

2015

Aviation Annual Report



Aviation Aircraft Use Summary
U.S. Forest Service
2015

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Executive Summary

US Forest Service Agency aviation business data is summarized to characterize annual aviation use and costs for contract and Agency-owned aircraft. Data summaries are presented to generate a picture of annual use at the Agency management scale, and analysis methods are standardized to facilitate observation of trends in future annual reports. Summaries are presented by calendar year (January 1 – December 31) to more thoroughly capture fire seasons and contracting cycles.

Information sources include the Aviation Business System (ABS) and the Aviation Management Information System (AMIS), which are obtained via the FamWeb Data Warehouse. Additionally, some summaries are provided by Agency aviation program specialists, contract specialists, or Regional Aviation Officers.

In 2015, all Forest Service Agency-owned and contracted aircraft flew 68,137 hours. Compared to recent history, this was more than the previous two years of record, but below 2012 totals by more than 13,000 hours.

Table 1 summarizes the Agency fleet, showing both the number of aircraft awarded a contract line item and those available to the Agency for use from other sources. These numbers are not reflective of the actual number of aircraft utilized though because a Call When Needed (CWN) aircraft may not have been available at the time of a resource order and some Exclusive Use aircraft are also awarded CWN contracts.

Report Disclaimer

Aviation Business System (ABS) and Aviation Management Information System (AMIS) archived aircraft use and costs data are stored in the FamWeb Data Warehouse. This information tracks aviation use for the Forest Service, and summaries provided in this report are only as accurate as the archived data. Summaries provided may represent both fire and non-fire flight missions (e.g., wildlife tracking or forest health survey flights).

Not all aircraft utilized by the Agency are billed through ABS (e.g., military aircraft with MAFFS units). Missing data and data entry errors may persist in the archived data and subsequent analyses. ABS is an Agency invoicing tool and was not designed for historical analyses. The Forest Service updates ABS data as payments are processed.

Inconsistencies, omissions, or obvious data errors may be manually corrected prior to completion of the annual analyses; these corrections will be noted.

Summary totals may not align precisely with itemized values due to rounding practices.

Table 1 – CY 2015 Forest Service Aircraft Fleet Summary

Contract Category	Number of Aircraft
Fixed-Wing	
Aerial Supervision Module/ Leadplane (Lease)	15
Light Fixed-Wing (EXU)	17
Light Fixed-Wing (CWN)	228
Smokejumper Aircraft (EXU)	6
Smokejumper Aircraft (CWN)	1
Smokejumper Aircraft (Agency Owned)	7
Large Transport (EXU)	1
Other Light Fixed-Wing	–
Helicopters	
Exclusive Use (EXU)	96
Call When Needed (CWN)	390
Agency Owned	3
Large Airtankers	
Next Generation – EXU	6
Next Generation – CWN	22
Legacy – EXU	7
Agency Owned¹	1
MAFFS	10
Scoopers	
CL-415 – EXU	2

¹ The 2014 National Defense Authorization Act states that aircraft ownership would transfer to the Forest Service upon completion of maintenance and installation of a retardant tank by the U.S. Air Force. With the required maintenance and retardant tank installation not completed, the U.S. Coast Guard bailed the aircraft to the Forest Service. Throughout this report, the HC-130H aircraft bailed to the Forest Service from the U.S. Coast Guard will be referred to as Forest Service "Owned."

Introduction: The Forest Service Aviation Program

The Forest Service is responsible for managing 193 million acres of National Forests and Grasslands. Aviation missions targeted at natural resource management and wildland fire objectives support the Agency's top priority to maintain and improve the health, diversity, and productivity of these lands to meet the needs of current and future generations. Fire and Aviation Management contributes to the Agency's mission through various means, including (for example):

- aerial delivery of firefighters by parachute, rappel rope, or on-site landing
- air tactical command and control
- surveillance, reconnaissance, and intelligence gathering
- infrared detection and mapping
- aerial delivery of fire retardant and water
- passenger transport for firefighting and resource missions
- administrative flights
- research
- forest rehabilitation
- forest health protection (aerial surveys, application and photography)
- law enforcement
- aerial photography.

Approximately 300 personnel at the Washington, Regional, and Forest level offices administer the aviation program. The national staff is in Washington, D.C. and at the National Interagency Fire Center (NIFC) in Boise, Idaho. Most of the rest of the aviation personnel are located throughout the forests with local forest and regional office staff providing day-to-day operational oversight and program guidance.

The Forest Service Aviation Program is one of the largest amongst the Federal aviation community (aside from the Department of Defense) and is the leading user of commercial aircraft services. The Agency owns and operates over 20 aircraft and contracts for hundreds of aircraft annually from commercial vendors.

The Forest Service also receives aviation support from numerous Federal and non-Federal partners (e.g., Departments of the Interior and Defense, states, counties, municipalities, and countries). Use statistics from these surge capacity aircraft, Forest Service owned aircraft under the Federal Excess Personal Property (FEPP) program, and any aircraft not billed through Aviation Business System (ABS) are not included in this report, unless otherwise noted.

