

NAPCO - Chapter Meeting



Chuck Schuler, P.E.

Desperate Communications

(the first 48 hours)



February 9, 2023
Sacramento, CA





Desperate Communications



NAPCO Chapter Meeting

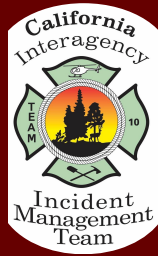
April 14, 2022 Vacaville, CA



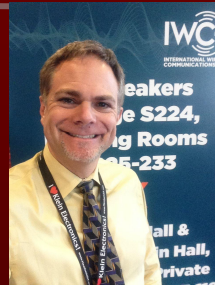
Fires, Hostages and Burning Man (COML and Incident Communications)



... now a deeper dive into Wildland Fire Communications

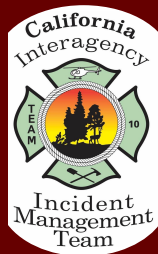


Chuck Schuler, P.E.



- Telecommunications Engineer - Sacramento Regional Fire/EMS Communications Center
- COML, All Hazards - Folsom Police
- COML / COMT - CIIMT 10
- SRIMT3
- President/CEO - Public Safety Innovation, Inc.





Desperate Communications

(the first 48 hours)

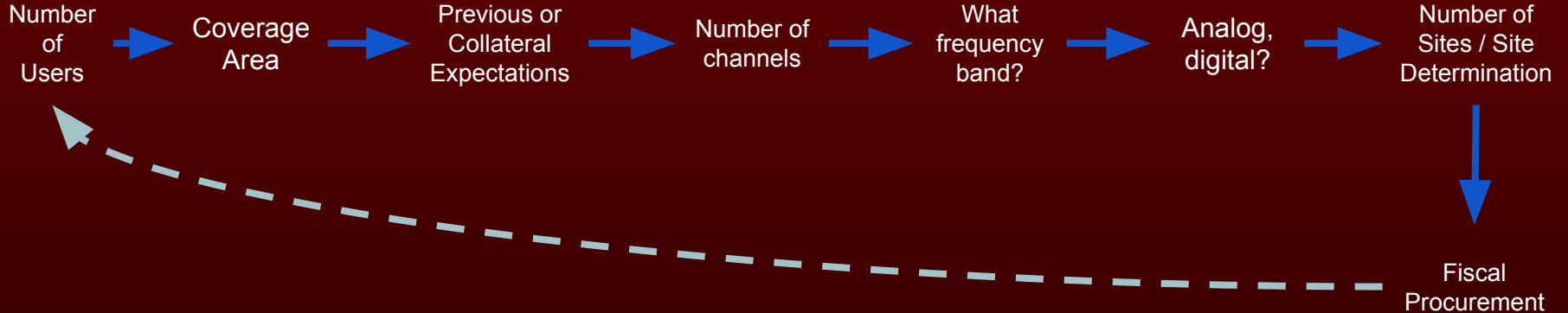
- Seven easy steps to Radio System Design
- How do things escalate?
- What resources and processes are in place to make this work?
- Wildland Fire Seven Steps of Chaos and Desperation
- 48 hours from Phone Call to System Go.
- Video and Questions at the end.

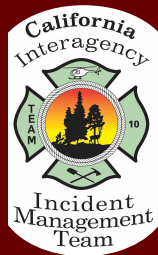




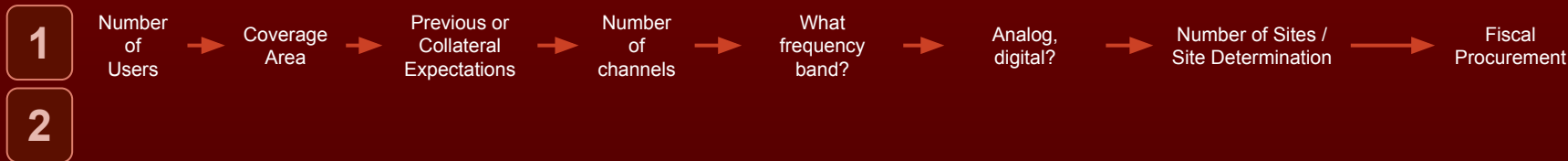
Basic Needs for a Radio System

1



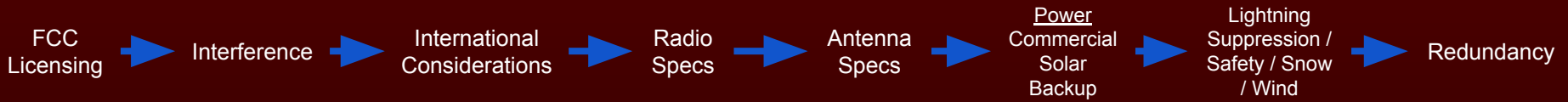
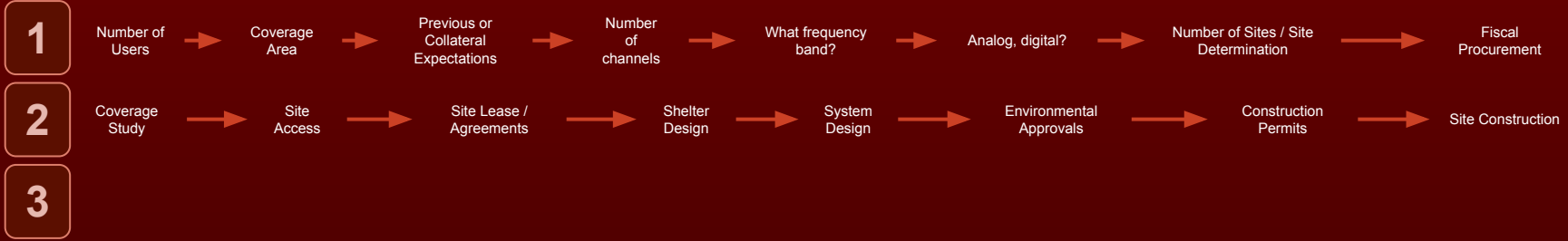


