

Fire Equipment Development Needs

Ratings for State Respondents - Presented in Priority Order

Questionnaire items presented in descending order by
Percent (%) of respondents (N) who assigned a high priority (4 or 5) to the development need.

Total STATE Responses = 184

Rating Categories		N	Total Number Each Category			Valid % Each Category			Overall
			No Need	Low Priority	High Priority	No Need	Low Priority	High Priority	Average
33h	Improve compatibility of communication equipment.	169	2	25	142	1.2%	14.8%	84.0%	4.35
33f	Reduce dead spots in radio communications.	168	5	28	135	3.0%	16.7%	80.4%	4.20
19b	Improve communications with the dozer operator.	156	2	34	120	1.3%	21.8%	76.9%	4.03
27e	Non-fog goggles with scratch-resistant lenses.	164	0	42	122	0.0%	25.6%	74.4%	4.12
33b	Improve the hand-held communication system.	164	4	40	120	2.4%	24.4%	73.2%	4.00
33g	Establish common command channels among agencies.	163	2	42	119	1.2%	25.8%	73.0%	4.01
27c	Improve low heat-stress protective clothing.	162	2	43	117	1.2%	26.5%	72.2%	4.00
33c	Satellite or microwave links to reduce isolation.	165	4	43	118	2.4%	26.1%	71.5%	3.90
19c	Protection of dozer operator from smoke and dust.	152	3	42	107	2.0%	27.6%	70.4%	3.88
23f	Improve fire weather information dissemination.	158	4	44	110	2.5%	27.8%	69.6%	3.85
23a	Develop fast, accurate resource location and allocation.	161	3	48	110	1.9%	29.8%	68.3%	3.91
33e	Improve incident repeater systems.	160	5	47	108	3.1%	29.4%	67.5%	3.84
27m	Fire-resistant clothing and gear for cold weather.	159	3	49	107	1.9%	30.8%	67.3%	3.82
27d	Improve devices to protect face from radiant heat.	163	3	51	109	1.8%	31.3%	66.9%	3.78
33a	Improve communications systems in vehicles.	160	6	48	106	3.8%	30.0%	66.3%	3.73
17i	Improve lightweight hose with rugged characteristics.	160	2	53	105	1.3%	33.1%	65.6%	3.80
21b	Develop standardized color-coded flagging for trees.	155	8	46	101	5.2%	29.7%	65.2%	3.61
31a	System for tracking and displaying resources.	162	6	51	105	3.7%	31.5%	64.8%	3.70
23h	Improve use of fire weather data.	153	2	52	99	1.3%	34.0%	64.7%	3.67
27b	Improve single-unit headlamps.	161	3	55	103	1.9%	34.2%	64.0%	3.72
27a	Improve fire shelters.	163	4	55	104	2.5%	33.7%	63.8%	3.85
27l	Improve the fireline pack for hand crews.	162	2	60	100	1.2%	37.0%	61.7%	3.64
31c	Improve interface between dispatch and vehicles.	160	4	59	97	2.5%	36.9%	60.6%	3.61
23k	Develop maps with latitude and longitude grids.	160	4	61	95	2.5%	38.1%	59.4%	3.57
25i	System for tracking and displaying resource allocation.	156	4	60	92	2.6%	38.5%	59.0%	3.57
23g	Improve remote site 24-hour weather monitoring.	151	5	58	88	3.3%	38.4%	58.3%	3.51
19i	Improve dozer safety equipment.	147	4	58	85	2.7%	39.5%	57.8%	3.64
23c	Improve Global Positioning System to locate persons.	163	3	66	94	1.8%	40.5%	57.7%	3.71
13m	Improve foam application equipment for engines.	160	4	64	92	2.5%	40.0%	57.5%	3.50
23j	Develop a real-time satellite fire detection system.	153	8	57	88	5.2%	37.3%	57.5%	3.44
33j	Establish recycle power source for hand-held radios.	162	10	59	93	6.2%	36.4%	57.4%	3.46
39c	Improve crew (belt) first aid kits.	148	4	59	85	2.7%	39.9%	57.4%	3.58

