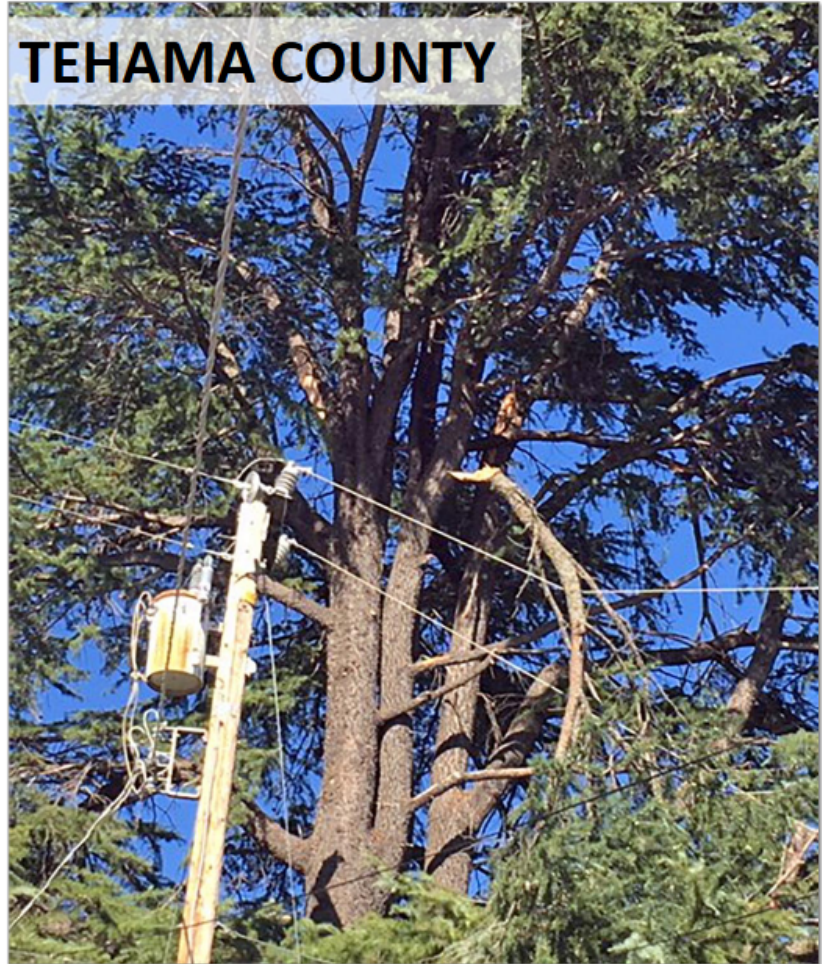

TEHAMA COUNTY

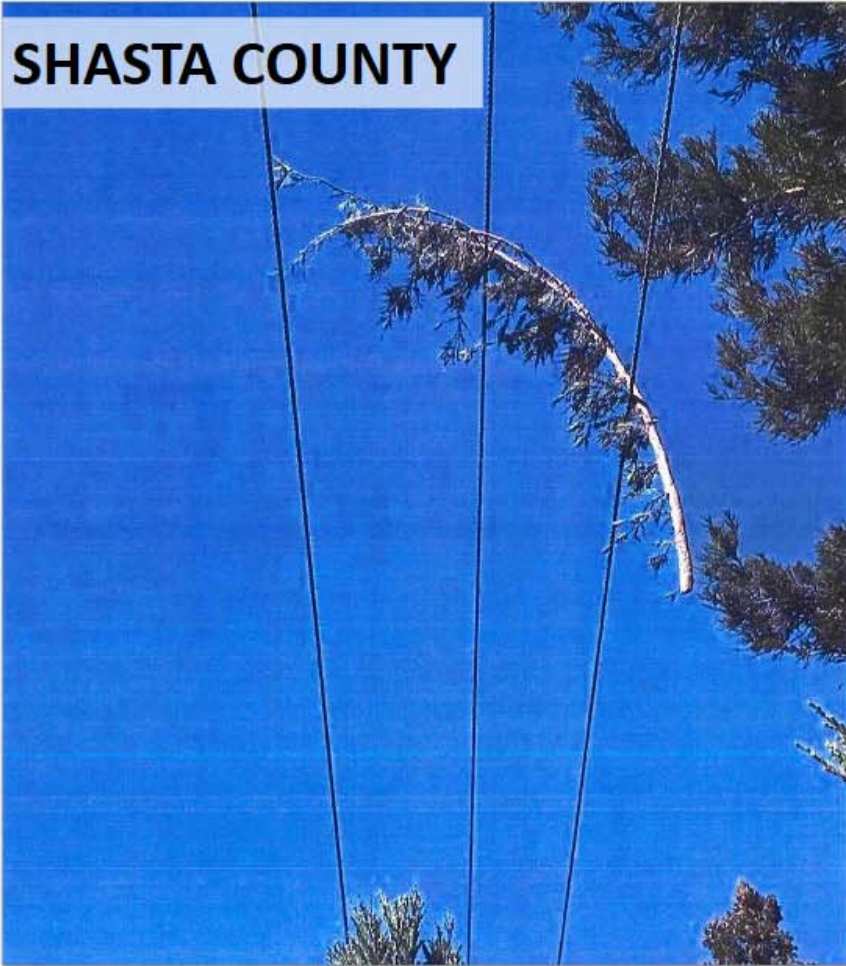

TEHAMA COUNTY

DAMAGE/HAZARD INCIDENTS

SHASTA COUNTY

NAPA COUNTY

Cupertino ARES/RACES
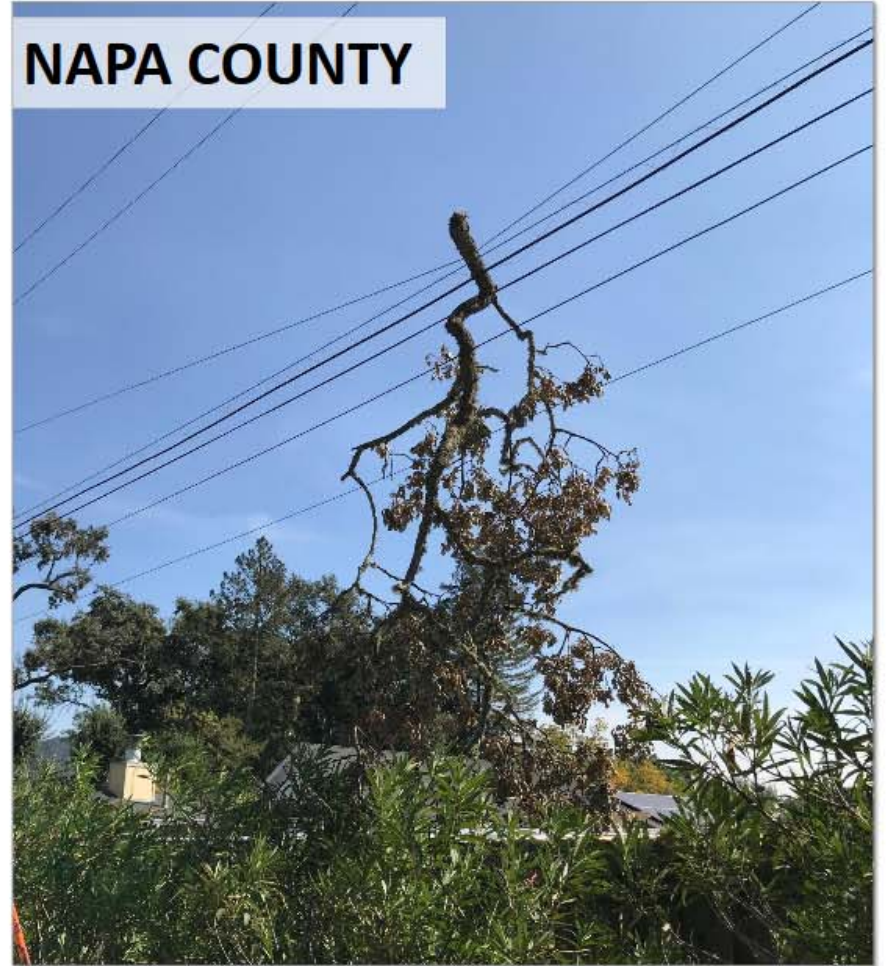
DAMAGE/HAZARD INCIDENTS