The Forest Service bases its Aviation Risk Management program on the philosophy that all aircraft mishaps are preventable, and that mishap prevention is an inherent function of management. The Forest Service had three aviation accidents in fiscal year 2015; details and additional safety information can be found in the FY 2015 Aviation Safety Summary (<https://www.fs.fed.us/sites/default/files/2019-04/fy15avsumm.pdf>).

Aviation Utilization and Cost Information

The Forest Service provides aircraft for both fire and non-fire missions. Although the Agency owns a limited number of aircraft, contract aircraft account for most of the aviation assets available for mission-related work. In 2015, 491 contracted aircraft and 24 Agency-owned aircraft, including one large airtanker, were employed to meet Agency missions.²

This report categorizes aircraft into four groups: fixed-wing, helicopter, airtanker, and scooper. The data summaries include both Agency-owned and contract aircraft, unless otherwise noted. The fixed-wing category includes the National Interagency Fire Center large transport jet, smokejumper aircraft, leadplanes, air attack, and all other fixed-wing aircraft not operating for the sole purpose of delivering a fire suppressant. The helicopter category includes all rotor-wing aircraft, regardless of flight missions. Unless otherwise noted, the airtanker category includes all flights and charges associated with any fixed-wing aircraft delivering a fire chemical suppressant to a fire (i.e., Single Engine Airtanker (SEAT), Large Airtanker (LAT), and Very Large Airtanker (VLAT)). Finally, scoopers are water scooping fixed-wing aircraft used in fire suppression.

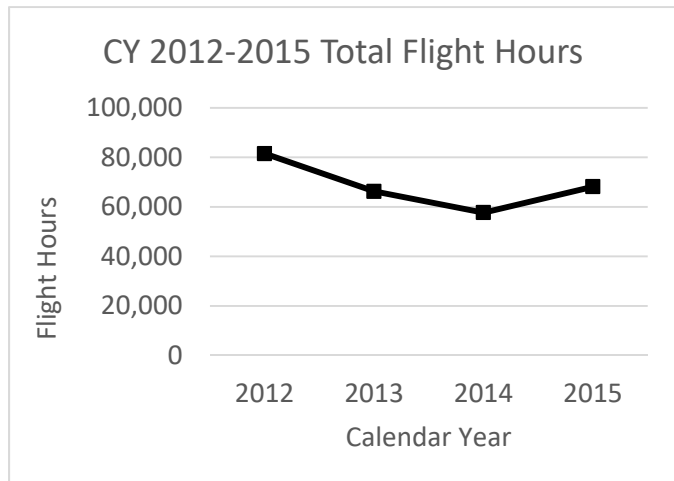
2015 At-A-Glance

Aviation Use

Agency and contract aircraft flew 68,137 hours in calendar year 2015 (Figure 1), which was near average for the previous three years of record (CY 2012-14 average is 68,455 hours). Aircraft activity peaked in July and August, with 58% of all annual flight hours (Figure 2).

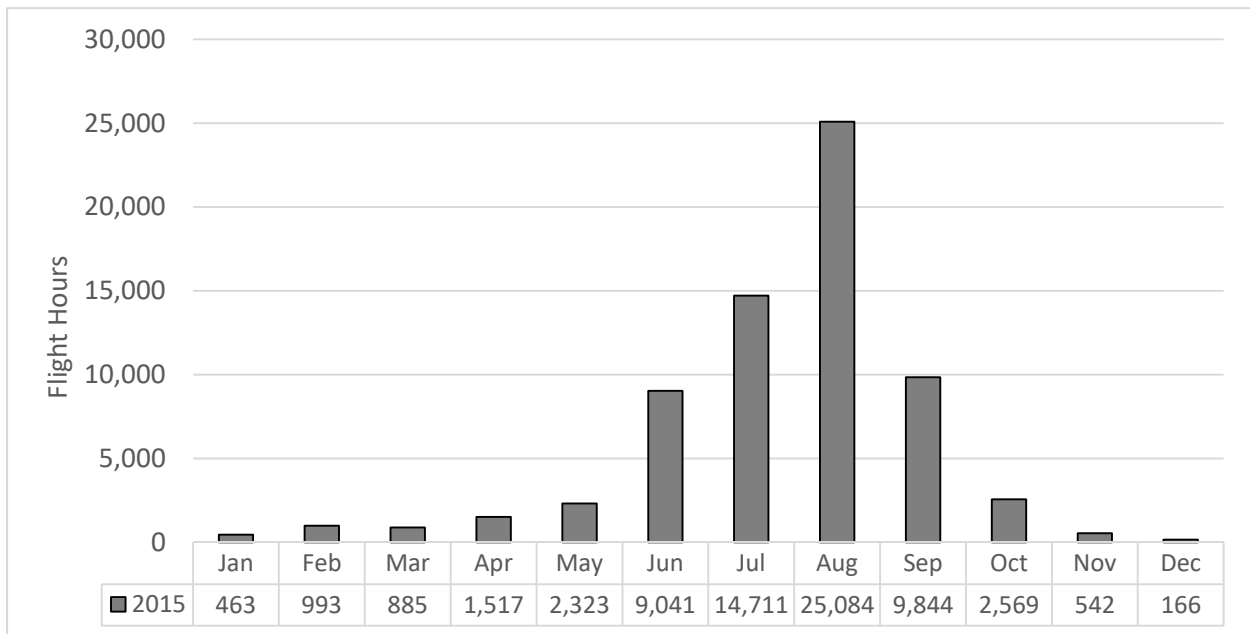
Figure 1 – CY 2012-2015 Total Agency Flight Time

