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## 2017 Year End Summary, Update, Preview



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Revised: 06-Dec-2017

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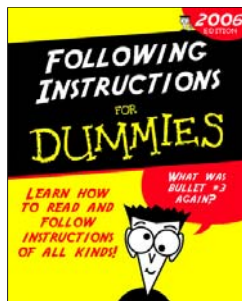
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### Housekeeping

- Introductions
- Pen/pencil & paper
- Cell phones on silent or vibrate
- Side conversations
- Questions
- Refreshments
- Breaks
- Restrooms
- In case of emergency



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**Agenda**

- Net Control
- Message Passing
- Shadowing
- Repeater Linking Delays
- Packet Networking
- SCCo Data Network – The Next Phase
- District Emergency Coordinator – Year End Report
- High Power Performance Award



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**Net Control**  
2017 Year End Summary, Update



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Mark Laubach, K6FJC  
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**Agenda**

- Update on California AB 1222 (aka AB 1785, Section 23123.5(f) CVC) and our mobile ham radio use
- Updates to Resource Net mobilization and de-mobilization resource tracking
- Course-correcting for better net communications efficiency:
  - How to be a better Net participant
  - How to be a better NCO

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### Update on California AB 1222 (reference material for post class study)

- Signed into law on 27 Sep 2017
  - Slightly amended, taking away the "specialized mobile radio..." association.
  - Press release <http://www.no1pc.org/handsfree/20170927-AB1222-SIGNED.pdf>
    - Intent stated: for phones, not for "trained or licensed professionals, such as utility workers, from using their mounted and [wired] two-way radios for brief communications with one another or dispatch. .... These devices do not possess the myriad distractions of cellular phones."
- The published Legislative analysis, which although not issued by the Attorney General's office as legal interpretation, does spell out the intent of the law - prohibit hand-held cellular call and text application.
  - [Analysis 1](#)
- A CHP enforcement memo, which comes not from the administrative side of things, but field operations, clarifying for their LEOs what should or should not be enforceable: don't bother with stops for mike use.
  - <http://www.no1pc.org/handsfree/CHPEnforcementMemo.pdf>

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### AB 1222 Impact on Hams

- Since the last net control class, things are slightly better.
  - AB 1222 is still not stated crystal clear, and will likely not be improved in any near future.
  - Interpretation is still up to local jurisdictions.
- Opinions / interpretations are that:
  - Holding the active device (e.g. a handheld) by hand (still looks like a phone) is a violation.
  - Hand-held affixed to the vehicle with a speaker-mike is most likely OK.
  - Mounted mobile rig, using a wired hand microphone is most likely OK.
- Carrying a copy of the CHP memo in your vehicle is prudent.
- Visit Jim Aspinwall's (NO1PC) site for the most current summary and discussion:
  - <http://www.no1pc.org/handsfree/>

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### Impact on Resource Net Level 3 H&W

- Before 2017, NCO would call out individual calls signs expecting an immediate response from the individual.
- Because of our state government, the 2017 NCO 3B course taught a new method: when NCO is ready for H&W they will make an announcement, and then you are to respond when you determine it is safe to do so.
  - Requires driving to a location where you can safely stop and make your H&W check-in.
- Since then, the law has been further clarified to the point where it seems to be ok (we're not lawyers) if you use a wired microphone attached to a mounted radio.
  - You still determine if it is safe and legal to respond while driving.
- NOTE: This likely will create a communications pile-up.

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### Updates to Resource Net Travel Tracking

- Mobilization
  - Unchanged.
  - Will continue to use as is.
- Demobilization
  - Optional.
  - If you decide to use the net, check-in and continue to use until you reach your destination, and then check-out.
  - If you are not going to use the net, simply don't use it.
    - Avoid "check-in, check-out".

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### How to be a Better Net Participant

- Observations and feedback, many comments of nets running slowly
  - Most often Resource Net Level 3 Travel Tracking during Mobilization
    - "Can't check-in", "can't check-out"
- After review (including recordings), root causes include the following:
  - Some participants are not coming to the event prepared
    - Thoroughly read and follow any instructions for an event, including anything sent in email before or provided at the event -> prepare your mind.
    - Equipment: make sure it is programmed and all works before arriving.
      - Note: still be able to program your radio in any weather situation or time of day.
    - Show up on time: anticipate lead time for parking, staging, and start of briefings.
  - Net Control's instructions are not being followed, creating repetition
    - If asking for reports, communicate just what was asked for, nothing more or less.
    - Reminder: if assigned a Tactical Call sign, your transmission is generally always:
      - "This is <Tactical Call> <message> <FCC Call Sign>"
  - The first second of a transmission is missing
    - With linked repeaters, press PTT and **THEN WAIT AT LEAST A FULL SECOND** before speaking!
    - Yaesu users: **TURN OFF WIRES** before transmitting anything!

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### How to be a Better Net Control

- The NCO sets the tone, pace, and efficiency of the Net
  - Be clear on any instructions to participants.
  - Be concise and terse, say no more, say no less, stick to net business.
  - Follow scripts and procedures.
  - Try to avoid repeating large portions of assignment instructions.
  - Leave sufficient pauses between messages
    - Need to allow for other participants to transmit as well as allow for emergency or priority traffic interruption.
- If the net has become inefficient, expect:
  - Some corrective suggestions and coaching (from supervisor, scribe, etc.).
  - A shift change, if other personnel are available.
  - A two-way debrief after the shift or event is over.
- All of us: important to course correct an inefficient net into a more efficient net: prepare and practice outside the classroom!