COLUSA COUNTY

LAKE COUNTY

DAMAGE/HAZARD INCIDENTS

SHASTA COUNTY

TEHAMA COUNTY

Cupertino ARES/RACES
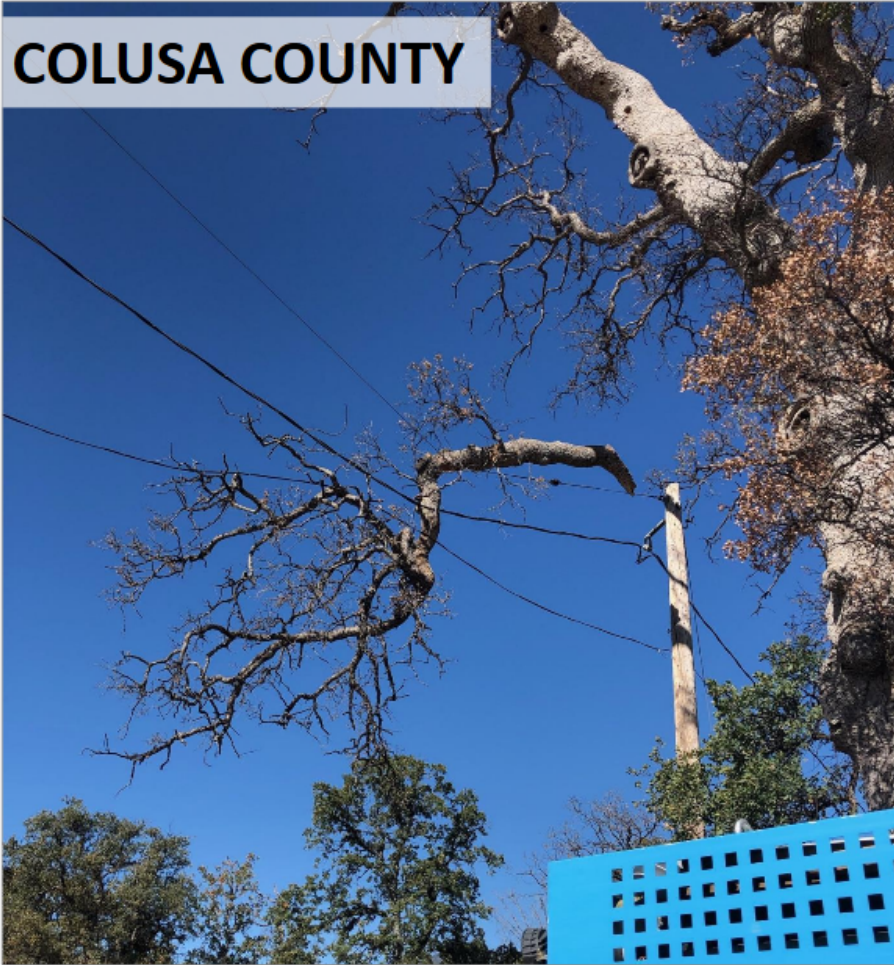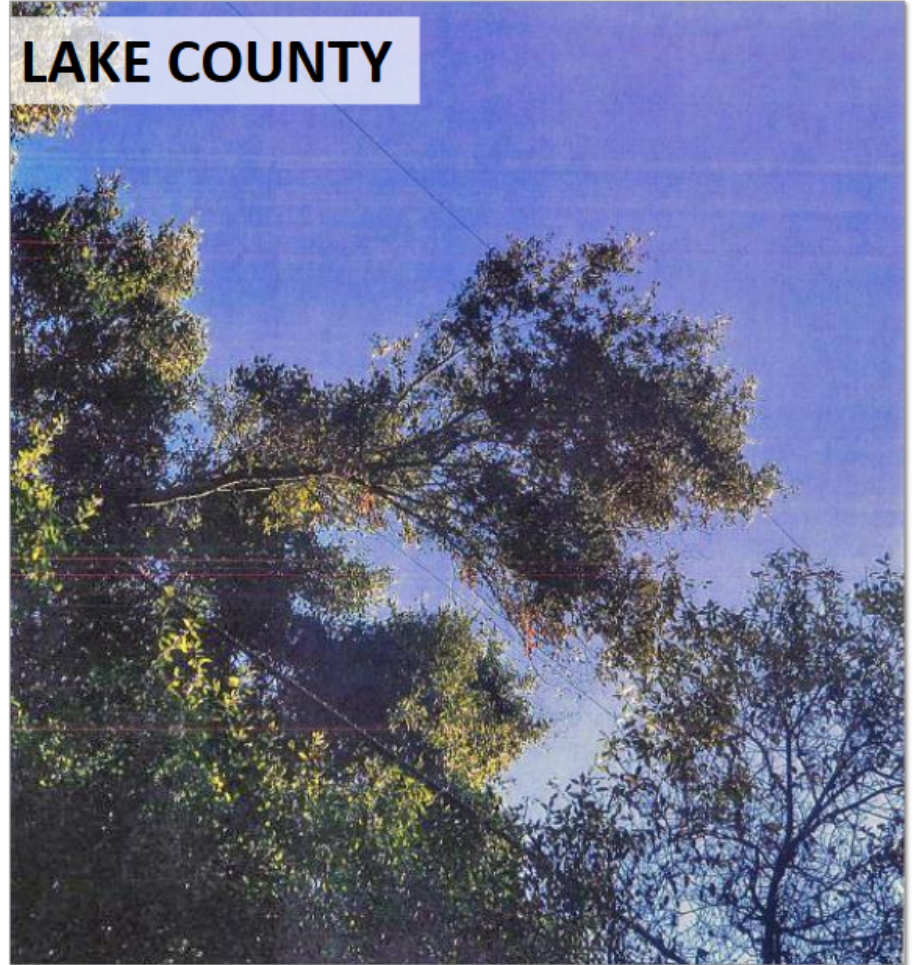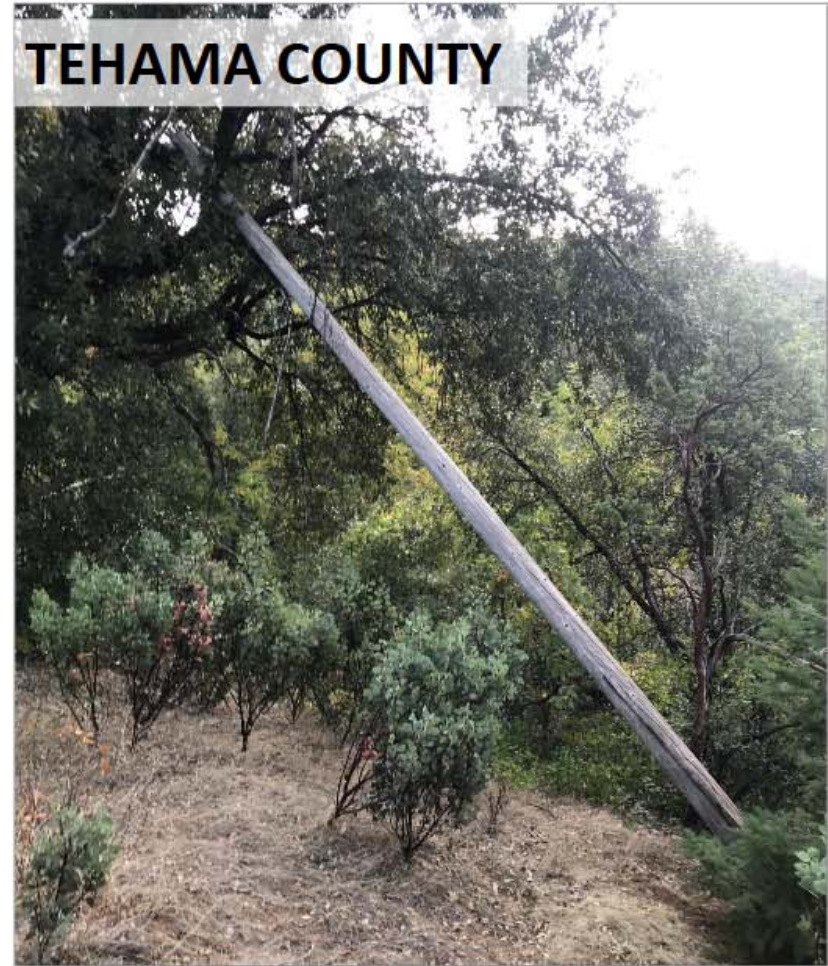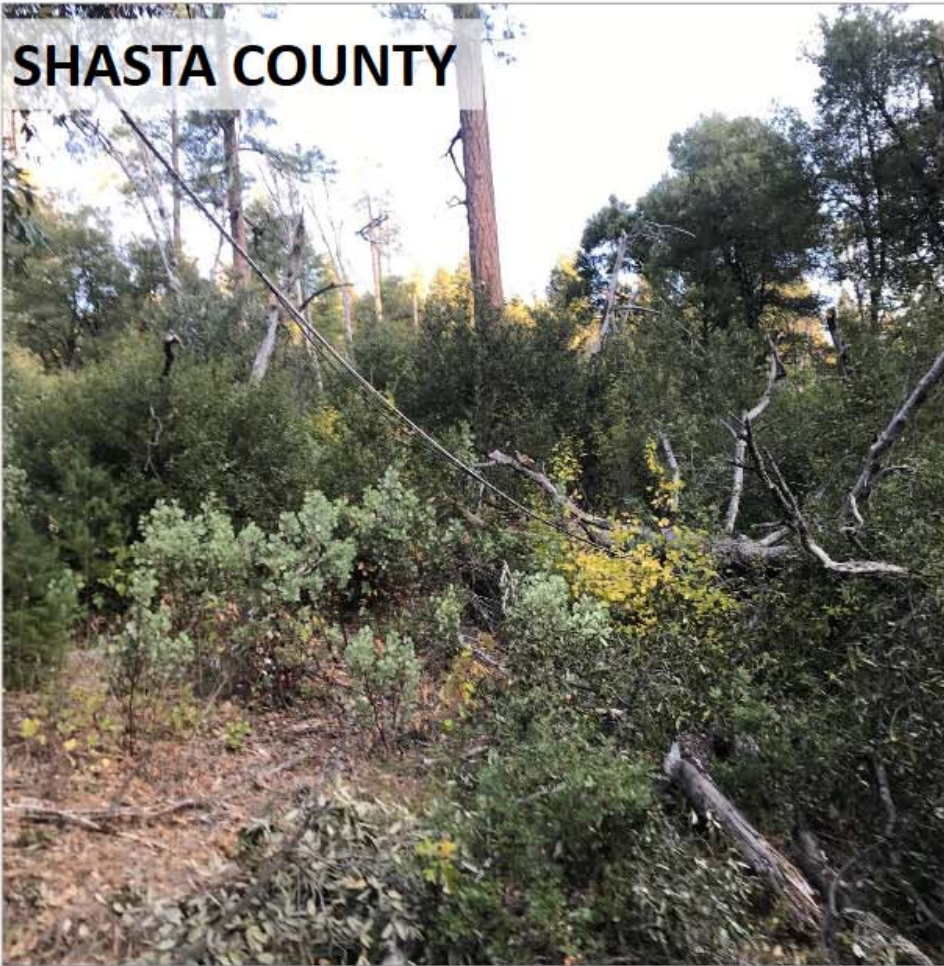
DAMAGE/HAZARD INCIDENTS