Calendar Year	Flight Hours
2012	81,483
2013	66,222
2014	57,660
2015	68,137
4-Year Average	68,376



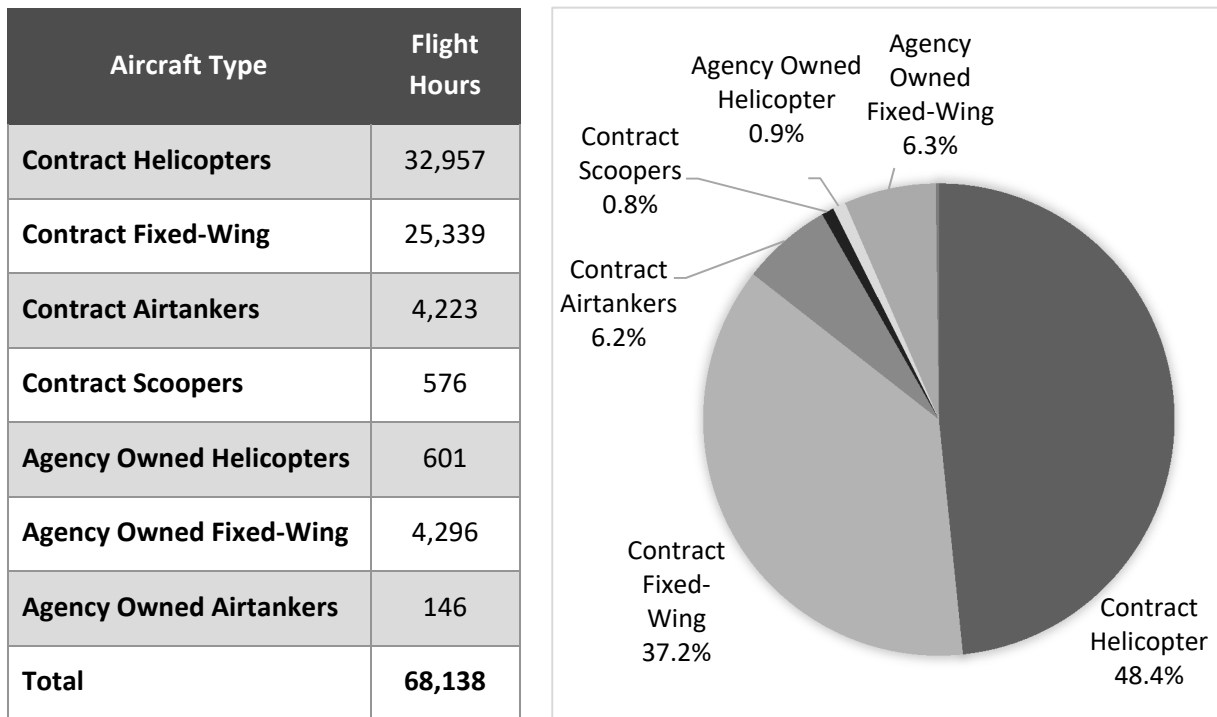
² Values reflect the actual number of unique aircraft that operated and do not align with fleet size values due to contract processes (e.g., aircraft swaps, multiple contract awards).

Figure 2 – CY 2015 Total Agency Flight Time by Month



Flight time for contract aircraft represented 92.6% of the annual total; Agency flight hours accounted for the remaining 7.4% (Figure 3). Examination of the distribution of use by aircraft type and ownership demonstrates that contract helicopters (48.4%) and contract fixed-wing (37.2%) represented the largest proportion of use (Figure 3).

Figure 3 – CY 2015 Total Agency Flight Time by Aircraft and Contract Type



Flight hours in support of Agency missions accounted for the bulk of flight time (77.5%), with 10.0% of flight hours attributed to Department of Interior missions, 12.4% to non-Federal missions, and <1% for missions related to other or unknown jurisdictions (Table 2).