33d	VHF repeater for communication with helicopters.	153	7	59	87	4.6%	38.6%	56.9%	3.56
27i	Improve reflective material for fire safety clothing.	159	5	64	90	3.1%	40.3%	56.6%	3.42
21e	Hand tools that are more effective and less fatiguing.	154	6	63	85	3.9%	40.9%	55.2%	3.36
21f	Power tools that are more effective and less fatiguing.	153	6	64	83	3.9%	41.8%	54.2%	3.33
25c	Improve sleeping bags and pads.	156	11	61	84	7.1%	39.1%	53.8%	3.35
23d	FLIR system to collect fireline imagery at night.	155	7	65	83	4.5%	41.9%	53.5%	3.35
35j	Improve investigation tools and equipment.	143	7	62	74	4.9%	43.4%	51.7%	3.39
23e	Improve effective use of information dissemination.	155	5	70	80	3.2%	45.2%	51.6%	3.35
39b	Improve individual first aid kits.	153	5	69	79	3.3%	45.1%	51.6%	3.45
39f	Improve injured employee transport system.	146	5	66	75	3.4%	45.2%	51.4%	3.35
21o	Improve labor-saving technologies for mopup.	156	8	68	80	5.1%	43.6%	51.3%	3.28
25a	Develop an integrated fire camp electrical system.	154	9	66	79	5.8%	42.9%	51.3%	3.40
25g	Means of getting people/supplies to remote camps.	154	7	68	79	4.5%	44.2%	51.3%	3.25
19j	Improve dozer identifier and locators.	148	6	67	75	4.1%	45.3%	50.7%	3.36
21c	Develop means of cutting through heavy down fuels.	148	10	63	75	6.8%	42.6%	50.7%	3.19
13d	Develop standardized engines across agencies.	162	18	62	82	11.1%	38.3%	50.6%	3.14
21g	Develop lighter, more powerful chain saws.	154	9	67	78	5.8%	43.5%	50.6%	3.21
23n	Handheld infrared imager for ground fire location.	154	9	67	78	5.8%	43.5%	50.6%	3.34
23m	Develop lightning detection system to predict ignition.	149	13	61	75	8.7%	40.9%	50.3%	3.18
31b	Improve accountability for cache inventory.	159	8	71	80	5.0%	44.7%	50.3%	3.33
29b	Specifications for vehicles for crew transport.	157	9	70	78	5.7%	44.6%	49.7%	3.25
21h	Improve safety design of tools.	150	13	63	74	8.7%	42.0%	49.3%	3.05
27f	Info on significance of carbon monoxide hazards.	159	3	78	78	1.9%	49.1%	49.1%	3.25
29a	More use of All Terrain Vehicles (ATVs).	161	8	75	78	5.0%	46.6%	48.4%	3.24
27j	Improve hardhats to meet impact, penetration, heat.	162	5	80	77	3.1%	49.4%	47.5%	3.31
13i	Develop a standardized family of engines.	159	11	73	75	6.9%	45.9%	47.2%	3.15
25j	Design items so they can be easily recycled.	157	12	72	73	7.6%	45.9%	46.5%	3.13
17j	Improve quick coupling fittings.	156	18	66	72	11.5%	42.3%	46.2%	3.10
13j	Improve aspirated air proportioner foam system.	154	7	76	71	4.5%	49.4%	46.1%	3.17
25d	Develop one-person sleeping tents.	158	26	60	72	16.5%	38.0%	45.6%	2.84
21p	Update catalog on hand-held infrared sensing devices.	154	8	76	70	5.2%	49.4%	45.5%	3.07
13a	Improve compressed air foam systems.	148	9	73	66	6.1%	49.3%	44.6%	3.09
17a	Modify an All Terrain Vehicle to carry water.	159	12	77	70	7.5%	48.4%	44.0%	3.01
13h	Improve electronic identifiers/locators for engines.	157	6	82	69	3.8%	52.2%	43.9%	3.06
27g	Info on fine particulate hazards during firefighting.	160	3	87	70	1.9%	54.4%	43.8%	3.16
39a	Improve the standard trauma kit.	144	5	76	63	3.5%	52.8%	43.8%	3.24
29f	Develop Off Highway Vehicle (OHV) personnel carrier.	156	14	74	68	9.0%	47.4%	43.6%	2.97
13g	Improve long-term chemical suppressants/equipment.	159	6	84	69	3.8%	52.8%	43.4%	3.11
11r	Improved helicopter seats to reduce spine injuries.	134	13	63	58	9.7%	47.0%	43.3%	2.99
31d	Improve means of locating people while off-duty.	160	19	72	69	11.9%	45.0%	43.1%	2.97
21m	Develop portable lightweight sprinkler mopup system.	158	11	79	68	7.0%	50.0%	43.0%	3.01