SANTA CRUZ COUNTY
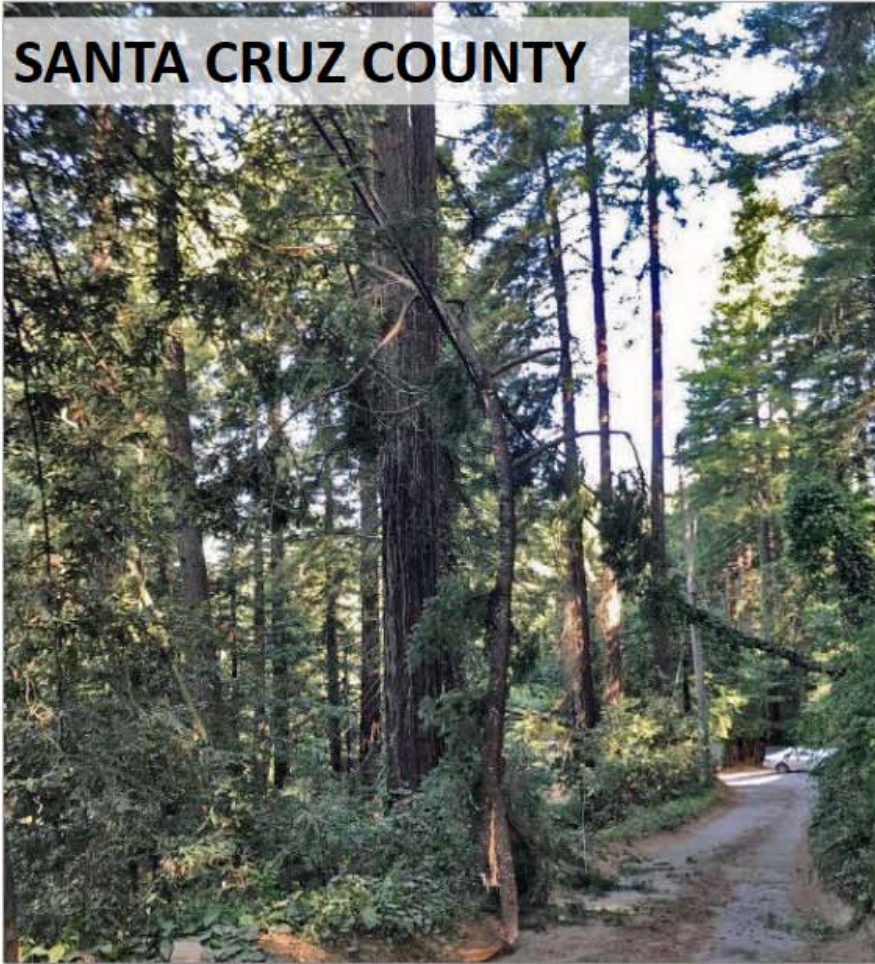
SANTA CRUZ COUNTY

Only the first of many
#8. PSPS: Our New Normal

1. The October 8th & 26th 2019 PSPS events are likely to be the first of many to affect Northern California over the next 10 years, Cupertino included.