Table 2 – CY 2015 Total Agency Flight Time by Region/Agency³

Region/Agency	Flight Hours	Percent of Total Flight Hours
FS: Region 1	10,006	14.7%
FS: Region 2	582	0.9%
FS: Region 3	1,427	2.1%
FS: Region 4	4,709	6.9%
FS: Region 5	16,065	23.6%
FS: Region 6	12,059	17.7%
FS: Region 8	2,048	3.0%
FS: Region 9	1,100	1.6%
FS: Region 10	1,910	2.8%
FS: Region 13 (WO)	2,238	3.3%
FS: Region Other (Northeastern Area, Research Stations, CIO, etc.)	648	1.0%
FS Total	52,791	77.5%
BIA	1,967	2.9%
BLM	2,678	3.9%
FWS	143	0.2%
NPS	2,030	3.0%
DOI Total	6,817	10.0%
Non-Fed Fire (State)	8,469	12.4%
Non-Wildland Fed Fire (DoD)	0	<0.1%
NICC	42	<0.1%
Unknown	18	<0.1%
Grand Total	68,137	100%

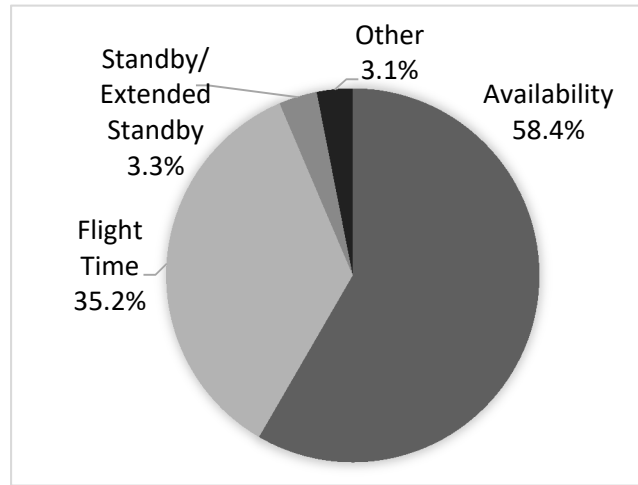
³ Region/Agency derived from Incident Finance Job Codes from ABS data.

Aviation Costs

In CY 2015, Agency expenditures for contract aircraft totaled \$466.4 million. More than half of all charges went to availability pay codes (58.4%). 35.2% went to flight time costs; remaining expenses were attributed to standby/ extended standby (3.3%) and other pay codes (3.1%; Figure 4).

Figure 4 – CY 2015 Aviation Contract Costs by Pay Code Description

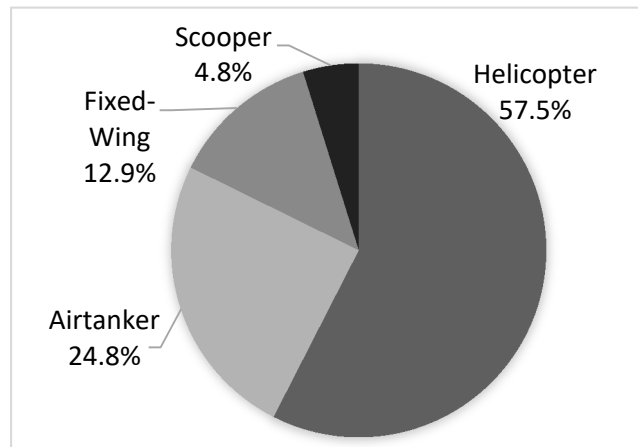
Pay Code Description	Total Costs
Availability	\$272,264,842
Flight Time	\$164,214,280
Standby/Extended Standby	\$15,442,990
Other	\$14,483,057
Total	\$466,405,170



Helicopters represented the bulk of expenditures at \$268.2 million, or 57.5% of total. Large airtanker costs were roughly a quarter of total (\$115.7 million, 24.8%), followed by fixed-wing (\$60.2 million, 12.9%) and scoopers (\$22.4 million, 4.8%; Figure 5).

Figure 5 – CY 2015 Aviation Contract Costs by Aircraft Type

Aircraft Type	Total Costs
Helicopter	\$268,199,450
Airtanker	\$115,671,877
Fixed-Wing	\$60,119,612
Scooper	\$22,414,231
Total	\$466,405,170



Fixed-Wing Aircraft

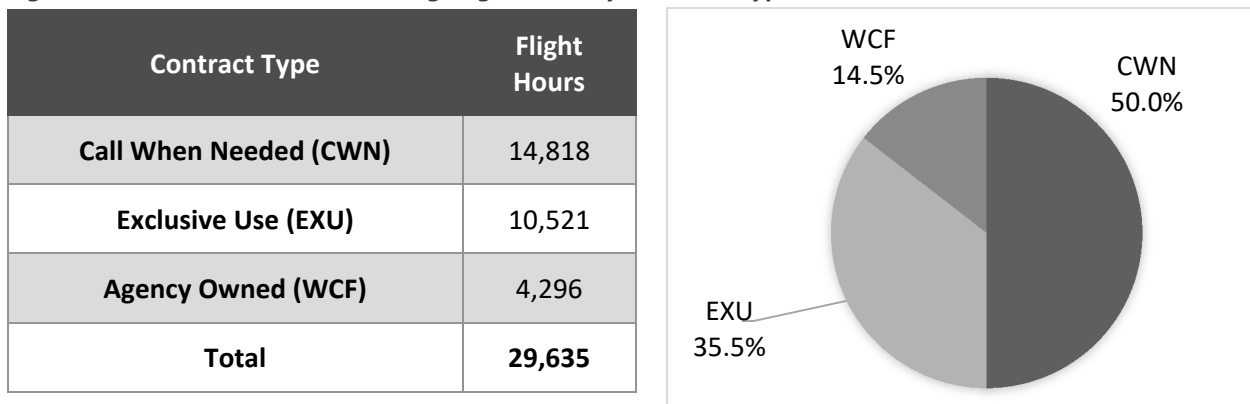
In 2015, the Forest Service issued EXU contracts for 39 fixed-wing aircraft to support various missions for smokejumper, leadplane, air attack, and transportation of firefighters. 229 additional light fixed-wing aircraft were available for use on CWN contracts (Table 3).