Site Determination and Coverage



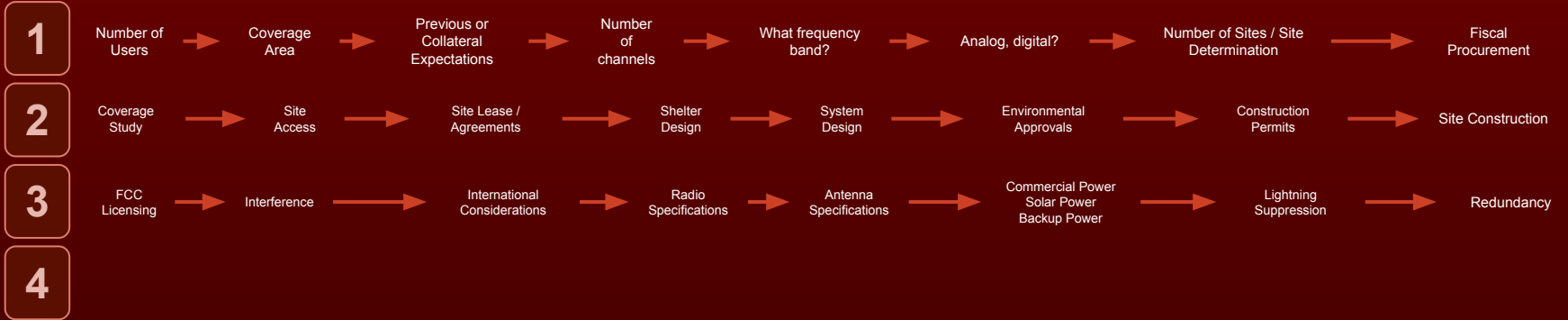


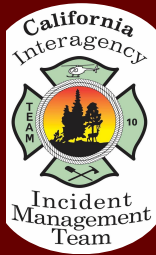
Licensing and Specifications



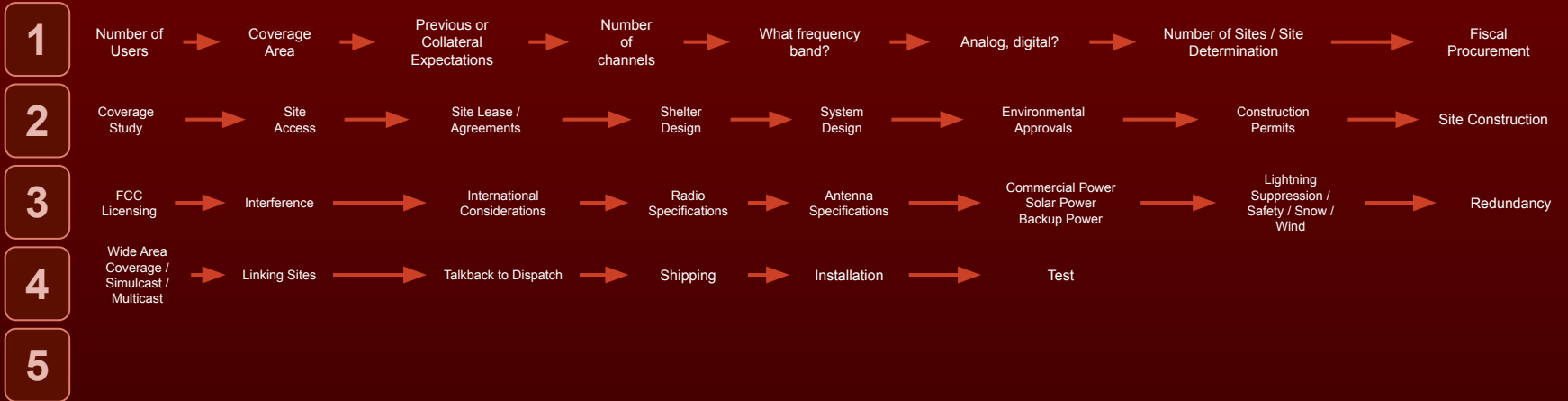


Backhaul and Site Equipment





Subscriber Radios



Coordination with Neighbor / Cooperating Agencies



Template Creation



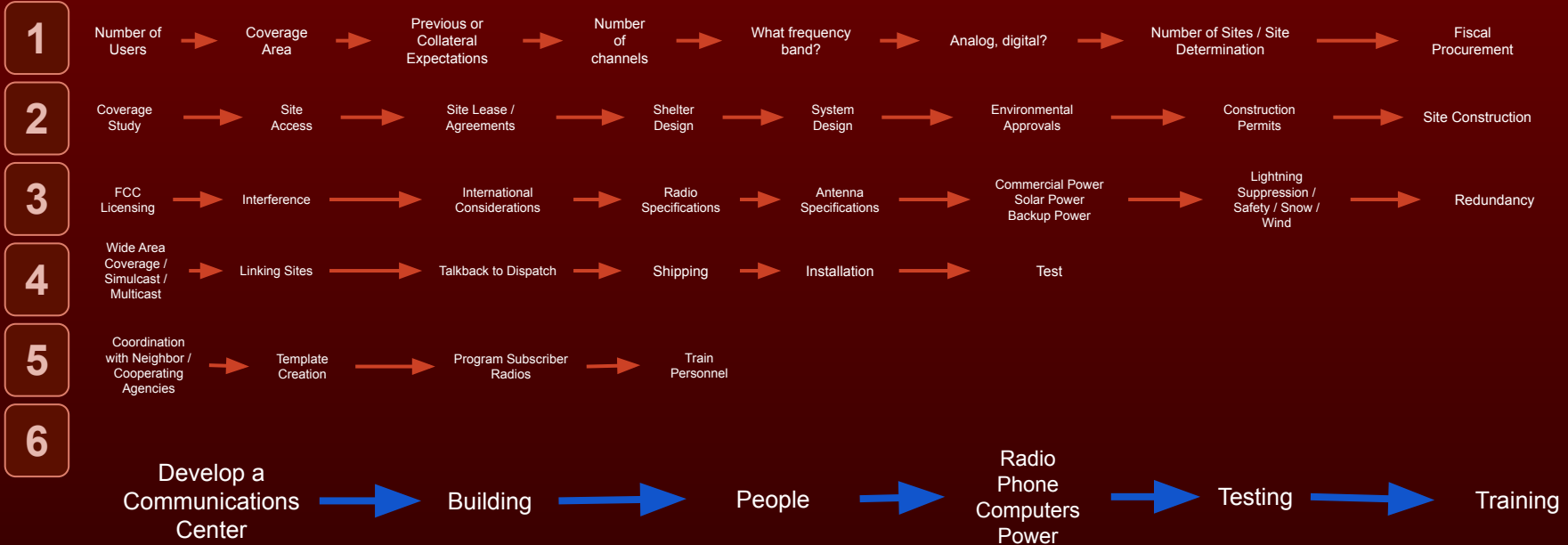
Program Subscriber Radios

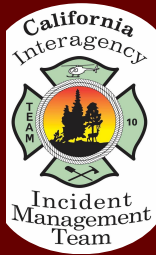


Train Personnel



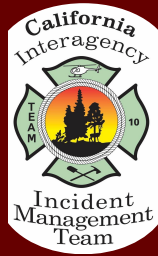
Communications Center