2. We will have other PSPS events, just as sure as there will be an earthquake in our future.

Check out the 2 After Action Reports…
www.cupertinoares.org > Exercises & Events > Activations

#7
CITY ARKS

What's new

1. Updated *ARK Activation Handbook*

2. Re-aligned ARK activation levels with the City and County standard

3. Medical Center ARK (Bubb Road) is decommissioned… and gone

4. Hyde ARK moved to Creekside Park

5. Seven Springs ARK moved to Regnart School

Updated Handbook
#7 City ARKs

Updated content

Cupertino ARK Activation Handbook

Cupertino Citizen Corps

December 2019

Activation Levels – Old
#7 City ARKs

	Old Levels
Zone Reporting - Responders start zone report collection; attempt to contact the DOC to pass local status and for instructions to proceed with Level 2 or an ICP, or shut down.	1
Zone Reporting with Communications - Responders have established communications with the DOC, continue to collect incident reports, and provide summary reports to the City.	2
ICP Activation with DOC approval. Responders sign in volunteers, continue collecting incident reports, develop an action plan, and organize teams for the local zone response.	3

Activation Levels – New
#7 City ARKs

	New Levels
Zone Reporting - Responders start zone report collection; attempt to contact the DOC to pass local status and for instructions to proceed with Level 2 or an ICP, or shut down.	3
Zone Reporting with Communications - Responders have established communications with the DOC, continue to collect incident reports, and provide summary reports to the City.	2
ICP Activation with DOC approval. Responders sign in volunteers, continue collecting incident reports, develop an action plan, and organize teams for the local zone response.	1

Creekside Park ARK (CUPCSA)
#7 City ARKs

- New container!
- Content moved from Hyde ARK

PARK HERE

Regnart School ARK (CUPRSA)
#7 City ARKs

Cupertino ARES/RACES

#6
PACKET OPERATIONS

What's new
#6 Packet Operations

1. New SCCo RACES Installer v145C released

2. PackItForms replaces PacFORMS

3. Updated *Amateur Packet Radio Field Reference*

4. Updated Cupertino tactical calls

5. Added Alt911 setup, operations information

Cupertino ARES/RACES

PackItForms replaces PacFORMS

#6 Packet Operations

CARES Year-end Review

County Use of PackItForms
#6 Packet Operations

- Santa Clara County PackItForms contains these public forms
  1. *XSC ICS-213 Message* Form adapted for Santa Clara County to transmit msgs.
  2. *XSC EOC-213RR Resource Request* Form – Requests specific resources needed to support an emergency.
  3. *XSC Op Area Municipal Status* Form – Reports city emergency situation status to county OES.
  4. *XSC Op Area Shelter Status* Form – Reports information and status on shelters opened in the cities to county OES.
  5. *XSC Allied Health Facility Status* – Reports information and status of private Skilled Nursing facilities to SCC Public Health Department.

  NEW!

- The SCC Installer program automatically installs these packet forms with Outpost.

NOTE!!!
These forms are ONLY for use between the City and the County,
not within Cupertino!!!

Cupertino ARES/RACES

Updated Handbook
#6 Packet Operations

**Amateur Packet Radio
Field Reference**

Cupertino ARES/RACES

December 2019

Updated Cupertino tactical calls
#6 Packet Operations

Updates to…

- City facilities
- ARKs
- Parks
- Public Safety
- Shelters

Cupertino OES
CUPCCC	Citizen Corps
CUPDOC	Citizens Corps DOC
CUPDPW	DPW/Service Center
CUPEOC	EOC
CUPMRC	Med Reserve Corps
CUPOPS	Field Ops

ARKs
CUPMVA	Monta Vista ARK (Z1)
CUPRSA	Regnart Sch ARK (Z2)
CUPGGA	Garden Gate ARK (Z3)
CUPLSA	Lawson Sch ARK (Z4)
CUPDZA	DeAnza ARK (Z5)
CUPCSA	Creekside ARK (Z6)
CUPMRA	Montebello Ridge ARK
CUPSCA	Stevens Canyon ARK

City Parks & Rec
CUPBBF	Blackberry Farm
CUPCSP	Creekside Park
CUPJOL	Jollyman Park
CUPMEM	Memorial Park
CUPPOR	Portal Park
CUPWIL	Wilson Park
CUPLVP	Linda Vista Park

CUPQLN	Quinlan Center
CUPSEN	Senior Center

Public Safety
XSCSWS	County Sheriff's Station, West Side
XSCF71	Cupertino Fire
XSCF72	Seven Springs Fire
XSCF77	Monta Vista Fire

Local Services
CUPSAN	Cup Sanitary District
CUPWVS	West Valley Community Services
SJWEOC	San Jose Water

Shelters
CUPSH1	Shelter 1
CUPSH2	Shelter 2
CUPSH3	Shelter 3
CUPSH4	Shelter 4

Ad-hoc Addresses
CUP001 through
CUP009

Alt911
#6 Packet Operations

Adds the following to the Packet Handbook:

- Process

- Addressing

- Asking the right questions

- Packet Settings

Our next steps:

1. Complete the Alt911 deployment to County Comm
2. Test Alt911 revisions as part of a 2020 exercise
3. Have in place by August 2020 to accommodate the next PSPS event
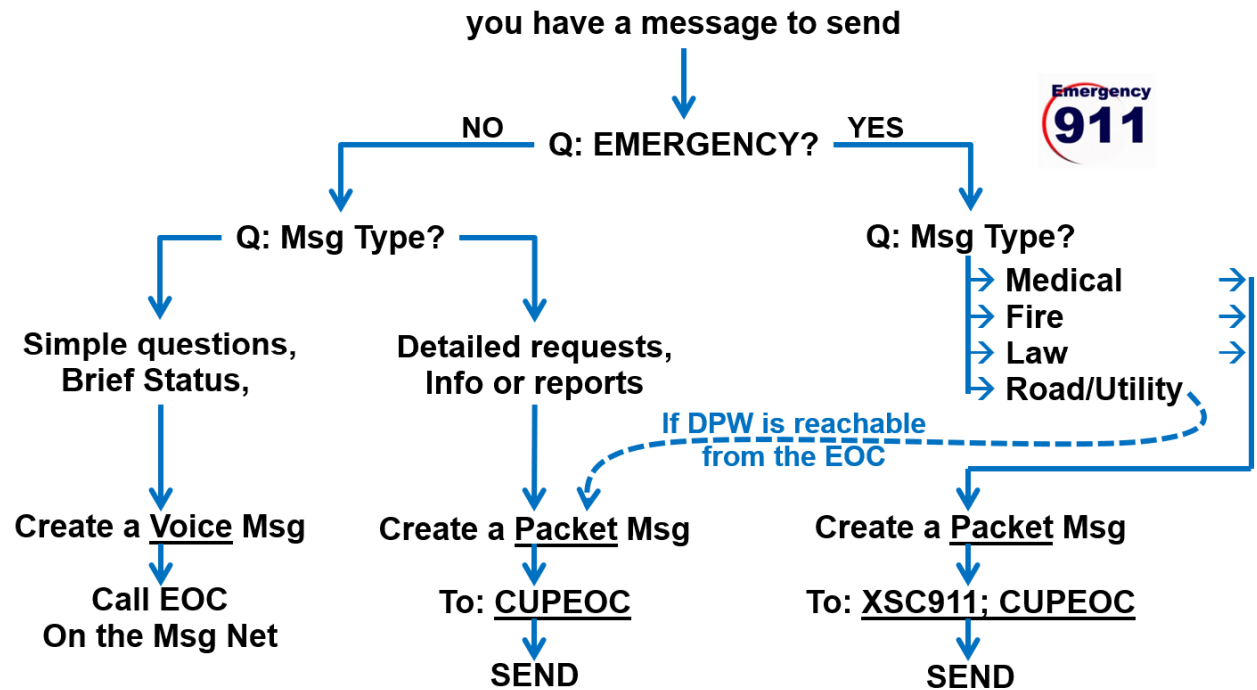
#5

FIELD COMMUNICATIONS OPERATIONS

What's new
#5 Field Comm Ops

1. Updated *Field Communications Operations Handbook*

2. More on-air exchange examples

3. More forms and details

4. Updated Modified Mercalli Intensity (MMI) Scale; aligns with USGS

Updated Handbook
#5 Field Comm Ops

Field Communications Operations Handbook

Cupertino ARES/RACES

December 2019

#4
MIKE-MIKE REPORTING

CARES Year-end Review

Mike-Mike Reporting

Situation

1. CARES needs to better determine the extent of an earthquake right up front.

2. County RACES has been using the Modified Mercalli Intensity (MMI) scale to pass *Mike-Mike* Reports.

3. While subjective and dependent on your location, the number of reports will provide a more averaged view of the impact.