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## Message Passing

### 2017 Year End Review, Update



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## Message Passing Fundamentals

The building blocks of the message passing process

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### Follow the NTS Manual (plus SCCo changes)

- Most of what we will cover comes from the ARRL NTS manual
  - Chapter 2 – Sending Messages on Voice
  - Print it out; keep it in your go kit; refer to it often
- A (very) few NTS procedures don't fit RACES situation where the message author and recipient are not radio operators
  - Example: "X" for end of sentence
- Santa Clara County RACES additions and/or exceptions adjust for our environment (FM simplex or repeaters) and fill in missing procedures
  - Punctuation, symbols, GPS coords, ...

CHAPTER 2 - SENDING MESSAGES ON VOICE

Table of contents (Double-Click PDF icon PDF page number in column 1 of Row 1)

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2.27 MESSAGE FORMATS	2
2.28 MESSAGE TYPES	2
2.29 MESSAGE FORMATS	2
2.30 MESSAGE TYPES	2
2.31 MESSAGE FORMATS	2
2.32 MESSAGE TYPES	2
2.33 MESSAGE FORMATS	2
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2.35 MESSAGE FORMATS	2
2.36 MESSAGE TYPES	2
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2.38 MESSAGE TYPES	2
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### Symbols

The NTS manual does not cover how to voice many symbols. SCCo RACES will adopt the following standard:

- “/” is spoken “slash”
  - Example: “... and/or ...” is spoken “... mixed group alpha november delta SLASH oscar romeo ...”
- “+” is spoken “plus”
  - Example: “... +1-408-867-5309 ...” is spoken “... telephone figures PLUS one <pause> four zero eight <pause> eight six seven <pause> five three zero niner ...”
- “-” depends on the context
  - “-” is spoken “minus” as part of a number
    - Example: “... -123 ...” is spoken “... figures MINUS one two three ...”
  - “-” is spoken “dash” when used as a dash
    - Example: “... w2xsc-1 ...” is spoken “... mixed group whiskey two x-ray sierra charlie DASH one ...”

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### Symbols (cont.)

Reminder, voicing of “.” is context dependent:

- In a number, “.” is spoken “decimal”
  - Example: “... 146.475 ...”
  - Spoken: “... figures one four six DECIMAL four seven five ...”
- In an email, packet, or internet address, “.” is spoken “dot”
  - Example: “... joe@host.com ...”
  - Spoken: “... email address juliet oscar echo atsign hotel oscar sierra tango DOT charlie oscar mike ...”
- At the end of a sentence, “.” is spoken “period”
  - Example: “... Bring food. ...”
  - Spoken: “... bring food PERIOD ...”

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### Message Passing Prowords

Prowords are special words used to facilitate message passing by voice. They are NOT written into the message.

- Prowords can be grouped into three categories, depending on how they are used:
  - **Operational/Control Prowords**
    - Define the start, end, or control the flow of the message
  - **Clarification Prowords**
    - Always spoken after a group
    - Clarifies or emphasizes what was just said
  - **Introductory Prowords**
    - Always spoken before a group
    - Alerts receiving operator to what is coming next
- It is important to use each of them in the right place to avoid confusing the recipient and slowing down the message transfer

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### Intro Proword: Figure(s)

- Identifies one or more numerals to follow
- Voice each digit separately
- A “.” is voiced “DECIMAL”
- A preceding “-” is voiced “MINUS”

• Examples:

- Written: Send 12 dozen jelly donuts right away
- Spoken: “Send FIGURES ONE TWO <pause> dozen jelly donuts right away”
- Written: Switch to frequency 146.115
- Spoken: “Switch to frequency FIGURES ONE FOUR SIX DECIMAL ONE ONE FIVE”

- Written: The temperature will dip to -10
- Spoken: “The temperature will dip to FIGURES MINUS ONE ZERO”

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### Intro Proword: Telephone Figures

- Identifies a telephone number to follow
- Best to include area code for clarity

• Examples:

- Written: 408-555-1212, (408) 555-1212, or 408.555.1212
- Spoken: “TELEPHONE FIGURES four zero eight<pause> five five five <pause> one two one two

- Written: +8816-408-555-1212
- Spoken: “TELEPHONE FIGURES plus eight eight one six <pause> four zero eight<pause> five five five <pause> one two one two

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### Intro Proword: GPS Coordinates

- Identifies a set of GPS coordinates to follow
- Used when a set of numbers contain one or more of the coordinate “marker” symbols:
  - ° (degrees), ‘ (minutes), “ (seconds)
  - N (north), S (south), E (east), W (west)
- Voice the “marker” symbols where they appear
  - But don’t add them, if not already part of written message.
- Include the word “AND” between the latitude and longitude parts.
- Send as a single “unit”, even if written across multiple “slots”
  - You may need to make adjustments to fit the “5 words at a time” rule
- If the numbers look like coordinates, but don’t contain any “marker” symbols, just send them as FIGURES.

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### Intro Proword: GPS Coordinates (cont.)

• Examples:

- Written: 41° 24.20', 2° 10.44'
- Spoken: "GEE-PEE-ESS COORDINATES four one DEGREES <pause> two four decimal two zero MINUTES <pause> AND <pause> two DEGREES <pause> one zero decimal four four MINUTES"
- Written: 41°24'12.2"N 2°10'26.5"E
- Spoken: "GEE-PEE-ESS COORDINATES four one DEGREES <pause> two four MINUTES <pause> one two decimal two SECONDS NORTH <pause> AND <pause> two DEGREES <pause> one zero MINUTES <pause> two six decimal five SECONDS EAST"

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### Intro Proword: GPS Coordinates (cont.)