29d	Establish standard markings and lighting for vehicles.	161	18	74	69	11.2%	46.0%	42.9%	2.86
27k	Equipment carrying vest of a tough fishnet fabric.	159	11	80	68	6.9%	50.3%	42.8%	3.06
13b	Reduce noise levels for apparatus operations.	154	4	85	65	2.6%	55.2%	42.2%	3.16
13c	Improve engine mobility in rough and steep terrain.	156	2	89	65	1.3%	57.1%	41.7%	3.17
21n	Improve foam technology for mopup.	158	10	83	65	6.3%	52.5%	41.1%	3.01
15d	Improve chemical suppressants f/engines & equipment.	154	8	83	63	5.2%	53.9%	40.9%	3.08
17e	Improve chemical suppressants used w/water equip.	157	10	83	64	6.4%	52.9%	40.8%	3.04
25b	Improve methods of insect control around fire camps.	153	10	81	62	6.5%	52.9%	40.5%	3.03
13l	Include more safety features in engine design.	151	7	83	61	4.6%	55.0%	40.4%	2.95
21d	Transportable lightweight mechanical line digger.	151	18	72	61	11.9%	47.7%	40.4%	2.75
25f	Improve hot and cold food containers.	155	9	85	61	5.8%	54.8%	39.4%	2.98
37a	Info on cost/production of fuel management techniques.	143	8	79	56	5.6%	55.2%	39.2%	2.97
13f	Improve storage capacity for equipment on engines.	159	7	90	62	4.4%	56.6%	39.0%	3.08
35c	Inspection process for residences/power lines/equip.	146	9	80	57	6.2%	54.8%	39.0%	3.02
17h	Expand line of water handling accessories.	149	6	85	58	4.0%	57.0%	38.9%	3.01
25e	Fire camp modules for uniformity of equipment.	155	9	86	60	5.8%	55.5%	38.7%	2.93
21l	Develop a mechanical line digger.	153	15	79	59	9.8%	51.6%	38.6%	2.80
21a	System to mark fireline on ridges & canyons from the air.	146	12	78	56	8.2%	53.4%	38.4%	2.85
25h	Improve safety for transporting liquid fuels.	154	6	89	59	3.9%	57.8%	38.3%	3.03
35e	Improve poster material to withstand weather.	144	13	76	55	9.0%	52.8%	38.2%	2.89
37f	Improve aerial ignition systems.	142	15	73	54	10.6%	51.4%	38.0%	2.85
35k	Improve fire prevention audiovisual support equipment.	145	8	82	55	5.5%	56.6%	37.9%	3.06
15a	Improve application rate info for foam applicators.	151	9	85	57	6.0%	56.3%	37.7%	2.97
11m	Improve quality flight helmet microphones/pigtails.	141	18	70	53	12.8%	49.6%	37.6%	2.72
11o	Develop cold weather personal protective accessories.	137	15	71	51	10.9%	51.8%	37.2%	2.81
39e	Improve Blood Borne Pathogens (BBP) equipment.	143	9	81	53	6.3%	56.6%	37.1%	2.99
39g	Improve equipment to mitigate HAZMAT exposures.	143	13	77	53	9.1%	53.8%	37.1%	2.99
27h	Reduce exposure to smoke with breathing devices.	160	8	93	59	5.0%	58.1%	36.9%	2.92
33i	Improve radio mounts for vehicles.	156	9	90	57	5.8%	57.7%	36.5%	2.97
37c	Efficient method of reducing fuel in young plantations.	144	8	84	52	5.6%	58.3%	36.1%	2.81
19a	Systems to correct environmental damage by dozers.	151	10	87	54	6.6%	57.6%	35.8%	2.79
37d	Improve ground ignition systems for prescribed burning.	144	9	84	51	6.3%	58.3%	35.4%	2.87
23b	Develop lightweight, portable night vision device.	153	11	88	54	7.2%	57.5%	35.3%	2.94
23i	Fire detection system for unstaffed lookout towers.	151	17	81	53	11.3%	53.6%	35.1%	2.76
13e	Improve engines to meet HAZMAT exposure.	151	11	88	52	7.3%	58.3%	34.4%	2.75
39d	Improve mass casualty equipment.	138	12	79	47	8.7%	57.2%	34.1%	2.78
17f	Develop delivery systems f/ground chemical suppressants	156	13	90	53	8.3%	57.7%	34.0%	2.78
29e	Improve existing systems to transport liquid fuels.	150	12	87	51	8.0%	58.0%	34.0%	2.77
35g	Improve content of posters.	141	12	81	48	8.5%	57.4%	34.0%	2.79
11x	Improve aerial ignition systems for prescribed burns.	136	11	79	46	8.1%	58.1%	33.8%	2.68
21k	Improve selection and capacity of firing devices.	154	5	97	52	3.2%	63.0%	33.8%	2.90