4. We will then use this to trigger the appropriate response.

MM triggers

#4 Mike-Mike Reporting

When do I get on the net?

IV… Your call

V… Yes; may trigger a PSA

VI… Yes; will trigger a PSA; may trigger a field assignment

VII… Yes; will trigger a PSA and field assignments

I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved or overturned. Dishes, glassware, knickknacks, and books fall off shelves. Weak plaster, adobe buildings, and some poorly built masonry buildings cracked. Damage slight. Trees and bushes shake visibly.
VII	Very Strong	Negligible damage in buildings of good design and construction. Slight to moderate in well-built ordinary structures. Considerable damage in poorly built or badly designed structures. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices, unbraced parapets and porches. Some cracks in better masonry buildings. Waves on ponds.
VIII	Severe	Steering of cars affected. Extensive damage to unreinforced masonry buildings, including partial collapse. Fall of some masonry walls. Twisting, falling of chimneys and monuments. Wood-frame houses moved on foundations if not bolted; loose partition walls thrown out. Tree branches broken.
IX	Violent	General panic. Damage to masonry buildings ranges from collapse to

Cupertino ARES/RACES

MM Reporting: what it sounds like
#4 Mike-Mike Reporting

Incorporate into the emergency net check-ins; would sound like this:

NCS: *… all stations, Check in with your Grid location, Mike-Mike Report and availability for a field assignment. Stations with suffix Alpha through Juliet, go now.*

KV6BC: *KV6BC, <u>Oscar 19</u>, <u>Mike-Mike 6</u>, <u>available</u>. KV6BC.*

#3
COMM 469 NETWORKING

CARES Year-end Review
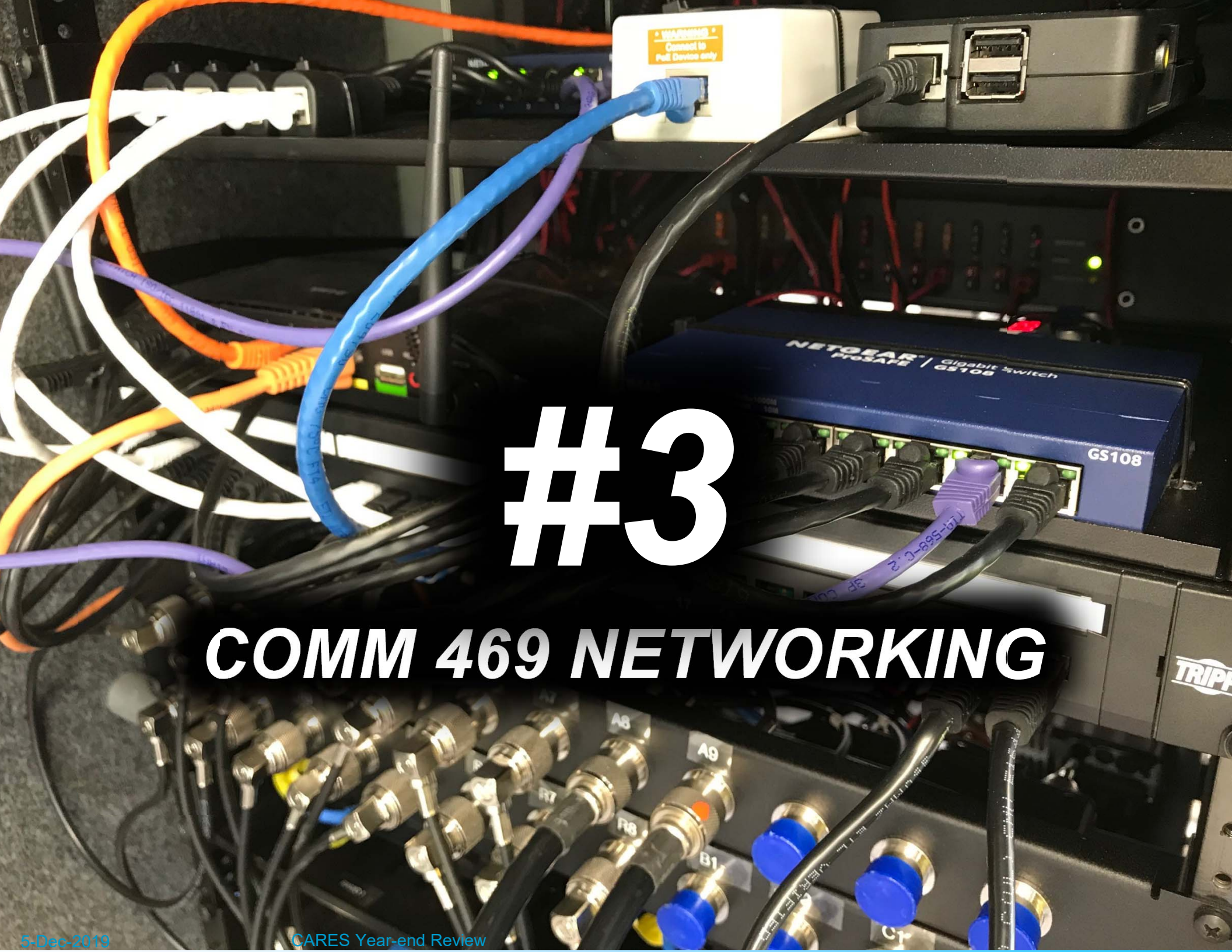
What's New
#3 Comm 469 Networking