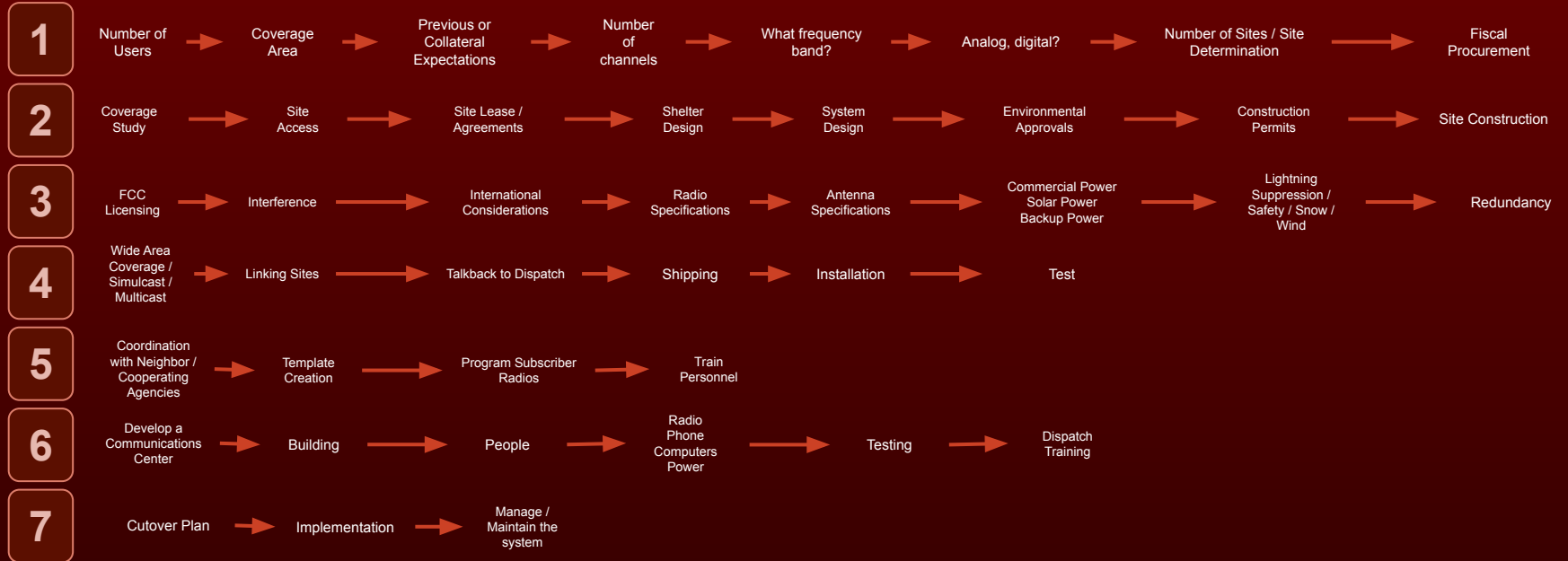


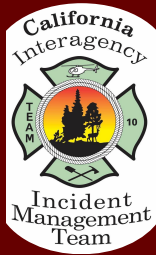
Implementation



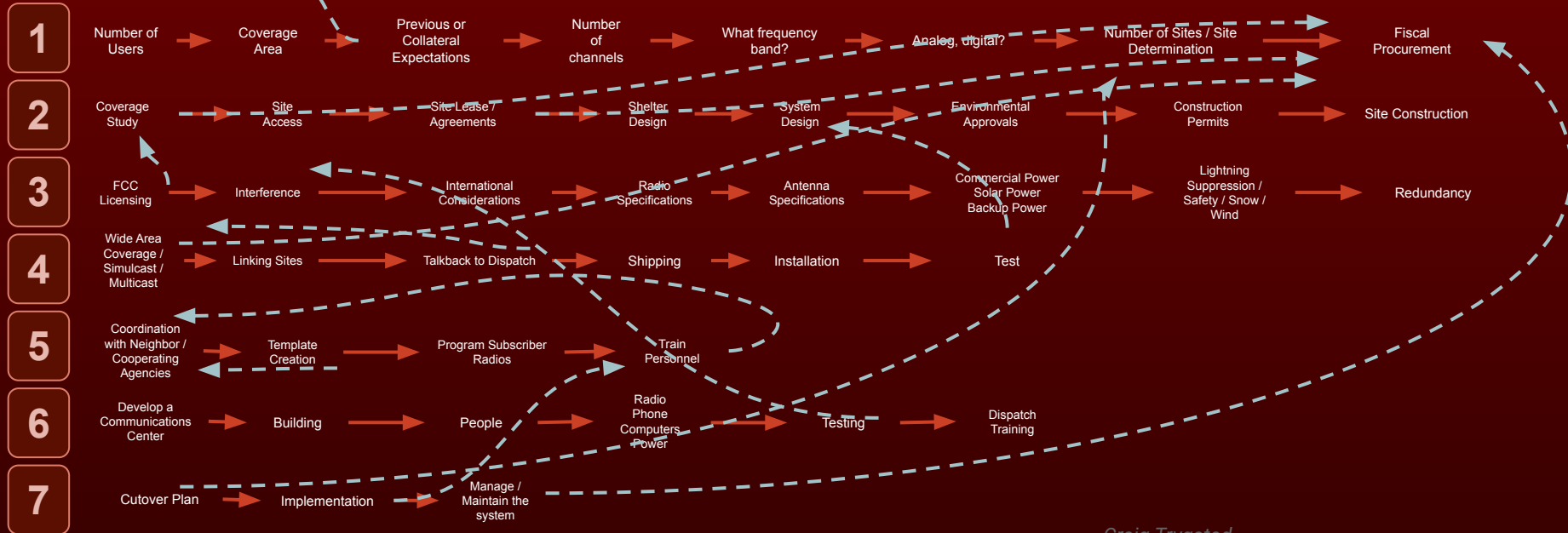


Designing a Radio System





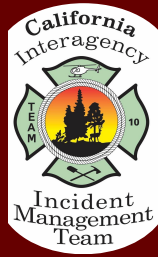
Realistic Design of a Radio System





Desperation in Design

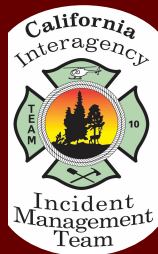




The Birth of an Incident



Grant Rolph/Higgins Storm Chasing, Queensland, Australia
<https://www.abc.net.au/news/2013-01-14/storms-to-accompany-change-as-heat-wave-ends/4463428>