15c	Improve specs and selection guide for foam systems.	149	9	90	50	6.0%	60.4%	33.6%	2.82
37k	Chemical systems to replace hand line broadcast burning	141	21	73	47	14.9%	51.8%	33.3%	2.51
37e	Improve sprinkler technology f/retardant effect of water.	142	12	83	47	8.5%	58.5%	33.1%	2.79
35d	Improve the Smokey Bear suit.	146	25	73	48	17.1%	50.0%	32.9%	2.62
17d	Modify sprinkler technology to contain a fire.	151	12	90	49	7.9%	59.6%	32.5%	2.87
21i	Improve equipment to build fireline w/minimal damage.	157	15	93	49	9.6%	59.2%	31.2%	2.60
23l	Develop technology for locating fires from towers.	145	20	80	45	13.8%	55.2%	31.0%	2.50
19k	Develop a fireline burnout system for dozer plows.	146	15	86	45	10.3%	58.9%	30.8%	2.62
19h	Develop dozer brush rakes to construct control lines.	150	18	86	46	12.0%	57.3%	30.7%	2.60
35f	Improve visibility of poster material.	143	15	85	43	10.5%	59.4%	30.1%	2.70
13k	More clearly define role of water tenders in engines.	154	18	90	46	11.7%	58.4%	29.9%	2.60
19d	Improve towable cargo and water hauling capacity.	144	11	91	42	7.6%	63.2%	29.2%	2.63
17g	Improve information on ground application rates.	153	13	97	43	8.5%	63.4%	28.1%	2.66
11d	Deliver/retrieve fire supplies without landing.	141	14	90	37	9.9%	63.8%	26.2%	2.45
11l	Improve reliability/quality of helicopter water bucket.	138	16	86	36	11.6%	62.3%	26.1%	2.44
11s	Develop multipurpose collapsible litter f/helicopters.	134	15	84	35	11.2%	62.7%	26.1%	2.51
11n	Develop cold weather flame-resistant flight suits.	137	21	81	35	15.3%	59.1%	25.5%	2.33
37b	Develop a system to gather and cut firewood/fuelwood.	139	18	86	35	12.9%	61.9%	25.2%	2.37
11b	Produce more consistent, accurate drop patterns.	141	11	95	35	7.8%	67.4%	24.8%	2.56
11t	Improve mixing, handling, transport of retardants.	134	16	85	33	11.9%	63.4%	24.6%	2.35
37i	Develop minimal environmental impact fireline.	142	24	83	35	16.9%	58.5%	24.6%	2.25
11p	More comfortable flame-resistant flight flight suits.	135	21	81	33	15.6%	60.0%	24.4%	2.33
11q	Develop contaminant-free helicopter fuel storage.	129	16	82	31	12.4%	63.6%	24.0%	2.36
11u	Improve quality of the flight helmet.	134	16	86	32	11.9%	64.2%	23.9%	2.41
35h	Improve resistance of posters to vandalism.	140	20	87	33	14.3%	62.1%	23.6%	2.39
11z	Develop equipment for helibase management facilities.	129	16	83	30	12.4%	64.3%	23.3%	2.37
37l	System to pre-treat leave trees in underburning ops.	143	26	84	33	18.2%	58.7%	23.1%	2.26
11j	More accurate Type 2 & 3 helicopter bucket drops.	140	15	93	32	10.7%	66.4%	22.9%	2.45
37g	Improve mixing/application guidelines for fuel gelling.	131	18	83	30	13.7%	63.4%	22.9%	2.37
11h	Increase accuracy Type 2 & 3 helicopter drops.	142	15	95	32	10.6%	66.9%	22.5%	2.46
35i	Improve bilingual posters and fire prevention materials.	143	23	88	32	16.4%	61.5%	22.4%	2.35
19g	Develop foam capacity for dozers.	148	24	91	33	16.2%	61.5%	22.3%	2.24
19e	Develop a dozer blade to cut a narrower fireline.	149	36	80	33	24.2%	53.7%	22.1%	2.03
19f	Develop alternative construction techniques f/dozers.	149	17	99	33	11.4%	66.4%	22.1%	2.42
21j	Improve the variety of fireline explosives.	152	21	98	33	13.8%	64.5%	21.7%	2.37
11c	Produce more consistent fixed wing drop patterns.	141	11	100	30	7.8%	70.9%	21.3%	2.45
11g	Improve Type 1 helicopter/helibucket performance.	138	13	96	29	9.4%	69.6%	21.0%	2.44
17c	Develop identification system for marking fire hose.	149	8	110	31	5.4%	73.8%	20.8%	2.50
11k	Increase capacity Type 2 & 3 helicopter bucket drops.	136	20	88	28	14.7%	64.7%	20.6%	2.33
11y	Improve rappel hardware for available helicopters.	123	22	76	25	17.9%	61.8%	20.3%	2.14
17b	Develop high-capacity hose maintenance equipment.	151	18	103	30	11.9%	68.2%	19.9%	2.38