1. Build-out of computer workstations

2. Internet connectivity

3. Walk-up printing

Computer Workstations

#3 Comm 469 Networking

1. Three of the four operating positions now have computer workstations in place, for use as:

   - Situation Status

   - WebEOC support

   - Packet Radio

   - Internet lookup, mapping

   - On-line forms, documentation access

   - Future application expansion
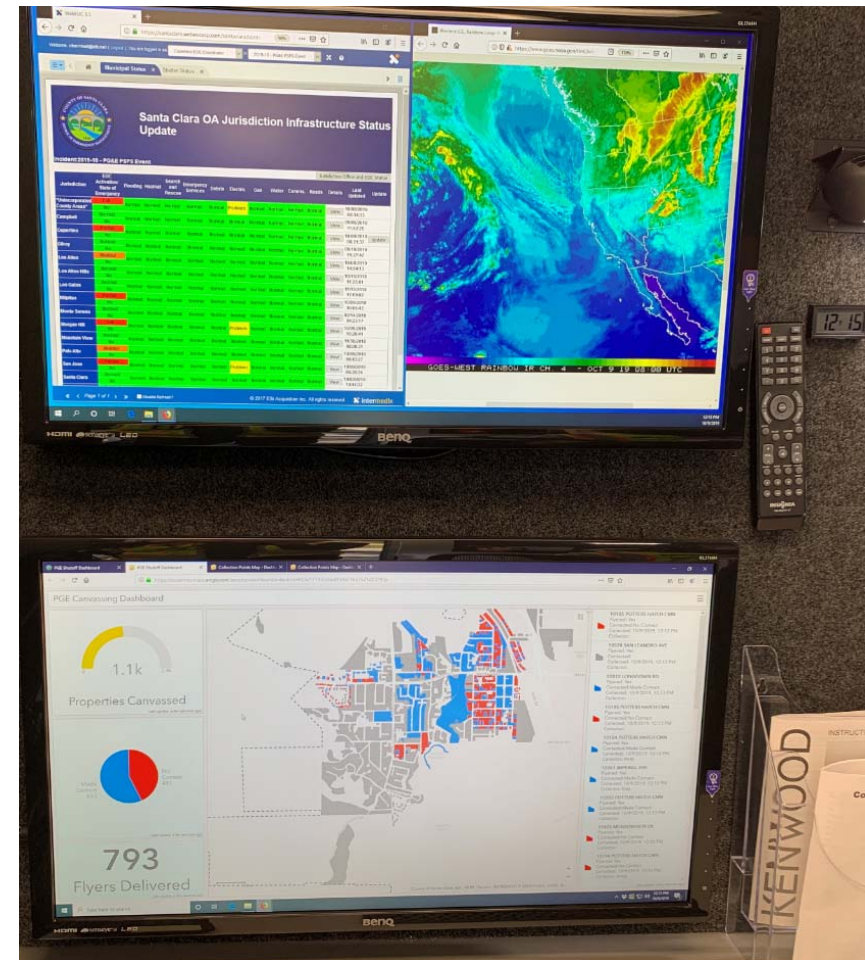
Internet connectivity

#3 Comm 469 Networking

1. Added a 4G LTE Wireless Modem

2. Provides internet access through the wireless cell network

3. Puts the Comm 469 computers and other network users on the internet

Cupertino ARES/RACES

CARES Year-end Review
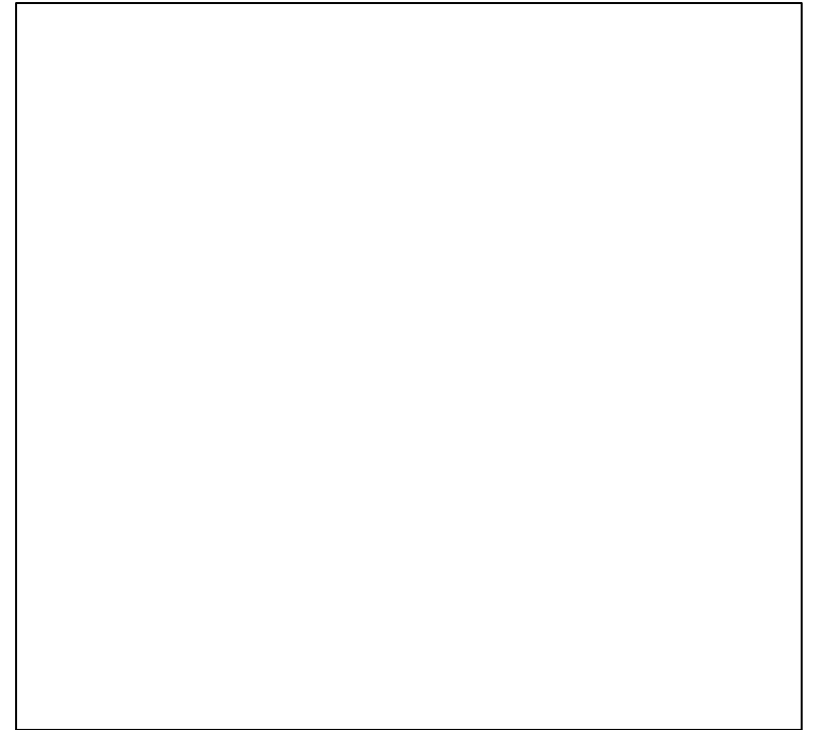
Walk-up printing
#3 Comm 469 Networking

1. The *VanNet* printer is accessible by any network connected device (computers, tablets, and smartphones) that can connect to the network.

   - From your device, navigate to your WiFi setup, search for, and select Comm469. When prompted, enter the Passcode… ********

   - Verify you are connected to *VanNet*.

   - Print from your PC, iPhone, Android, or tablet

   - Printer: Brother Compact Laser Printer

#2
TYPE 4 CREDENTIALING

Credential Requirements

Administrative
Work/live/active in Santa Clara County; respond to primary jur...
18 years of age or older
Valid Technician class or higher Amateur Radio license
Valid California driver's license or State-issued ID card
Reliable transportation for assignments
Has read "SCCo ARES/RACES Credentialing Program Handbook"
Has read "SCCo ARES/RACES Perf. Stds. & Best Practices"
Registered with primary jurisdiction as Disaster Service Worker

Training
Santa Clara County ARES/RACES Training
Int... Emergency Communications
Fun... Emergency Communications (or equivalent)
Emergency Management Training
ICS-100 / IS-100: Intro to ICS
ICS-200 / IS-200: ICS... Single Resources
ICS-700 / IS-700: Intro to NIMS
SEMS / IS-... Intro to SEMS

Equipment
All items in SCCo standard 2-hour Carry Kit
All items in SCCo standard 12-hour Go Kit

Knowledge
Demonstrate personal radio familiarity per Creden...

Experience (or equivalent, as determin...
At least eight weekly SPECS o...
At least two quarter...

What's new

#2 Type IV Credentialing

1. County MAC Program changes

2. What is Type IV Operator?

3. Getting to Type IV

4. Type IV and CARES

Cupertino ARES/RACES

What is a Type IV Operator
#2 Type IV Credentialing

- A Type IV credential level indicates basic operating capabilities. It is not role specific.

- The Type IV operator has the basic skills, standard equipment, and a moderate amount of experience, all of which enables him/her to operate safely in an assignment, perhaps with coaching.

- Typical assignments include basic information gathering and status reporting or supporting a more experienced operator.

Comparison of Capabilities
#2 Type IV Credentialing

	Type V	Type IV	Type III	Type II
Equipped for up to 12 Hr shift	Unknown	Yes	Eval	Eval
Respond anywhere in jurisdiction	Unknown	Yes	Eval	Eval
Basic Net Usage Procedures	Unknown	Yes	Eval	Eval
Simple Damage/status reports	Unknown	Yes	Eval	Eval
Handle low traffic levels	Unknown	Yes	Eval	Eval
3rd Party Traffic	Unknown	Unknown	Eval	Eval
Low-to-medium traffic levels	Unknown	Unknown	Eval	Eval
Manage problems	Unknown	Unknown	Eval	Eval
Equipped w/ mobile radio, ant	Unknown	Unknown	Unknown	Eval
Two Nets, Cross band	Unknown	Unknown	Unknown	Eval
Medium-to-high traffic levels	Unknown	Unknown	Unknown	Eval

Getting to Type IV
#2 Type IV Credentialing

Meet a set of well-defined requirements:

1. Administrative
2. Training
3. Equipment
4. Knowledge
5. Experience
6. Performance
7. On-going participation

Local jurisdictions may have additional requirements and make the Type IV Credential a part of their overall requirements.

SCCo RACES Credential Record   **Type IV Communicator**

Name: _____ Call Sign: _____ Jurisdiction: _____

All activities must be performed according to the Performance Standards. For specifics of each of these requirements, consult the Credentialing Program Handbook. Instructions are on the next page.