Initial Response



USFS-KNF

Klamath
National Forest
Dispatch



2,715 mi²

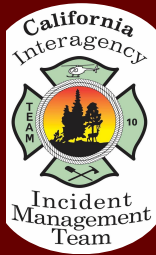
3-4 Personnel on Duty

Day Shift Only

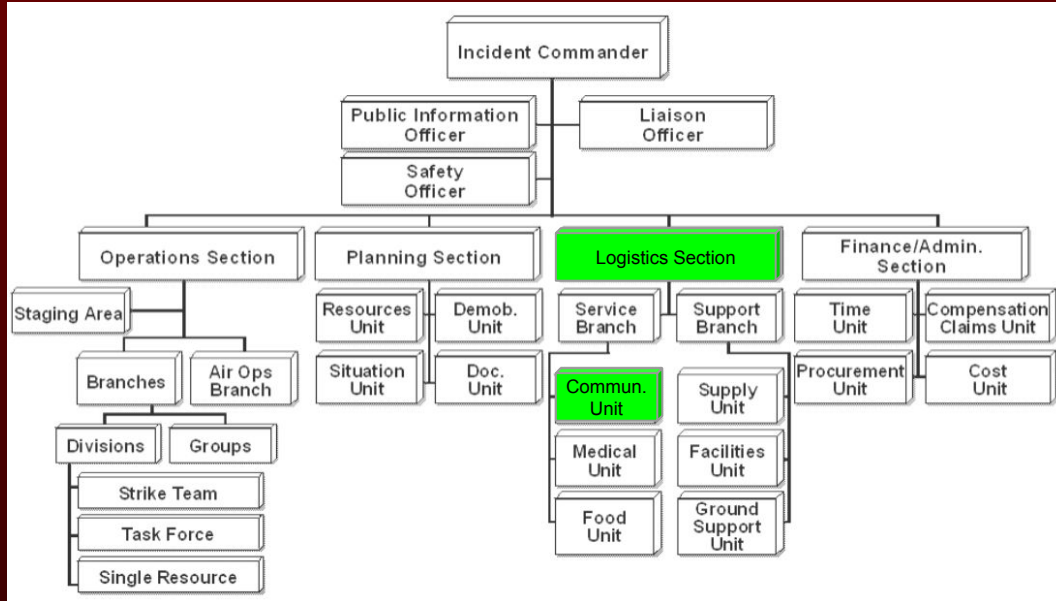
Forest Net

Admin Net

Fire Net

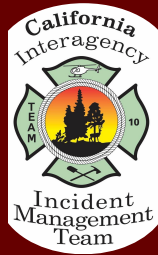


Incident Management Team



FEMA - ICS 300

<https://training.fema.gov/emiweb/is/icsresource/assets/ics%20organizational%20structure%20and%20elements.pdf>



“Infantry wins battles, Logistics wins wars.”



John J. Pershing
American Expeditionary Forces, WW1



National Interagency Fire Cache
(NIFC)
Boise, ID



Nebraska Public Media
<https://nebraskastories.org/videos/the-legacy-of-general-john-j-pershing>



The National WW1 Museum and Memorial
<https://www.theworldwar.org/events/ww1usa-may-2022>

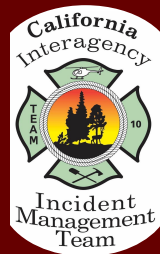


U.S. Army
https://www.army.mil/article/195799/world_war_i_as_a_transition_point_for_army_sustainment



Red / Rogers Fires
Sling Load to Mt. Hoffman
Yosemite, 2022

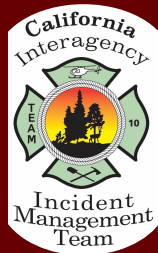




Team Cohesion





California Interagency Incident Management Team 10 - Team Photo, Yosemite 2022



Delegation of Authority



 **Federal Subsistence Board**
1011 East Tudor Road, MS121
Anchorage, Alaska 99503

 **USDA**
FOREST SERVICE

FWS/OSM XXXX.XX

Craig District Ranger
Tongass National Forest
P.O. Box 500
Craig, Alaska 99921

Dear Craig District Ranger:

This letter delegates specific regulatory authority from the Federal Subsistence Board (Board) to the Craig District Ranger to issue emergency or temporary special actions if necessary to ensure the conservation of a healthy wildlife population, to continue subsistence uses of wildlife, for reasons of public safety, or to assure the continued viability of the population. This delegation only applies to the Federal public lands subject to Alaska National Interest Lands Conservation Act (ANILCA) Title VIII jurisdiction within the Craig Ranger District of the Tongass National Forest for the management of deer and wolves on these lands.

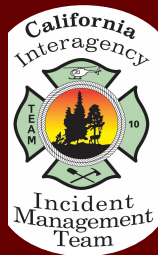
It is the intent of the Board that actions related to the management of deer and wolves by Federal officials be coordinated, prior to implementation, with the Alaska Department of Fish and Game (ADF&G) and the Southeast Alaska Subsistence Regional Advisory Council (Council) to the extent possible. Federal managers are expected to work with State managers, the Council Chair, and applicable Council members to minimize disruption to subsistence resource users and existing agency programs, consistent with the need for special action.

DELEGATION OF AUTHORITY

- 1. Delegation:** The Craig District Ranger is hereby delegated authority to issue emergency or temporary special actions affecting deer and wolves on Federal lands as outlined in the **Scope of Delegation** below. Any action greater than 60 days in length (temporary special action) requires a public hearing before implementation. Special actions are governed by Federal regulation at 36 CFR 242.19 and 50 CFR 100.19.
- 2. Authority:** This delegation of authority is established pursuant to 36 CFR 242.10(d)(6) and 50 CFR 100.10(d)(6), which state: "The Board may delegate to agency field officials the

U.S. Department of the Interior

https://www.doi.gov/sites/doi.gov/files/uploads/sect2_unit_2_wolves_2018_dal_0.pdf



Resources



IROC Interagency Resource Ordering Capability

Incident - MOSQUITO

Point of Origin: MOSQUITO CA:TNF-001371

Requests (103) Financial Codes (1) Incident Contacts (183) Incident Frequencies (7) Incident Locations (47) Addresses (16) Airports (2) Aviation Hazards Incident Request Blocks (21) Custom Request Numbers Auto Doc (1016)