Table 3 – CY 2015 Contract Fixed-Wing Fleet Summary

Aircraft Category	EXU Aircraft	CWN Aircraft	Total
Smokejumper Aircraft	6	1	7
Aerial Supervision Modules/ Leadplanes	15	0	15
Light Fixed-Wing	17	228	245
Transport Jet	1	0	1
Total	39	229	268

In addition to the contract aircraft, the Forest owns and operates 20 light-fixed-wing aircraft utilized for smokejumper, leadplane, and other natural resource management missions, such as Forest Health Protection. In 2015, fixed-wing aircraft flew 29,635 hours, which accounts for 43.5% of the annual total flight time. Half of the fixed-wing flight time is from Call When Needed (CWN) aircraft (50.0%), 35.5% is from Exclusive Use (EXU) planes, and 14.5% is from Agency owned (WCF) fixed-wing aircraft (Figure 6).

Figure 6 – CY 2015 Total Fixed-Wing Flight Time by Contract Type



Most fixed-wing flight time was spent supporting air attack missions (43.0%). Leadplane flights accounted for a larger percentage of the total compared to the prior year (10.0% in 2015 vs. 5.7% in 2014; Table 4).

Table 4 – CY 2015 Total Fixed-Wing Flight Time by Mission Code Description

Mission Code Description	Flight Hours	Percent of Total
Air Attack	12,735	43.0%
Leadplane	2,953	10.0%
Detection (Flights for detecting wildfires)	1,774	6.0%
Smokejumper Transport	1,757	5.9%
Survey/Observation	1,563	5.3%
Ferry	1,355	4.6%
Infrared Imagery, Fire Suppression	1,150	3.9%
Personnel Transport, Normal Activities	912	3.1%
Other	5,435	18.3%
Total	29,635	100%

Fixed-wing expenditures were \$64.3 million in 2015. Contract aircraft costs accounted for the bulk of these expenses at \$60.1 million or 93.4% of the total annual fixed-wing charges. For contract fixed-wing, 30.4% of the total expenditures were associate with availability charges (Table 5).

Table 5 – CY 2015 Total Fixed-Wing Costs by Ownership and Pay Code Description

Ownership	Flight Hours	Availability Costs	Flight Time and Other Costs	Total Costs
Contract	25,339	\$18,250,915	\$41,868,697	\$60,119,612
Agency-Owned	4,296	\$0	\$4,273,774	\$4,273,774
Total	29,635	\$18,250,915	\$46,142,471	\$64,393,386

Smokejumper Program

The Smokejumper Program has seven Forest Service Bases in four Regions (Regions 1, 4, 5, and 6). 301 smokejumpers were in the program in 2015. In this year, smokejumpers utilized 14 aircraft to staff 275 unique fires by parachute (Table 6).

Table 6 – CY 2015 Smokejumper Program Summary⁴

Smokejumper Base	Region	Aircraft Make Model/ Vendor	# Smokejumpers Per Base	# Fires Jumped	# Smokejumpers Staffing Fires via Parachute
Grangeville	R1	(1) DHC-6 Twin Otter/Leading Edge	29	40	228
Missoula	R1	(1) Sherpa A Model/USFS (1) DC3T/USFS (1) CASA 212/Bighorn	65	36	209
West Yellowstone	R1	(1) Dornier 228/Bighorn	28	7	42
McCall	R4	(2) DHC-6 Twin Otter/USFS (1) DHC-6 Twin Otter/Leading Edge	63	32	175
Redding	R5	(1) Sherpa A Model/USFS (1) Dornier 228/Bighorn (1) CASA 212/Bighorn CWN	44	77	420
North Cascades	R6	(1) CASA 212/Bighorn	28	35	133
Redmond	R6	(2) Sherpa A Model/USFS	44	48	260
7 Bases	4 Regions	14 Aircraft	301	275	1,467

⁴ Annual summaries reflect only fires staffed by parachute and do not include ground actions, single resource assignments, and prescribed fire support.

Helicopters

The Agency awarded 115 EXU and 310 CWN contracts in 2015 (Table 7). Of these, the Agency utilized 273 contracted helicopters on fire and natural resource management missions. The actual number of aircraft in operation differs from Table 7 values due to dual contract awards (both EXU and CWN for a single aircraft), vendor aircraft substitutions, or CWN aircraft unavailability.