• Examples:

- Written: 32.30 N, 122.61 W
- Spoken: "GEE-PEE-ESS COORDINATES three two decimal three zero NORTH <pause> AND <pause> one two two decimal six one WEST"
- Written: 32.30°, -122.61°
- Spoken: "GEE-PEE-ESS COORDINATES three two decimal three zero DEGREES <pause> AND <pause> minus one two two decimal six one DEGREES"

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### Problem Solving

How to handle the problems that will inevitably happen

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### Proword Is Part of the Message

- What if a proword like “figures” is part of the message?
- Answer: Use “I spell”
- Examples:
  - Written: “The latest figures are encouraging.”
  - Spoken: “The latest figures I SPELL foxtrot india golf uniform romeo echo sierra <pause> are encouraging.”
  - Written: “Itemize 4 figures for each.”
  - Spoken: “Itemize FIGURE four <pause> figures I SPELL foxtrot india golf uniform romeo echo sierra <pause> for I SPELL foxtrot oscar romeo <pause> each.”

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### Long Messages

- When you run out of room on the form when receiving a message:
  - Make it abundantly clear on page 1 that there is more than one page (“Page 1 of X”)
  - Use plain paper for subsequent page(s)
  - Number each subsequent page (“Page X of Y”)
  - All subsequent pages MUST include message number
  - Use only front of paper
    - Copying and/or scanning often misses the back of pages
  - Immediately staple or otherwise affix all pages together

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## Shadowing

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### Shadow "First 5 Minutes" Checklist

- Inspired by Scott, K6SLB, who made something for his personal use.
- A "checklist" to remind you what to cover during your initial interview with your principal.
  - Who are you? Who is your principal?
  - What you CAN and CAN'T do.
- Specific instructions from your principal.
- Reconnect plan.
- Handy "tear off" tab for your contact information.
- Available on the "Shadowing – Type III" course description page

Shadow "First 5 Minutes" Checklist

Name of Shadow	Shadowed Name	Shadowed Title
Shadowed Name	Shadowed Title	Shadowed Name

1. Introduction yourself
2. Principal Name, Title, Name of School
3. Explain role of Shadow, explain your presence
  - a. Explain your role as a shadow
  - b. Explain your role as a shadow
  - c. Explain your role as a shadow
  - d. Explain your role as a shadow
4. Explain why you are shadowing (not required, but use principal's preferred response, see
  - a. Why are you shadowing? (Required)
  - b. Why are you shadowing? (Required)
  - c. Why are you shadowing? (Required)
  - d. Why are you shadowing? (Required)
5. What are your objectives for shadowing? \_\_\_\_\_
6. Inform any specific message traffic, or particular events, that you would like to hear information about? \_\_\_\_\_
7. Reconnect plan if shadowed
8. Principal needs phone number

Other: Name, Title, Area of Charge  
 Address  
 Phone  
 Email

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### Repeater Linking Delays 2017 Year End Review, Update



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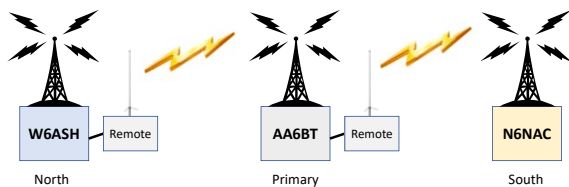
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### Repeater Delays when Linked

- Normally, the repeaters used for Resource Net are not linked
- When linked there is a delay -- **you need to allow for it**
- Max delay when sending from W6ASH to N6NAC (or reverse)



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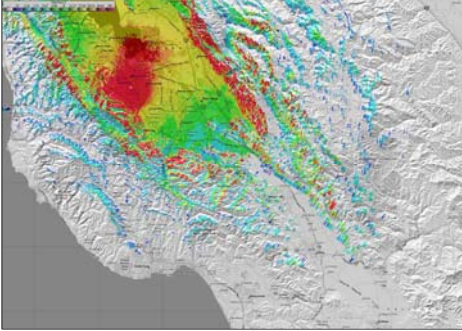
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W6ASH Coverage (Resource Net North)



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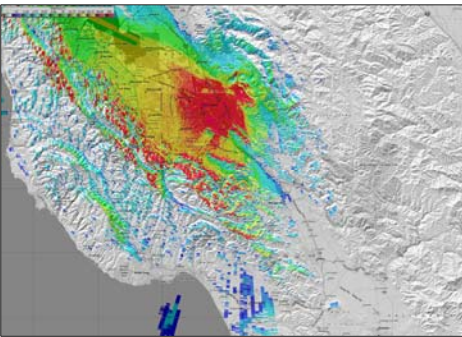
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AA6BT Coverage (Resource Net Primary)



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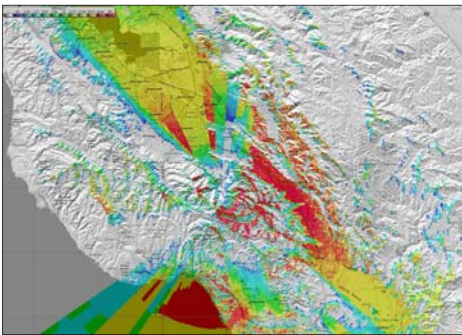
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N6NAC Coverage (Resource Net South)



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**Linked Repeater Delay Examples**