Incident = MOSQUITO > Catalog Item Name contains communications

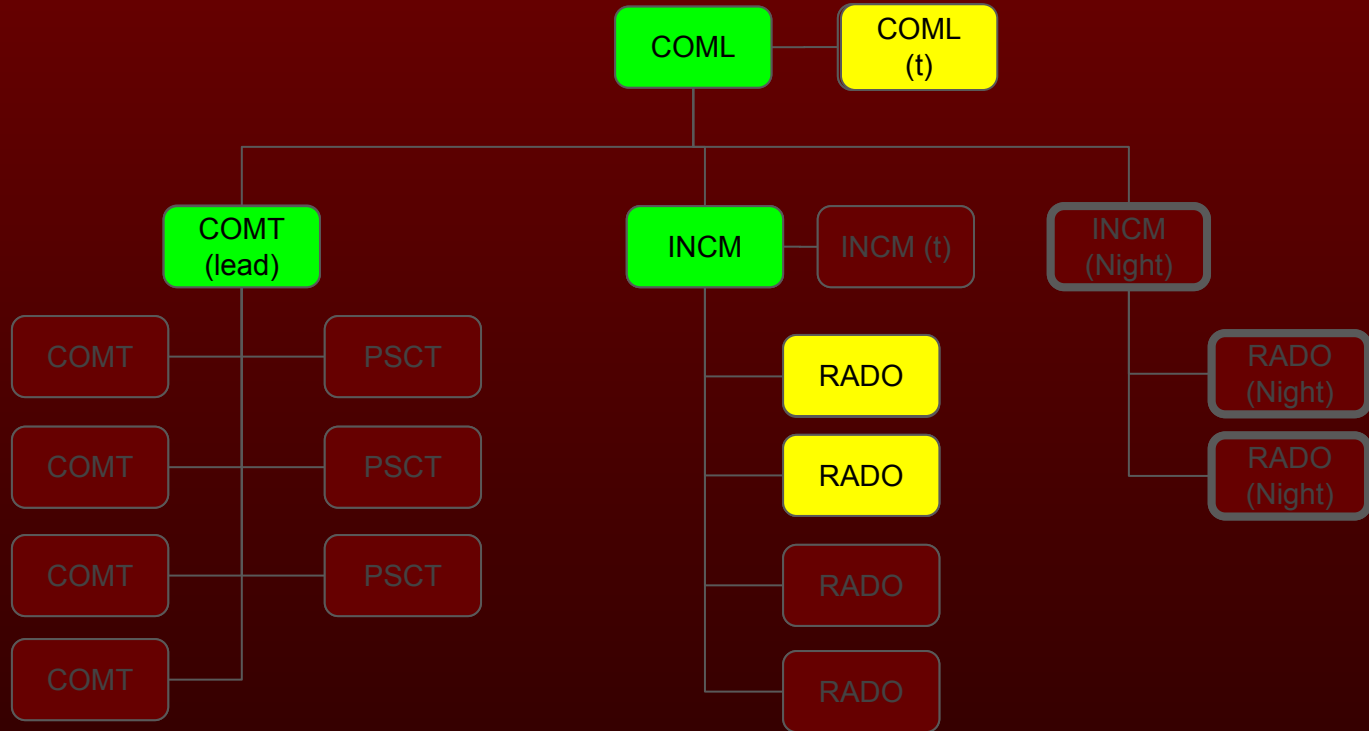
Request Number	Type	Request Status	Catalog	Catalog Category	Catalog Item	Resource	Order Processing Status
E-20186	Equipment	Complete	Miscellaneous	COM1 - Communications Unit - Mobile_Type 1	COM1 - MCC 24	Returned to Home	C
E-588	Equipment	Complete	Miscellaneous	COM1 - Communications Unit - Mobile_Type 1	COM2 - Expeditors By Lindale, Inc. - A43723	Returned to Home	C
E-229	Equipment	Complete	Miscellaneous	COM1 - Communications Unit - Mobile_Type 1	COM2 - Kit Contracting LLC - S75200M28E...	Returned to Home	1
E-433	Equipment	Complete	Miscellaneous	COM1 - Communications Unit - Mobile_Type 1	COM2 - Underdog Timber Falling, Inc. - J...	Returned to Home	1
E-20265	Equipment	Complete	Miscellaneous	COM1 - Communications Unit - Mobile_Type 1	COM1 - OES SUPPORT 5264	Returned to Home	C
E-448	Equipment	Cancelled	Miscellaneous	COM1 - Communications Unit - Mobile_Type 3	(empty)	Cancelled	1
Q-1547.52	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Stoner, Don	Returned to Home	1
Q-1225.25	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Greene, Michael Clifton	Returned to Home	1
Q-907	Overhead	Complete	Positions	COM1 - Communications Unit Leader	De La Torre, Armando	Returned to Home	1
Q-941	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Harper, Kevin D	Returned to Home	1
Q-20028	Overhead	Cancelled	Positions	COM1 - Communications Unit Leader	(empty)	Cancelled	C
Q-1098	Overhead	Cancelled	Positions	COM1 - Communications Unit Leader	(empty)	Cancelled	1
Q-927.71	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Oliver, Eric	Returned to Home	1
Q-966	Overhead	Cancelled	Positions	COM1 - Communications Unit Leader	(empty)	Cancelled	C
Q-1225.26	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Perry, Christopher A	Returned to Home	1
Q-95.55	Overhead	Complete	Positions	COM1 - Communications Unit Leader	EARLE, KEN	Returned to Home	C
Q-188	Overhead	Complete	Positions	COM1 - Communications Unit Leader	Larkin, David William	Returned to Home	1
Q-20100	Overhead	Cancelled	Positions	COM1 - Communications Unit Leader	(empty)	Cancelled	C
Q-1547.53	Overhead	Reassigned	Positions	COM1 - Communications Unit Leader	Schuler, Chuck	Reassigned	1
Q-927.59	Overhead	Reassigned	Positions	COM1 - Communications Unit Leader	Kevin, Roddy W	Reassigned	1
Q-1466	Overhead	Reassigned	Positions	COM1 - Incident Communications Technician	Schuler, Chuck	Reassigned	1
Q-104	Overhead	Cancelled UTF	Positions	COM1 - Incident Communications Technician	(empty)	Cancelled UTF	C

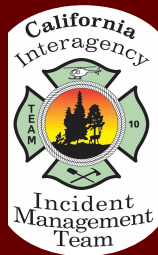


National Wildland Coordinating Group
<https://famit.nwcg.gov>



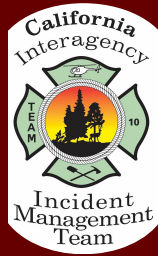
Communications Unit - Personnel





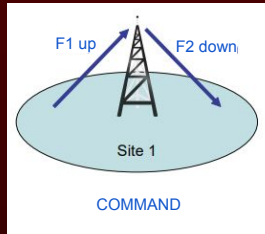
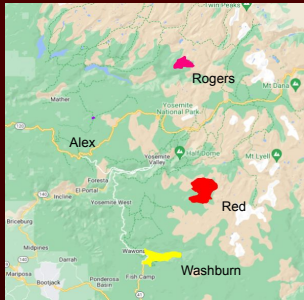
NIFC Cache (National Interagency Fire Center)