Table 7 – CY 2015 Contract Helicopter Fleet Summary

Helicopter Category	EXU Aircraft	CWN Aircraft ⁵	Total
Type 1	34	121	155
Type 2	32	112	144
Type 3	29	157 ⁶	186
Type 2 (Night Flying)	1	0	1
Total	96	390	486

⁵ These totals represent the number of aircraft awarded a line item on the CWN contract and are not representative of the number of aircraft that had orders for operational missions. Some of the T3 helicopters are double-counted since they are awarded both EXU and CWN contracts.

⁶ This number represents the total aircraft awarded a line item. 107 T3 CWN helicopters operated for the FS in 2015.

Table 8 summarizes EXU helicopter regional distribution. T1 and 2 EXU helicopters are based in western regions (Regions 1 – 6). Region 5 has the largest proportion of both Type 1 (35%) and Type 2 (48%) aircraft, whereas Region 3 has the smallest proportion (6% Type 1, 3% Type 2).

Table 8 – CY 2015 Exclusive Use Helicopters by Region

Region	Type 1 LFS Aircraft	Proportion of T1 EXU Fleet	Type 2 IA Aircraft	Proportion of T2 EXU Fleet	Type 3 Aircraft ⁷
Region 1	5	15%	3	9%	4
Region 2	3	9%	3	9%	3 ⁸
Region 3	2	6%	1	3%	8 ⁹
Region 4	8	24%	4	12%	9 ¹⁰
Region 5	12	35%	16 ¹¹	48%	3
Region 6	4	12%	6	18%	Unknown
Region 8	0	0%	0	0%	Unknown
Region 9	0	0%	0	0%	Unknown
Region 10	0	0%	0	0%	0

⁷ Some T3 helicopters share contracts between regions; here, a helicopter is counted in the Region where the aircraft initially starts its MAP. The proportion by Region for T3 helicopters is not provided since the shared contracts skew the data.

⁸ Region 2 has shared contracts on one helicopter.

⁹ Region 3 has shared contracts on three helicopters.

¹⁰ Region 4 has one shared contract.

¹¹ Includes one night flying helicopter.

In total, there were 33,558 flight hours for helicopters in 2015. For chemical and water delivery missions, approximately 82.3 million gallons of retardant and 80.5 million gallons of water were delivered (Table 9).

Table 9 – CY 2015 Helicopter Use Summary by Contract and Helicopter Type

Helicopter Type	Flight Hours	Gel/ Foam (gallons)	Water (gallons)	Retardant (gallons)
Exclusive Use Helicopters				
Type 1	9,143	0	55,619,496	57,222,206
Type 2	7,391	0	7,760,762	7,786,194
Type 2 (Firewatch)	231	0	149,531	152,761
Type 3	7,766	0	1,715,874	1,722,774
EXU Subtotal	24,300	0	65,245,663	66,883,935
Call When Needed Helicopters				
Type 1	1,873	0	10,645,083	10,745,614
Type 2	2,858	60,125	3,764,639	3,861,724
Type 3	3,694	0	859,987	863,116
CWN Subtotal	8,425	60,125	15,269,709	15,470,454
Agency Owned Helicopters				
Type 2 (Firewatch)	231	0	149,531	152,761
Type 3	601	0	0	0
Agency Owned Subtotal	832	0	149,531	152,761
Total Helicopter Use	33,558		80,515,372	82,354,389

Total flight time was relatively evenly distributed across aircraft type (Figure 7), and most aircraft use by flight time was attributed to EXU aircraft (73.0%; Figure 8).

Figure 7 – CY 2015 Total Helicopter Flight Hours by Type

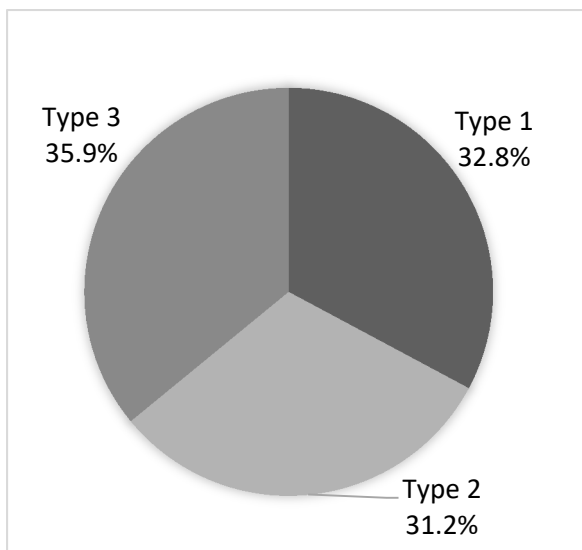
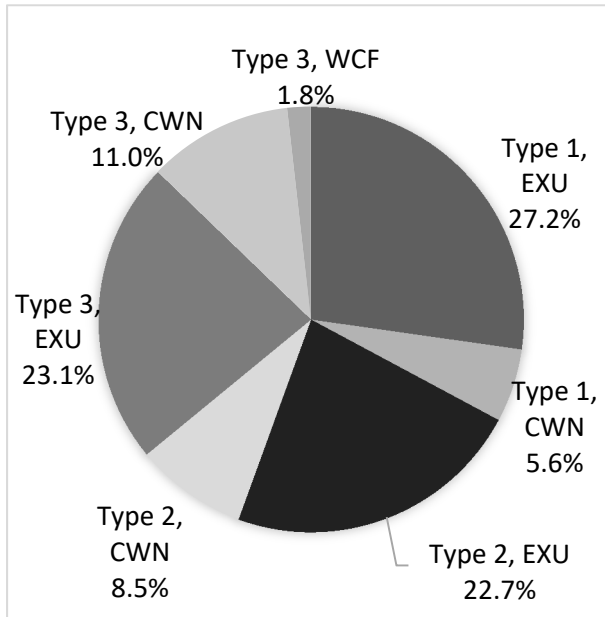