Resource Net level 1

N6NAC 

AA6BT 

W6ASH 

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**Linked Repeater Delay Examples**

Resource Net level 3

AA6BT 

N6NAC 

NC calls K6PIG, K6PIG acknowledges  
 NC puts K6PIG back in assignment que, K6PIG acknowledges

NC calls K6GA, K6GA acknowledges  
 NC to K6GA with assignment, K6GA acknowledges  
 NC gives K6GA details of assignment, K6GA copies  
 NC gives travel directions

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**Packet Networking**  
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### Outpost & PacFORMS

2017 Review, Updates

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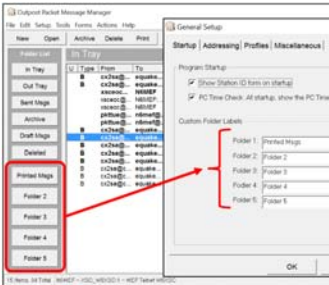
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### User Configurable Folders

- Five more folders for managing the workflow
- Customize the labels
- Supports message drag and drop

Find it...  
**Tools > General Settings**



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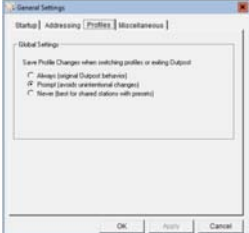
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### Profile Locking

- Controls whether configuration changes are saved to the active profile when switching profiles or existing Outpost
- “Always” is the original Outpost behavior
- “Prompt” avoids unintentional changes
  - SCCo default
- “Never” is best for EOCs

Find it here...  
**Tools > General Settings, 3rd tab**



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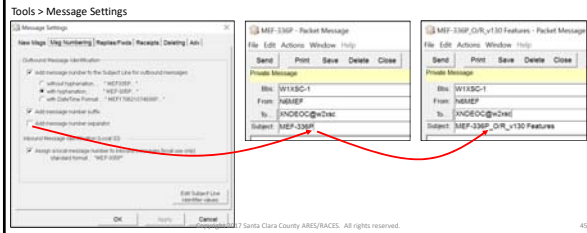
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### Configurable Message Number Separator

- Turn off “:” separator after message number in subject
- No need to back up/delete “:” before typing SCCo standard subject line separator “\_”




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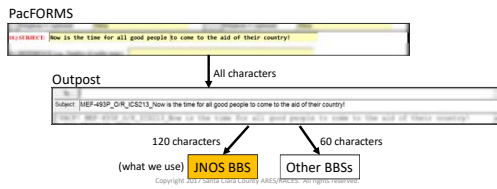
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### Longer Subject Lines for PacFORMS

- Previous version of PacFORMS limited the Subject line sent to Outpost to 50 char
- PacFORMS now sends all characters to Outpost
- Different BBSs can handle different length subjects
  - JNOS = 120 char; Other BBSs (FBB, BPQ) = 60 characters




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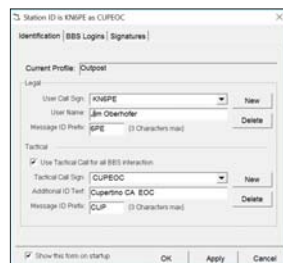
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### Station ID Changes

Creates a single location for managing information about station identifications.

1. Changes to how users and tactical calls are defined and selected.
2. Consolidates the Signature fields and controls

Find it here...  
Setup > Station ID, 1<sup>st</sup> and 3<sup>rd</sup> tab




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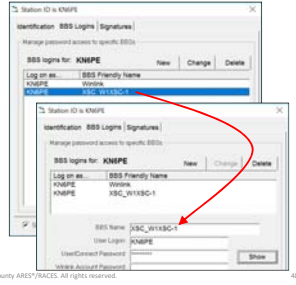
### New BBS Telnet Logon

Moves telnet logons from the TNC setup to be clearly associated with the user ID.

- This will be useful with the new high speed access options

- Adds support for Winlink Secure Login

Find it here...  
Setup > Station ID, 2<sup>nd</sup> tab



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### Updated EOC-213RR Resource Request

- OES updated again, June 2017
- New format
- New required fields rules
- Only first page is sent
- Second page is added by EOC personnel when received



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### Preview: Work Underway ...

- New OA Municipal Status form
  - Replaces City Scan
- Updated RACES Mutual Aid Resource Request, Fulfillment
- MS Edge browser support
  - Firefox is still recommended
- Several other user interface and workflow improvements ...



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## Network

2017 Review, Updates

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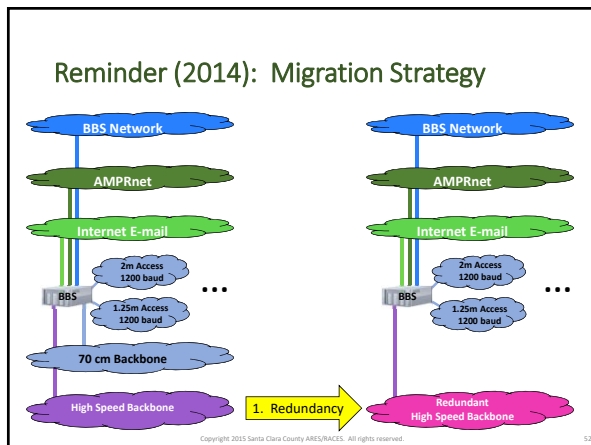
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### Reminder (2016): New Home for W3XSC