Designing a Radio System

1



NIFC
 VHF - Command
 VHF - Tactical
 UHF - Logistics
 UHF - Link

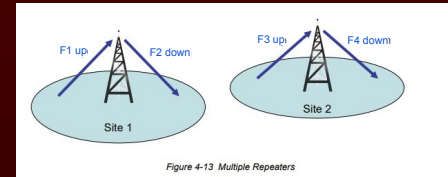
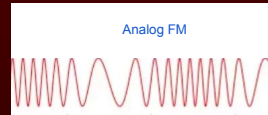


Figure 4-13 Multiple Repeaters

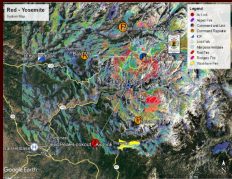
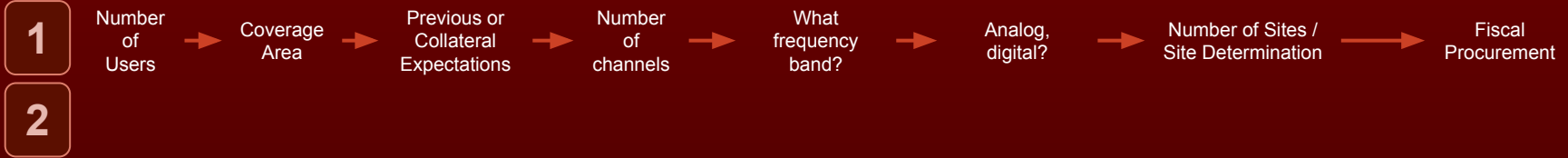
Number of Sites / Site Determination

Fiscal Procurement



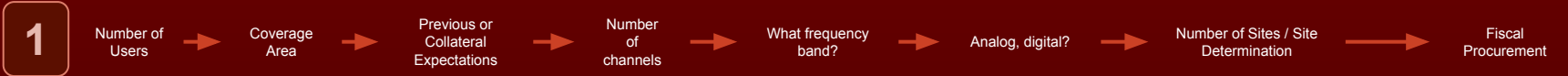


Site Determination and Coverage





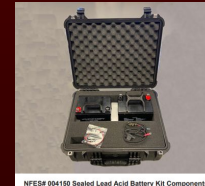
Licensing and Specifications



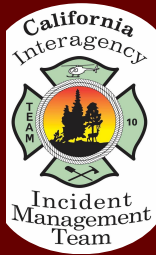
3



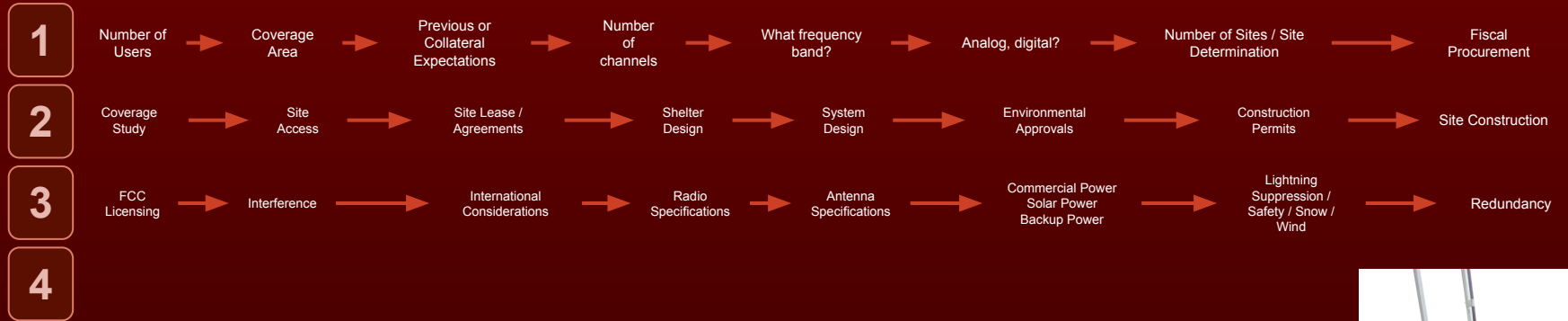
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157.050	FM	157.050	Common 1		5W	None	None
157.060	FM	157.060	Common 2		5W	None	None
157.070	FM	157.070	Common 3		5W	None	None
157.080	FM	157.080	Common 4		5W	None	None
157.090	FM	157.090	Common 5		5W	None	None
157.100	FM	157.100	Common 6		5W	None	None
157.110	FM	157.110	Common 7		5W	None	None
157.120	FM	157.120	Common 8		5W	None	None
157.130	FM	157.130	Common 9		5W	None	None
157.140	FM	157.140	Common 10		5W	None	None
157.150	FM	157.150	Common 11		5W	None	None
157.160	FM	157.160	Common 12		5W	None	None
157.170	FM	157.170	Common 13		5W	None	None
157.180	FM	157.180	Common 14		5W	None	None
157.190	FM	157.190	Common 15		5W	None	None
157.200	FM	157.200	Common 16		5W	None	None
157.210	FM	157.210	Common 17		5W	None	None
157.220	FM	157.220	Common 18		5W	None	None
157.230	FM	157.230	Common 19		5W	None	None
157.240	FM	157.240	Common 20		5W	None	None
157.250	FM	157.250	Common 21		5W	None	None
157.260	FM	157.260	Common 22		5W	None	None
157.270	FM	157.270	Common 23		5W	None	None
157.280	FM	157.280	Common 24		5W	None	None
157.290	FM	157.290	Common 25		5W	None	None
157.300	FM	157.300	Common 26		5W	None	None
157.310	FM	157.310	Common 27		5W	None	None
157.320	FM	157.320	Common 28		5W	None	None
157.330	FM	157.330	Common 29		5W	None	None
157.340	FM	157.340	Common 30		5W	None	None
157.350	FM	157.350	Common 31		5W	None	None
157.360	FM	157.360	Common 32		5W	None	None
157.370	FM	157.370	Common 33		5W	None	None
157.380	FM	157.380	Common 34		5W	None	None
157.390	FM	157.390	Common 35		5W	None	None
157.400	FM	157.400	Common 36		5W	None	None
157.410	FM	157.410	Common 37		5W	None	None
157.420	FM	157.420	Common 38		5W	None	None
157.430	FM	157.430	Common 39		5W	None	None
157.440	FM	157.440	Common 40		5W	None	None
157.450	FM	157.450	Common 41		5W	None	None
157.460	FM	157.460	Common 42		5W	None	None
157.470	FM	157.470	Common 43		5W	None	None
157.480	FM	157.480	Common 44		5W	None	None
157.490	FM	157.490	Common 45		5W	None	None
157.500	FM	157.500	Common 46		5W	None	None
157.510	FM	157.510	Common 47		5W	None	None
157.520	FM	157.520	Common 48		5W	None	None
157.530	FM	157.530	Common 49		5W	None	None
157.540	FM	157.540	Common 50		5W	None	None
157.550	FM	157.550	Common 51		5W	None	None
157.560	FM	157.560	Common 52		5W	None	None
157.570	FM	157.570	Common 53		5W	None	None
157.580	FM	157.580	Common 54		5W	None	None
157.590	FM	157.590	Common 55		5W	None	None
157.600	FM	157.600	Common 56		5W	None	None
157.610	FM	157.610	Common 57		5W	None	None
157.620	FM	157.620	Common 58		5W	None	None
157.630	FM	157.630	Common 59		5W	None	None
157.640	FM	157.640	Common 60		5W	None	None
157.650	FM	157.650	Common 61		5W	None	None
157.660	FM	157.660	Common 62		5W	None	None
157.670	FM	157.670	Common 63		5W	None	None
157.680	FM	157.680	Common 64		5W	None	None
157.690	FM	157.690	Common 65		5W	None	None
157.700	FM	157.700	Common 66		5W	None	None
157.710	FM	157.710	Common 67		5W	None	None
157.720	FM	157.720	Common 68		5W	None	None
157.730	FM	157.730	Common 69		5W	None	None
157.740	FM	157.740	Common 70		5W	None	None
157.750	FM	157.750	Common 71		5W	None	None
157.760	FM	157.760	Common 72		5W	None	None
157.770	FM	157.770	Common 73		5W	None	None
157.780	FM	157.780	Common 74		5W	None	None
157.790	FM	157.790	Common 75		5W	None	None
157.800	FM	157.800	Common 76		5W	None	None
157.810	FM	157.810	Common 77		5W	None	None
157.820	FM	157.820	Common 78		5W	None	None
157.830	FM	157.830	Common 79		5W	None	None
157.840	FM	157.840	Common 80		5W	None	None
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157.860	FM	157.860	Common 82		5W	None	None
157.870	FM	157.870	Common 83		5W	None	None
157.880	FM	157.880	Common 84		5W	None	None
157.890	FM	157.890	Common 85		5W	None	None
157.900	FM	157.900	Common 86		5W	None	None
157.910	FM	157.910	Common 87		5W	None	None
157.920	FM	157.920	Common 88		5W	None	None
157.930	FM	157.930	Common 89		5W	None	None
157.940	FM	157.940	Common 90		5W	None	None
157.950	FM	157.950	Common 91		5W	None	None
157.960	FM	157.960	Common 92		5W	None	None
157.970	FM	157.970	Common 93		5W	None	None
157.980	FM	157.980	Common 94		5W	None	None
157.990	FM	157.990	Common 95		5W	None	None
158.000	FM	158.000	Common 96		5W	None	None
158.010	FM	158.010	Common 97		5W	None	None
158.020	FM	158.020	Common 98		5W	None	None
158.030	FM	158.030	Common 99		5W	None	None
158.040	FM	158.040	Common 100		5W	None	None