Radio Officer			Credential Requirements (completed within the last two years)
Date	Call Sign	Initials	
			Administrative
			Work/live/active in Santa Clara County; respond to primary jurisdiction
			18 years of age or older
			Valid Technician class or higher Amateur Radio license
			Valid California driver's license or State-issued ID card
			Reliable transportation for assignments
			Has read "SCCo ARES/RACES Credentialing Program Handbook"
			Has read "SCCo ARES/RACES Perf. Stds. & Best Practices"
			Registered with primary jurisdiction as Disaster Service Worker
			Training
			Santa Clara County ARES/RACES Training
			Intro to Emergency Communications (or equivalent)
			Fundamentals of Emergency Communications*
			Emergency Management Training*
			ICS-100 / IS-100: Intro to ICS
			ICS-200 / IS-200: ICS for Single Resources
			ICS-700 / IS-700: Intro to NIMS
			SEMS G606: Intro to SEMS
			Equipment
			All items in SCCo standard 2-hour Carry Kit
			All items in SCCo standard 12-hour Go Kit
			Knowledge
			Demonstrate personal radio familiarity per Credential handbook
			Experience (or equivalent, as determined by local jurisdiction RO)
			At least eight weekly SPECS or SVECS and city net check-ins
			At least two quarterly drills
			At least one approved functional or full-scale exercise
			At least one approved public service event or real emergency incident
			Performance
			Functioned effectively & professionally with served agency
			Has maturity and experience to perform according to "SCCo ARES/RACES Performance Standards and Best Practices"
			Ongoing Participation
			Agree to minimum training and participation requirements

Radio Officer:

I have reviewed the requirements in the Credentialing Program Handbook for each of the above items and have verified that the candidate has fully completed each requirement as described in the handbook.

_____   _____   _____   _____
Print Name of Radio Officer   Signature of Radio Officer   Call Sign   Date

1. Administrative
#2 Type IV Credentialing

Radio Officer			Credential Requirements
Date	Call Sign	Initials	
			Administrative
			Work/live in Santa Clara County; respond to primary jurisdiction
			18 years of age or older
			Valid Technician class or higher Amateur Radio license
			Valid California driver's license or State-issued ID card
			Reliable transportation for assignments
			Has read "SCCo ARES/RACES Credentialing Program Handbook"
			Has read "SCCo ARES/RACES Perf. Stds. & Best Practices"
			Registered with primary jurisdiction as Disaster Service Worker

Cupertino ARES/RACES

2. Training
#2 Type IV Credentialing

Radio Officer			Credential Requirements
Date	Call Sign	Initials	
			Training
			Santa Clara County ARES/RACES Training
			Intro to Emergency Communications (or equivalent)
			Fundamentals of Emergency Communications
			Emergency Management Training
			ICS-100 / IS-100: Intro to ICS
			ICS-200 / IS-200: ICS for Single Resources
			ICS-700 / IS-700: Intro to NIMS
			SEMS G606: Intro to SEMS

Cupertino ARES/RACES

3, 4. Equipment, Knowledge
#2 Type IV Credentialing

Radio Officer			Credential Requirements
Date	Call Sign	Initials	
			Equipment
			2-hour Carry Kit
			12-hour Go Kit
			Knowledge
			Demonstrate personal radio familiarity per Credential handbook

Personal Radio Familiarity

Configure radio to perform each of the following unaided:

1. Simplex without tone
2. Simplex with tone and tone squelch
3. Repeater with offset and CTCSS tone
4. Save configurations to and recall from memory
5. Lock keypad or mic controls, if so equipped
6. Full/factory reset (clear all settings) [explain only; demonstration not required]

5. Experience
#2 Type IV Credentialing

Radio Officer			Credential Requirements
Date	Call Sign	Initials	
			Experience (or equivalent, as determined by local jurisdiction RO)
			At least eight weekly SPECS or SVECS and city net check-ins
			At least two quarterly drills
			At least one approved functional or full-scale exercise
			At least one approved public service event or real emergency incident

Experience
We have a lot of leeway here on what drills and exercises will count.

6, 7. Performance, Participation
#2 Type IV Credentialing

Radio Officer			Credential Requirements
Date	Call Sign	Initials	
			Performance
			Functioned effectively & professionally with served agency
			Has maturity and experience to perform according to "SCCo ARES/RACES Performance Standards and Best Practices"
			Ongoing Participation
			Agree to minimum training and participation requirements

Why are we doing this?
#2 Type IV Credentialing

1. Credentialing is becoming more prevalent in Emergency Management, especially where mutual aid may be used.

2. The State of California has a credentialing program for EOC positions at local, Op Area, and State levels.

3. Jurisdictions and served agencies are increasingly aware of credentialing and are expecting to build credentialed teams.

4. Cupertino OES is no exception.

5. County Fire will be expecting a level of credentialing given us operating in their Fire Stations.

SCCo RACES Endorsement Record　　　　**County Fire Station Radio Operator**

Name: _____　Call Sign: _____　Jurisdiction: _____

All activities must be performed according to the Performance Standards. For specifics of each of these requirements, consult the Credentialing Program Handbook.

Program Manager			Endorsement Requirements
Date	Call Sign	Initials	
			Credentials
			SCCo RACES Type III Field Operator (F3)
			SCCo RACES Type III Packet Operator (P3)
			Administrative
			LiveScan and background check by SCCo Sheriff (OR SCCo RACES Mutual Aid Communicator endorsement)
			Recommendation from local jurisdiction Radio Officer
			Training
			County Fire Training
			ACES County Fire Station Operations
			Experience
			Min 1: approved drill/exercise, public service or incident

Cupertino ARES/RACES

How do we get there?
#2 Type IV Credentialing

1. If you are a MAC, you are automatically a Type IV and a MAC, and have a year to complete the SEMS G606 class (on-line).

2. New Members: Type IV is an expectation for membership

Here's the Challenge…

1. Existing Members: It is likely that many CARES members already qualify or are very close. Complete the Type IV requirements within 1 year.

#1
ENHANCED ARK COMMUNICATIONS

Why are we looking at GMRS?
#1 Enhanced ARK Comms

The Situation

- Cupertino ARKs have a need to communicate not only between ARK sites and the EOC, but throughout their respective ARK zone.

- Amateur Radio is the method the City uses for <u>ARK-to-EOC</u> comms.

- FRS (Family Radio Service) radio is the method for <u>intra-ARK communications</u> because of its license-free operation.

- However, it is <u>not effective for wide areas</u> greater than a few city blocks given the suburban environment within a typical zone.

- While Amateur Radio has been used in zone assessment exercises, this is not practical during a real activation due to <u>competing demands for CARES resources</u>.

Why are we looking at GMRS?
#1 Enhanced ARK Comms

The Background

The General Mobile Radio Service (GMRS) is an FCC licensed land-mobile FM UHF radio service (462 MHz and 467 MHz) designed for short-distance two-way communication. Key GMRS features are:

1. requires an FCC issued license, no test, 10-year term, $70.

2. allows for external antennas that increase range.

3. transmit at up to 50 watts on the 16 main channels.

4. supports the use of repeaters.

5. individual license extends to immediate family.

6. can communicate with FRS users on 22 shared frequencies; some power limits apply.