- The City of Mountain View has been a great host
  - Provided initial radios, antennas, space, power, etc.
  - But the site is too low for microwave line of sight
- New Home: Channing House, Palo Alto
  - 200 feet ASL (vs. 125' in Mountain View)
  - Clear line of sight to W1XSC, W4XSC (vs. none)
  - Multiple mounts for microwave dish/sector antennas (vs. none)
  - Generator, earthquake dampeners
  - Other backup site uses
- Schedule
  - Construction: current
  - Move target: H1-2017



Channing House: Looking SW toward San Jose

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### New Home for W3XSC

- Done
  - Design approvals
  - Power
  - Conduits
  - Roofing
  - Cable tray
  - Innerducts
  - Grounding
  - Mounting posts/braces
  - Backbone antennas
  - VHF/UHF antenna
  - Cabinet (radios, network, servers)
- Next
  - Access antennas, cabling, network gear for connecting surrounding sites



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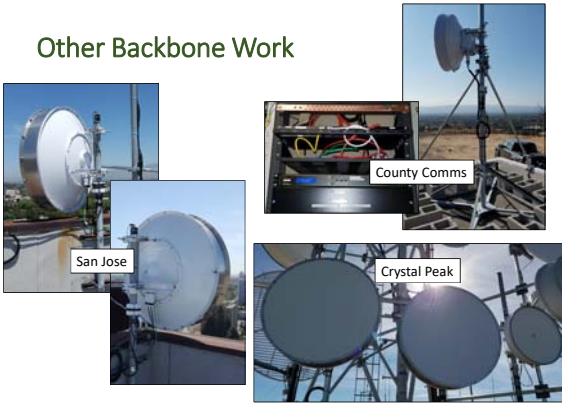
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### Other Backbone Work



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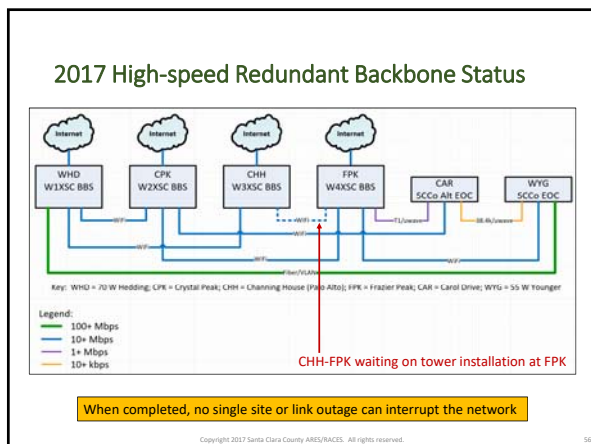
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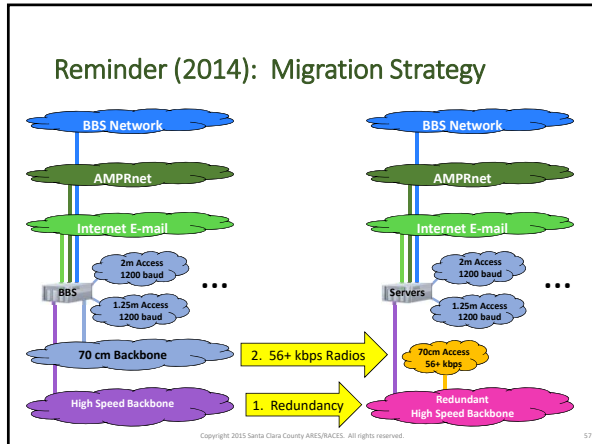
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### 56+ kbps UHF Radio Update

- No show: previously anticipated amateur data radio
- Found: commercial radio with more capabilities
  - TCP/IP Ethernet/radio bridge/router
  - Channel BWs to 50 kHz; data rates up to 128 kbps (100x)\*
  - Compression, RTS/CTS, advanced diagnostics, ...
  - Thousands deployed: commercial, government
  - Can operate in amateur radio 70 cm band
    - Turn off encryption, turn on CW ID
- Status
  - Reviewed application/specs with manufacturer; looks good!
  - Next: testing (bench, field), bids/negotiation, contract(s), ...
  - Likely H1-2018 deployment
    - Need to complete redundant backbone first

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### Mbps Access Update

- High speed (Mbps) access available
- Requires line of site to hub site
- Construction already started
  - Mounting points
  - Antennas
  - Cabling
  - Firewalls
- First subscribers anticipated in early 2018

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### Packet Networking Summary

- Outpost & PacFORMS
  - A dozen or so improvements to efficiency, effectiveness of EmComm workflow
- Network Infrastructure
  - Reliability:
    - Major enhancements to redundancy of high-speed backbone
    - No service outages for seven years!
  - Accessibility:
    - Continued county-wide connectivity to at least two backbone sites (VHF)
    - Soon: 56k+ bps packet access via telnet for most of the county
    - New: Mbps packet access via telnet in many key locations now
- What's Next?
  - Can we do more than packet with the new high speed connections?