NEER 004150 Sealed Lead Acid Battery Kit Components

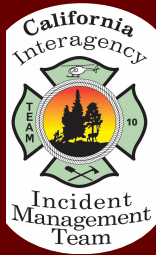


Backhaul and Site Equipment

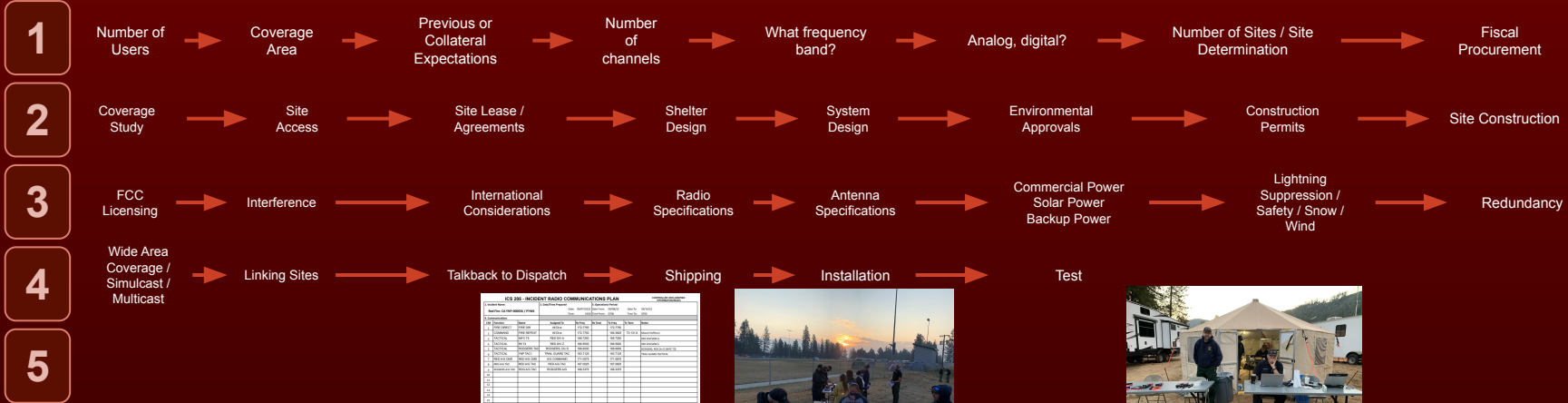


Wide Area Coverage / Simulcast / Multicast





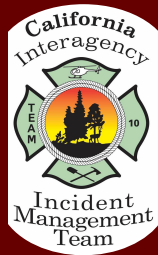
Subscriber Radios



ICL 390 - INCIDENT RADIO COMMUNICATIONS PLAN

Agency	Radio	Channel	Power	Antenna	Notes
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
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Communications Center