Figure 8 – CY 2015 Total Helicopter Flight Hours by Helicopter and Contract Type



Helicopter expenditures were \$268.2 million in CY 2015; approximately 60% went toward availability costs and 40% went toward flight and other charges (Table 10).

Table 10 – CY 2015 Contract Helicopter Use and Costs Summary

Helicopter Type	Flight Hours	Availability Costs	Flight and Other Costs	Total Costs
Type 1	11,016	\$100,199,711	\$65,990,044	\$166,189,755
Type 2	10,481	\$38,562,557	\$23,966,152	\$62,528,710
Type 3	11,460	\$22,167,602	\$17,313,384	\$39,480,986
Total	32,957	\$160,929,870	\$107,269,580	\$268,199,450

Rappel Program

In 2015, the USFS Rappel Program had 14 aircraft across 12 bases in 4 Regions, staffed by 258 rappellers. Rappellers supported 256 IA fires by rappel and 330 IA fires in a helitack capacity; additionally, 126 large fires were supported by rappel crews. Rappel aircraft flew 3,249 flight hours in 2014.

Table 11 – CY 2015 Rappel Program Use Summary

Base	Region	Aircraft	Rappellers	Fires (Rappel)	Fires (Helitack)	Large Fires Supported	Flight Time
Gallatin	R1	9122Z	15	24	5	7	215
Lucky Peak	R4	205DY	10	9	21	7	297
Salmon 1	R4	932CH	19	6	13	10	144
Salmon 2	R4	933CH	20	19	31	3	216
Price Valley 1	R4	16HX	16	25	7	20	294
Price Valley 2	R4	28HX	15	23	21	17	220
Scott Valley	R5	183HQ	15	10	39	3	230
Trimmer	R5	215KA	15	6	50	26	247
La Grande 1	R6	669H	18	18	42	8	219
La Grande 2	R6	689H	19	29	13	10	243
Wenatchee	R6	502HQ	31	20	16	5	292
John Day	R6	510WW	27	19	25	4	254
Siskiyou	R6	205RH	19	29	38	3	206
Central OR	R6	223HT	19	19	9	3	172
12 Bases	4 Regions	14 Aircraft	258	256	330	126	3,249
				586 IA Fires Staffed			

Airtankers

In 2015, the Forest Service had 15 EXU airtankers, including 1 VLAT and 6 LATs working under Next Generation contracts, 7 LATs working under Legacy contracts, and 2 CL-415 scoopers. There were 22 potential CWN aircraft available to the Agency for surge capacity demand, including a mixture of VLATs and LATs; additionally, up to 10 MAFFS units were available for use on National Guard C-130 aircraft. An Agency owned C-130 LAT was also available for use in 2015 (Table 12).

Table 12 – CY 2015 Airtanker Fleet Summary

Contract Category	Agency Owned Aircraft	EXU Aircraft	CWN Aircraft
Next Generation Airtankers		6	22
Legacy Airtankers		7	
Scoopers		2	
Agency Owned	1		
MAFFS			10

Contract airtankers logged 4,945 flight hours in 2015, which represents 7.3% of the Agency's total calendar year use billed in ABS (Table 13). Contract airtankers also delivered approximately 16.2 million gallons of retardant, with 69.1% of total delivered by LATs and 29.2% by VLATs (Table 13).

Table 13 – CY 2015 Airtanker Use Summary by Aircraft and Contract Type

Airtanker Type	Flight Hours	Retardant (gallons)
Exclusive Use		
LAT	2,818	8,036,525
VLAT	243	2,206,558
Scooper	576	0
EXU Subtotal	3,636	10,243,083
Call When Needed		
LAT	890	3,123,859
VLAT	273	2,517,189
CWN Subtotal	1,163	5,641,048
Agency Owned		
LAT	146	276,349
Agency owned subtotal	146	276,349
Total Airtanker Use	4,945	16,160,480

54.9% of use by flight time was in support of Forest Service fires (derived from ABS job code); the remaining 45.1% of use on non-Agency fires went to state and local cooperators (29.6%) and the Department of Interior (15.4%; Table 14).