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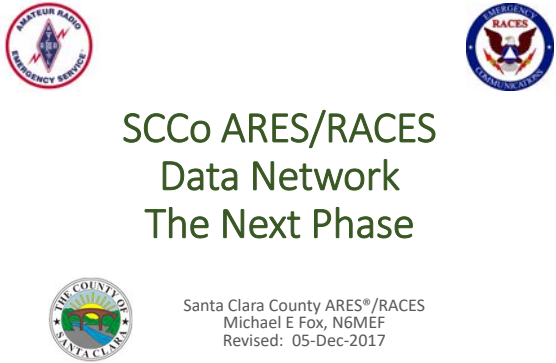
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## SCCo ARES/RACES Data Network The Next Phase

Santa Clara County ARES®/RACES  
Michael E Fox, N6MEF  
Revised: 05-Dec-2017

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### Overview

- The Santa Clara County RACES data network provides emergency communications responders with a reliable, efficient and effective digital network environment that meets the needs of our served agencies.
  - Emergency communications responders: usually amateur radio operators, but could also include CERT personnel and others
  - Primary need: message traffic
  - Reliability: No service outage in over 7 years!
- Until recently, the network provided one service: packet
  - Accessed using VHF amateur radio for maximum county-wide coverage
  - Provides plain text "e-mail" messages plus bulletins, HTML versions of county EOC and hospital forms, 2-way Internet e-mail gateway
- Recent enhancements to the network allow more services
  - The result is poised to be a major step forward in amateur radio EmComm

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## Service Offering Overview

Managing and moving information during emergencies

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## Service Strategy

- Initial services have been focused on message, status traffic
  - It's the bulk of EOC communications needs
  - Even at packet speeds, it's ~15 times faster than voice!
  - And it's about to get even faster, with even better message services!
- Future services depend on needs of served agencies and/or amateur radio operator responders
  - Potential next step: intranet, image and file transfer/sharing
  - Other services as the need arises
- Cities can use the network to develop their own services
  - Example: city-wide damage assessment forms with roll-up display in EOC

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## Packet BBS Service

- E-mail-like service with automated workflow and documentation
- Capabilities:
  - Simple, e-mail-like client
  - Plain text e-mail-like messages
  - Optimized HTML EOC forms
  - Multi-user notices/bulletins
  - Message numbering & tracking
  - Automatic acknowledgement
  - ICS-309 Comm Log generation
  - Internet e-mail gateway
    - But Internet is not required
- Optimized for low bandwidth
  - VHF/UHF radio access
- Availability:
  - RF throughout county
- Also useful at higher speeds
  - TCP/IP access



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**New for 2018**  
**Plain Text Conversion Service for Packet**  
 Let's Packet Users Read Encoded Messages

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**Reminder (2016):**  
**E-mail to Packet: Conversion to Plain Text**

- Most E-mail uses MIME (Multipurpose Internet Mail Extensions) format
  - Packet BBS doesn't understand MIME
- Most E-mail is sent as HTML; packet is plain text
  - Most e-mail senders don't know they need to set plain text mode
  - Even if they do, they may not know how to do it, or they may forget
- Some service providers automatically encode; no choice!
  - Example: Mobile phone text message > HTML > Base64 (ugh!)
- Investigate MIME conversion to plain text in mail gateway

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**It Turns Out ... It's REALLY Complicated**

Partial List of Text Message Formats

Carrier	Text Message	Resulting E-mail
Sprint	Test	Text > HTML > Base64-encoded
Verizon	Test	Plain text (subject and body)
	Test (S)(S)(S)	Quoted-printable (subject and body)
	Test (S)(S)(S)(S)	Base64-encoded (subject and body)
	Blah blah blah ... blah Test (S)(S)(S)	Blank (subject and body); file attachment

(S) = Smiley face emoji

- Each client/app is different; any of the above could change at any time
- So, we must handle just about every possible combination

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**New for 2018**  
**Standard Internet E-mail**  
 ... no Internet required!

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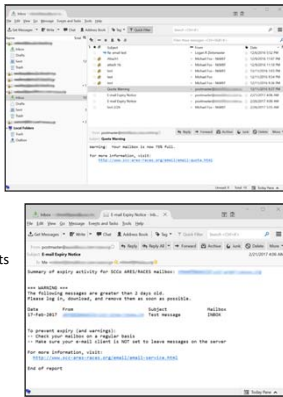
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**New**  
**E-mail Service**

- Standard e-mail service
- Capabilities:
  - Standard server software
  - Standard e-mail client software
    - Recommended: Thunderbird
  - Standard features
    - Rich text formatting, attachments
  - Standard e-mail protocols
    - POP3, SMTP, TLS, SPF, DKIM, ...
  - Anti-X measures
  - Internet gateway
    - But Internet is not required

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**E-mail and Packet Servers are Co-Located**

- Multiple servers, just like with packet
- Numbered 1-5, just like with packet
- Each city has primary and secondary, just like with packet
- Failure of one doesn't affect the others, just like with packet

E-mail Domain	Location	Co-located Packet BBS
email1.scc-ares-races.org	San Jose (Santa Clara Co office bldg)	W1XSC
email2.scc-ares-races.org	Crystal Peak (South County)	W2XSC
email3.scc-ares-races.org	Palo Alto	W3XSC
email4.scc-ares-races.org	Frazier Peak (above Milpitas)	W4XSC
email5.scc-ares-races.org	varies (drills, events, incidents)	W5XSC

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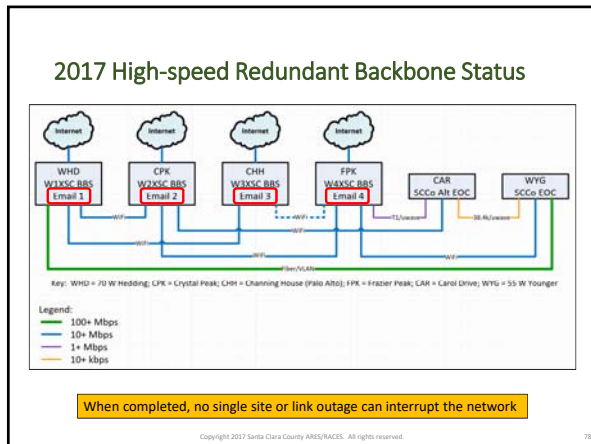
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### Account Details