FRS vs GMRS
#1 Enhanced ARK Comms

Comparing FRS and GMRS

	FRS	GMRS
FCC Rules	Part 95 Subpart B	Part 95, Subpart E
License	By rule	Issued, 10 year term, $70, no test
Frequencies	22 FRS channels	30 GMRS channels
Radios	HTs	HTs, Mobiles
Antennas	Fixed antenna	External antennas
Power	Up to 2.0 watts	Up to 50 watts
Repeaters	No	Yes

Frequencies
#1 Enh ARK Comms

1. Thinking in terms of frequencies…

Freq (MHz)	FRS CH	FRS PWR	FRS BWTH	GMRS PWR	GMRS BWTH
462.5500	15	2 W	12.5 kHz	50 W	20 kHz
462.5625	1	2 W	12.5 kHz	5 W	20 kHz
462.5750	16	2 W	12.5 kHz	50 W	20 kHz
462.5875	2	2 W	12.5 kHz	5 W	20 kHz
462.6000	17	2 W	12.5 kHz	50 W	20 kHz
462.6125	3	2 W	12.5 kHz	5 W	20 kHz
462.6250	18	2 W	12.5 kHz	50 W	20 kHz
462.6375	4	2 W	12.5 kHz	5 W	20 kHz
462.6500	19	2 W	12.5 kHz	50 W	20 kHz
462.6625	5	2 W	12.5 kHz	5 W	20 kHz
462.6750	20	2 W	12.5 kHz	50 W	20 kHz
462.6875	6	2 W	12.5 kHz	5 W	20 kHz
462.7000	21	2 W	12.5 kHz	50 W	20 kHz
462.7125	7	2 W	12.5 kHz	5 W	20 kHz
462.7250	22	2 W	12.5 kHz	50 W	20 kHz
467.5500	N/A	N/A	N/A	50 W	20 kHz
467.5675	8	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.5750	N/A	N/A	N/A	50 W	20 kHz
467.5875	9	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.6000	N/A	N/A	N/A	50 W	20 kHz
467.6125	10	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.6250	N/A	N/A	N/A	50 W	20 kHz
467.6375	11	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.6500	N/A	N/A	N/A	50 W	20 kHz
467.6625	12	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.6750	N/A	N/A	N/A	50 W	20 kHz
467.6875	13	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.7000	N/A	N/A	N/A	50 W	20 kHz
467.7125	14	0.5 W	12.5 kHz	0.5 W	12.5 kHz
467.7250	N/A	N/A	N/A	50 W	20 kHz

Frequencies
#1 Enh ARK Comms

1. Thinking in terms of channels…

2. GMRS Repeater Pairs with 5 MHz offset

3. While GMRS radios seem to follow the FRS channel line-up, always do a radio-check between radio types to be sure!

Freq (MHz)	FRS CH	FRS PWR	FRS BWTH	GMRS PWR	GMRS BWTH	NOTES
462.5625	1	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.5875	2	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.6125	3	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.6375	4	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.6625	5	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.6875	6	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
462.7125	7	2 W	12.5 kHz	5 W	20 kHz	Shared Simplex
467.5675	8	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.5875	9	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.6125	10	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.6375	11	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.6625	12	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.6875	13	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
467.7125	14	0.5 W	12.5 kHz	0.5 W	12.5 kHz	Shared Simplex
462.5500	15	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.5750	16	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.6000	17	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.6250	18	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.6500	19	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.6750	20	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.7000	21	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
462.7250	22	2 W	12.5 kHz	50 W	20 kHz	Shared + GMRS repeater output
467.5500	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.5750	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.6000	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.6250	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.6500	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.6750	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.7000	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input
467.7250	N/A	N/A	N/A	50 W	20 kHz	GMRS repeater input

Cupertino ARES/RACES

And now, the rules
#1 Enhanced ARK Comms

Part 95, Subpart E

§95.1705   Individual licenses required; eligibility; who may operate; cooperative use.

- A <u>valid individual license is required</u> to operate a GMRS station.
- (c)(3) Any individual who holds an individual license <u>may allow anyone</u> to operate his or her GMRS station if necessary <u>to communicate an emergency message</u>.

§95.1731   Permissible GMRS uses.

- The operator of a GMRS station may use that station for two-way plain language voice <u>communications with other GMRS stations</u> and with FRS units concerning personal or business activities.

§95.1751   GMRS station identification.

- (a) The <u>GMRS station call sign must be transmitted</u>:
  - (1) Following a single transmission or a series of transmissions; and,
  - (2) After 15 minutes and at least once every 15 minutes thereafter during a series of transmissions lasting more than 15 minutes.

How has a GMRS license? – UPDATED 9-Dec-2019
#1 Enhanced ARK Comms

Name	GMRS Call	Amateur Call
Al Boleda	WQKV994	-n/c-
Bob Cascone	WQZF436	N6IM
Michael Chang	WRER791	KI6ETU
Lloyd Dickman	WRES218	AF6XM
Doug Frieson	WQMY568	KJ6LLY
Walt Gyer	WRCW310	K6WGY
Judy Halchin	WQXU319	KK6EWQ
Steve Hill	WRCY584	KK6FPI
Mark Laubach	WRCQ964	K6FJC
Al Miller	WRDZ336	K6AB
Jim Oberhofer	WQVI706	KN6PE
Paul Petach	WQJS401	KI6QXV
John Trollman	WRCX904	K6HVJ
Matt Yost	WQXG480	K6FYR

Cupertino ARES/RACES

Why are we looking at GMRS?
#1 Enhanced ARK Comms

The Goal

Work to make CERT more communications self-sufficient with tighter integration into the broader City response.

The Plan

With higher antennas placed at the ARKs connected to a GMRS mobile radio, it is possible that an ARK could communicate with its field teams equipped with FRS. For this solution to work, the following is proposed:

1. Equip each ARK with a GMRS radio system – mobile radio, external antenna, power supply – capable of transmitting at least 5 watts.

2. Recruit CERT members (at least 2 per ARK) who apply for a GMRS radio license.

3. Upgrade City FRS radios to newer models that can output 2 watts.

4. Develop a more structured communications training for CERT.

GMRS radio pack
#1 Enhanced ARK Comms

Why are we looking at GMRS?
#1 Enhanced ARK Comms

The Test…

Test 1. Basic GMRS coverage test, DeAnza ARK. 6-July-2019.
   Five field teams deployed. Mobile GMRS radios with elevated antennas provided good coverage, way beyond the boundary of the DeAnza ARK zone. Some terrain fade observed.

Test 2. GMRS & City FRS, Creekside ARK. Aug 3, 2019. Tested with City FRS radios.
   Established a base station operating at 5 watts, mag-mount on the ARK roof, with city FRS radios in the field. Overall, coverage throughout ARK Zone 6 had plenty of L&C (Loud and Clear) reports with the City FRS radios.

Test 3. GMRS & City FRS, Monta Vista. Aug 17, 2019.
   Similar to test 2 except with more hilly terrain, high-gain Mast antenna. Coverage confirmed at several low spots (Blue Pheasant Restaurant, Blackberry Farm, Stevens Dam lower parking lot). In a few cases, only the 2.0w HTs (not 0.5w) could be heard by NCS.

Test 4. GMRS in Comm 469.
   Tested mobile to mobile GMRS coverage. Good coverage at 5 watts with external mobile antenna to all Allied Health facilities, CuSD, and ARK locations; no real coverage with FRS/GMRS fixed antenna HTs.

Cupertino ARES/RACES

The Test at Creekside ARK
#1 Enhanced ARK Comms

What to help?
#1 Enhanced ARK Comms

1. First, we are not moving away from Amateur Radio.

2. To develop a level of competency with CERT at the ARKs, we need folks willing to provide some coaching.

3. Get familiar with GMRS. Whereas the City is funding a "mobile and mag mount" at each ARK, we will need field responders who could lead CERT with some "*on-the-job-training*" if necessary.

4. Get your GMRS License. You could act as a "control operator" (not a GMRS term) and jump-start CERT as a GMRS Net Control operator.

5. We have terrific tools in our Radios. Help get CERT excited with something similar that they can own.

Thank you
Any Questions?