- 1
- 2
- 3
- 4
- 5
- 6



Develop a
Communications
Center



Building



People



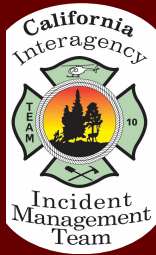
Radio
Phone
Computers
Power



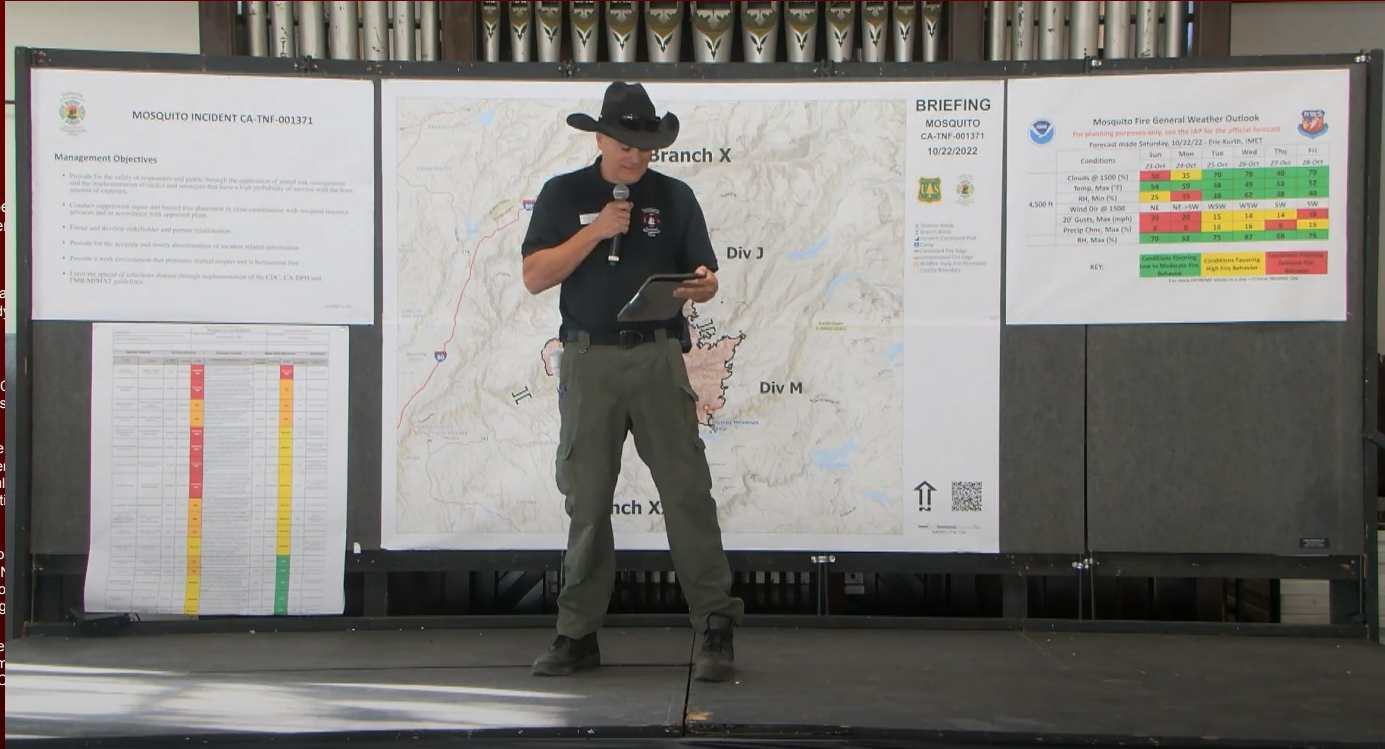
Testing



Training



Implementation (Brief and Go)



1

Number
Use

2

Coverage
Study

3

FCC
Licenses

4

Wide
Coverage
Simultaneous
Multi

5

Coordination
with
Coordination
Agency

6

Deployment
Command

7

Fiscal
Procurement

Site Construction

Redundancy

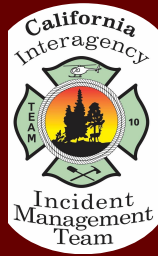
Cutover Plan



Implementation

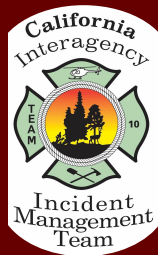


Manage / Maintain
the system



Design a Radio System





Desperate Communications (the first 48)



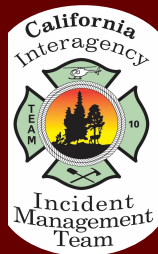
Red / Rogers Fire Yosemite 2022



[Red Fire - Yosemite 2022](https://www.instagram.com/p/CkOWE-MJlLf/)

<https://www.instagram.com/p/CkOWE-MJlLf/>

Kaleena Lynde, USFS - ENF



Questions ???



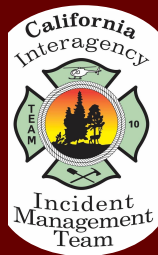
Sacramento Regional Fire/EMS, Telecommunications Engineer
California Incident Management Team 10 - COML

Chuck Schuler, P.E. 916-952-0101

cschuler@srfecc.ca.gov

schuler@ieee.org

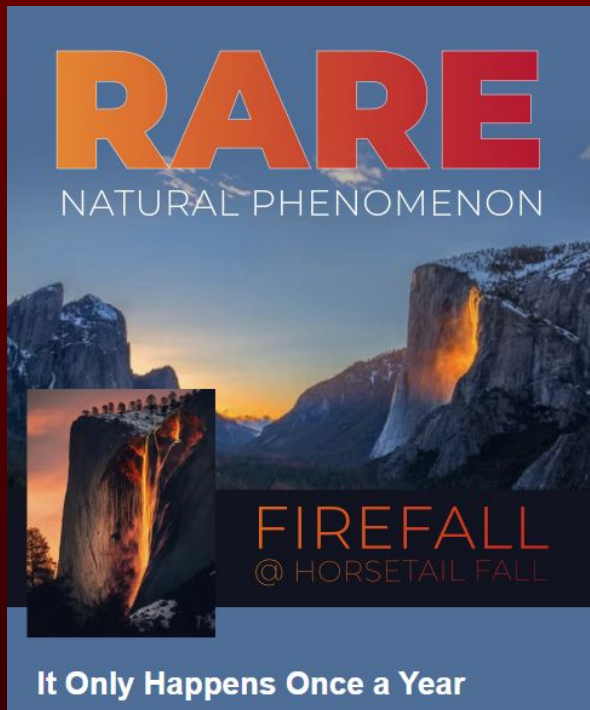
<Insert QR link to presentation here>



Yosemite National Forest

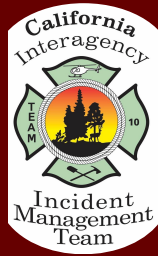


Late
February



Firefall over Glacier Point (left)
and Horsetail Fall illuminated by
sunset (right).

*Firefall photo (left) courtesy of the
Yosemite Archives. Horsetail Fall photo
(right) by Christine Fey.*



<QR>

Desperate Communications

(the first 48)



Resources:

Sacramento Regional Fire/EMS Communications Center

California Incident Management Team 10 - COML

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USFS - Chuck House

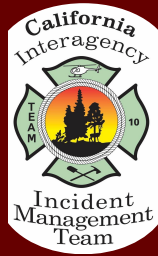
caknf01.ecc@usda.gov

CIIMT 1 - Kody Kerwin

kodykerwin@gmail.com

CIIMT 10 - LSC3 - Aaron Lowe

alowe@carson.org



NAPCO - Chapter Meeting



Desperate Communications

(the first 48 hours)



February 9, 2023
Sacramento, CA

Chuck Schuler, P.E.





End