Maximum Message Size	10 MB
Mailbox quota	50 MB
• Warnings at 75% and 90%	
Old message expiry and removal	92 days
• Warnings at 7 days	

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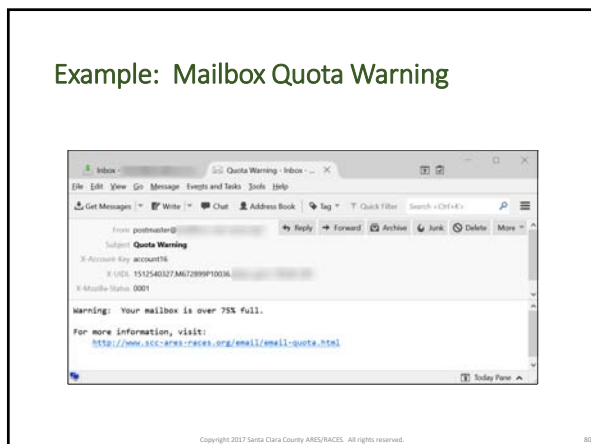
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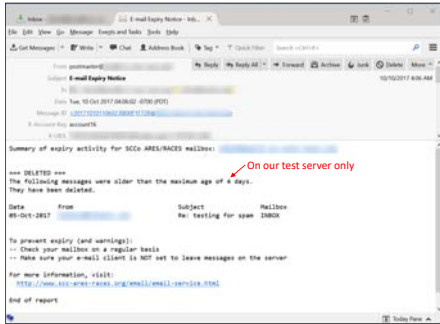
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### Example: Old Mail Expiry Notice



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### E-mail vs Packet - Summary

E-mail	Packet
GUI Interface	GUI Interface ✓
Supports rich text	Plain text ✓
Supports attachments	No attachments ✓
Requires higher bandwidth	Requires minimal bandwidth ✓
Reduced RF coverage	County-wide coverage ✓
No workflow	Rich EmComm workflow (message numbering, delivery receipts, logging, ...) ✓

- Packet – still best for EmComm
  - Best RF coverage; best EmComm workflow
- E-mail – can help with some 3<sup>rd</sup> party communications
  - Complex encoding, attachments; but requires more BW, less coverage

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### Accessing the E-mail Service

- E-mail needs MUCH more bandwidth than packet
  - Larger packets, chattier protocols, attachments, rich text formatting
- To get more bandwidth, we have to use higher frequencies
- Higher frequencies mean less RF coverage
- Access options for our network:
  - TCP/IP at n\* Mbps via WiFi: from locations with line of sight to hub
  - TCP/IP at 56+ Kbps via UHF: soon, from most of the county

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**New**  
Intra/Internet Service

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**New**  
Intra/Internet Service

- Standard TCP/IP connectivity
  - To internal servers (as they are developed)
  - To external, Internet sites
- Capabilities
  - Standard, general TCP/IP service
  - Connect isolated radio room PCs
    - Connect to internal servers or Internet
  - Emergency backup Internet access
    - NOT a replacement for commercial ISP
  - Considering other services
    - Internal DNS, VPN, etc.



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**Accessing Intranet/Internet**

- General web browsing, file sharing, and other services require even more bandwidth than E-mail
- These services are not possible at VHF/UHF; need WiFi
- Access options for our network:
  - TCP/IP at n\* Mbps via WiFi: from locations with line of sight to hub

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### Network Infrastructure Overview

Options for accessing the services

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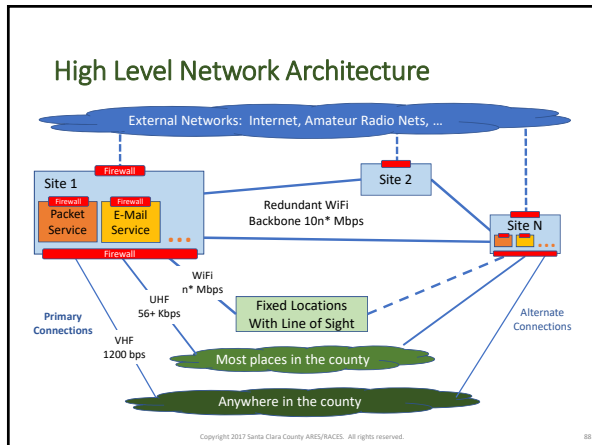
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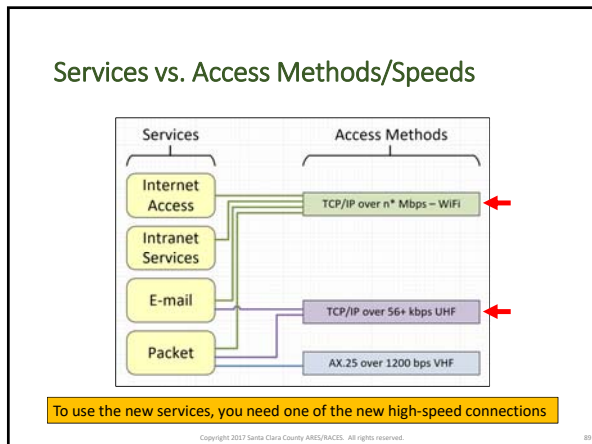
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### General Connectivity Recommendations