11f	Increase capacity Type 1 helicopter bucket drops.	138	21	91	26	15.2%	65.9%	18.8%	2.26
11i	Increase capacity Type 2 & 3 helicopter bucket drops.	140	19	95	26	13.6%	67.9%	18.6%	2.34
11w	Improve snorkel systems for helitankers.	129	14	91	24	10.9%	70.5%	18.6%	2.20
29c	Evaluate suitability of the color of F.S. vehicles.	156	55	72	29	35.3%	46.2%	18.6%	1.72
11v	Improve environmental management of chemicals.	135	18	93	24	13.3%	68.9%	17.8%	2.09
37j	Improve material to cover machine and hand piles.	135	28	83	24	20.7%	61.5%	17.8%	2.00
15b	Develop a towable foam application unit.	149	27	96	26	18.1%	64.4%	17.4%	2.02
35b	Develop a spark arrester guide.	140	18	98	24	12.9%	70.0%	17.1%	2.29
11a	Greater Consistency of drop height for airtankers.	142	17	102	23	12.0%	71.8%	16.2%	2.23
11e	Increase capacity Type 1 helicopter water drops.	137	19	96	22	13.9%	70.1%	16.1%	2.25
35a	Improve spark arrester systems.	141	17	102	22	12.1%	72.3%	15.6%	2.30
37h	Develop a king-size (approx. 200 gallons) helitorch.	134	34	82	18	25.4%	61.2%	13.4%	1.73