- The faster your connection, the more services you can use
- EOCs, hospitals should install WiFi connections, if possible
  - Enables use of all services
  - Line of sight to hub site is required; possible at many EOCs, hospitals
- All fixed sites should install 56+ kbps UHF connections
  - Enables use of e-mail and packet services
  - Available where line of site doesn't exist
  - Can act as fallback in case of WiFi failure
- All sites (fixed or otherwise) should have 1200 baud VHF
  - Enables packet services; broader coverage
  - Can act as fallback in case of UHF failure

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### New Updated Web Site

- New "Data" section coming
  - "Packet" is one part of it
- Includes
  - Service details
    - Packet BBS
    - E-mail
    - Intra/Internet
  - Access technology details
    - VHF Packet
    - UHF TCP/IP
    - WiFi TCP/IP
    - Mesh TCP/IP
- Expected: Dec 2017/Jan 2018



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### Getting Involved Is Easy

And there's lots to do!

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### Your City/Agency Needs Your Help

- We have impressive capabilities to offer our served agencies
  - But they don't know about them!
- Your agencies depend on you to help them understand
  - The services you/we can provide to them
  - What you need in order to provide those services to them
    - Equipment, space, procedures, etc.
- Opportunity for a team effort in each city
  - Use existing expertise and/or gain new expertise in several areas
    - RF: radios, antennas, propagation
    - Networking: TCP/IP, LANs, E-mail, PC software
    - Operations: procedures, documentation, installation, training, support
  - Room for everyone that's interested to participate

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### Help Also Needed at the County Level

- Help build, maintain the county network and services
- It's challenging. But it's fun!
- Do you want to be a part of making it happen?
- We could use:
  - BBS sysops, Linux sysadmins
  - RF and network engineers
  - Software engineers (shell, Perl, PHP, SQL, ...)
  - Installers (electrical, mechanical, tower, ...)
  - Testers (services, access methods)

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### How To Get Connected To The New Services

A recommended approach

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### How To Get Connected to New Services

- Form a data networking team within your ARES/RACES group
  - Include whoever wants to participate (some lead, some learn)
  - Variety of expertise needed: some technical, some operational
  - Recruit expertise where needed (your city, other cities, county team)
- Form a plan for using the new services within your group
  - Learn more details about the services, network infrastructure
  - How can these services be used within your ARES/RACES group?
  - How can these services benefit your served agencies?
- Investigate options for high-speed connections
  - WiFi: Clear line of sight to a hub site
  - UHF: Line of site not required; but best antenna location is needed
  - Collect details: Lat/Lon, height above ground, etc.

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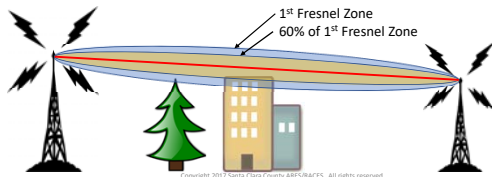
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### Evaluate WiFi Line of Sight to Hub Location

- Absolute minimum = clear 60% of 1<sup>st</sup> Fresnel Zone
  - Remember: trees grow; buildings get built, rooftops are modified
- Consider antenna mounting options
  - A clear line of site may require installation on a pole or tower; consider wind load
  - Highly directional antennas must be within (climbing) reach for alignment
  - Longer distances require larger antennas; consider installation, maintenance, wind



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### How To Get Connected to New Services (2)

- Submit site info form (available 1/2018)
- County team verifies line of sight, coverage, signal levels, ...
  - Recommends radio, antenna, cabling, etc.
- Prepare a presentation of your plan for your city/agency
  - Benefits to city/agency of using new services
  - Requirements: equipment, space, access, ...
- Present the plan to your city/agency; get buy-in
  - Funding may take time (government budgets, procedures, ...)
- Keep county team informed of installation plans
  - It helps us to schedule hub site work so we'll be ready

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### How To Get Connected to New Services (3)

- Coordinate installation with county team
  - Antenna alignment, signal level checks, routing/firewall updates, ...
- Train users and encourage usage
  - Local procedures, county procedures, troubleshooting, maintenance
  - Weekly check-ins, drills, public service events

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## District Emergency Coordinator 2017 Year End Report


 Santa Clara County ARES®/RACES/ACS  
 Logan Zintsmaster, KZ6O  
 Revised: 05-Dec-2017

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### Key Activities

- Multiple Presentations
  - Santa Clara County Emergency Operational Area Council
  - City of Palo Alto, Stanford University, Stanford Medical
- New Emergency Coordinators
  - Jack Pines – Palo Alto
  - Bert Bailey – Loma Prieta
  - Don McKee – San Jose
- Ranked in the top ten nationally for 2016 SET Drill
- High Power Performance Award Created for Annual Drill

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### Weekly Net Check-ins

- SPECS Net Weekly Average
  - 109 Voice
  - 22 Packet
- SVECS Net Weekly Average
  - 191 Voice
  - 30 Packet
- Total Weekly Average
  - 300 Voice
  - 52 Packet

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### Activity Reported to the ARRL

- Average Number of Members
  - 542 Average since Jan 2017
  - 557 reported in October
- Average Number of Operations
  - Drills, Training, Public Service, Emergency
  - 75 operations per month
- Average Number of Participation Hours
  - 1092 hours per month

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### Training Summary

- Taught 11 classes
  - 399 attendees
- Training exercise in the field
  - 22 attendees
- Taught 3 sessions (2 classes) of Introduction To and Fundamentals of Emergency Communications for newly licensed operators
  - 98 attendees
- 143 Unique Sign-ups

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