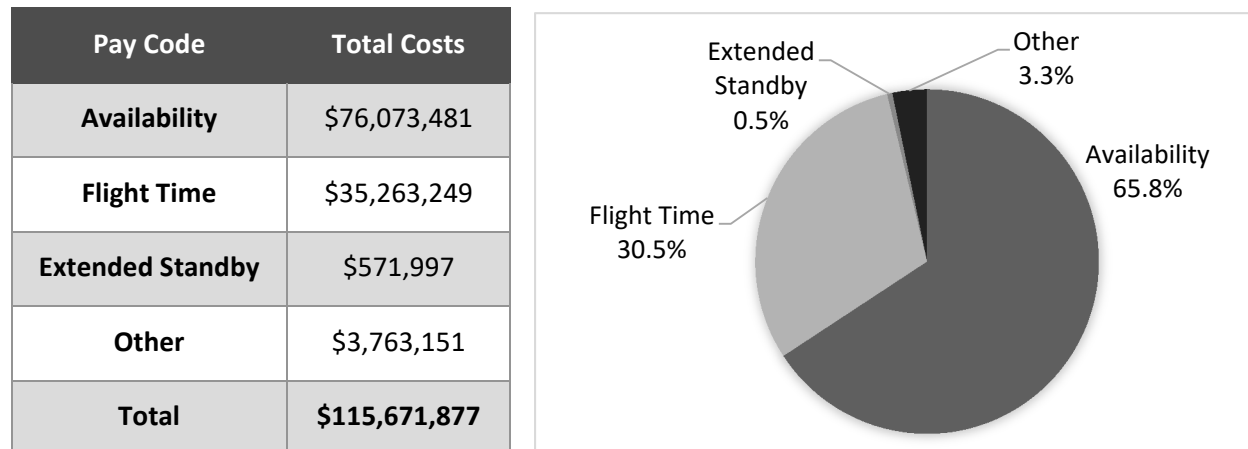
Table 14 – CY 2015 Airtanker Flight Time by Region/Agency¹² (LAT/VLAT)

Region/Agency	Flight Hours	Percent of Flight Hours
FS: Region 1	278	6.4%
FS: Region 2	26	0.6%
FS: Region 3	35	0.8%
FS: Region 4	187	4.3%
FS: Region 5	1,177	26.9%
FS: Region 6	480	11.0%
FS: Region 8	10	0.2%
FS: Region 9	28	0.6%
FS: Region 10	16	0.4%
FS: Region 13 (WO)	164	3.7%
FS Total	2,401	54.9%
BIA	102	2.3%
BLM	485	11.1%
FWS	19	0.4%
NPS	68	1.6%
DOI Total	674	15.4%
Non-Fed Fire (State)	1,294	29.6%
Non-Wildland Fed Fire (DoD)	0	0.0%
NICC	0	0.0%
Grand Total	4,370	100.0%

¹² Region/Agency derived from Incident Finance Job Codes from ABS data.

Contract LAT/VLAT expenditures were \$115.7 million in CY 2015. Availability charges totaled \$76.1 million (65.8%), and flight time costs were \$35.3 million (30.5%). Standby and other expenses accounted for the remaining costs (\$4.3 million, 3.8%; Figure 9). All LAT/VLAT expenditures (not including scoopers) represented approximately 25% of total Agency aircraft expenditures billed in ABS.

Figure 9 – CY 2015 Contract LAT/VLAT Costs by Pay Code Description



For EXU airtankers, by aircraft model, P2V aircraft flew the most in 2015 (1,192 hours), followed next by RJ85A aircraft (535 hours) and MD-87 aircraft (461 hours). P2V aircraft also represented the highest availability cost (\$15.0 million), but they also delivered the most retardant (2.5 million gallons), compared to other LAT and VLAT aircraft models (Table 15).

Table 15 – CY 2015 EXU Contract LAT/VLAT Use Summary by Aircraft Model

Aircraft Model	Flight Hours	Retardant (gallons)	Availability Costs
BAE 146	255	743,225	\$5,092,114
AVRO 146-RJ85A	535	1,569,032	\$8,958,888
DC-10	243	2,206,558	\$4,491,916
MD-87	461	2,073,923	\$8,573,488
EC130Q	375	1,191,147	\$6,672,500
P2V	1,192	2,459,198	\$15,064,469
Total	3,060	10,243,083	\$48,853,374

Tables 16-19 summarize historical airtanker use by year, aircraft type, and contract category. These summaries do not include Modular Airborne Fire Fighting Systems (MAFFS) or cooperator airtanker use data. In addition to these contract summaries, a single Forest Service HC-130H LAT flew 100 hours and delivered 276 thousand gallons of retardant in 2015 in support of fire suppression operations.

Compared to the three prior years, 2015 EXU LAT total flight time was similar (2,963 hours); however, aircraft delivered more retardant than in any of the 3 previous years (8.3 million gallons, Table 16). EXU VLATs flew 243 hours and delivered 2.2 million gallons of retardant (Table 17).

Table 16 – CY 2012-2015 EXU LAT Use Summary

Calendar Year	Flight Hours	Retardant (gallons)
2012	2,745	4,971,000
2013	2,302	5,345,435
2014	2,814	7,980,545
2015	2,963	8,312,874

Table 17 – CY 2012-2015 EXU VLAT Use Summary

Calendar Year	Flight Hours	Retardant (gallons)
2012	0	0
2013	Unknown	Unknown
2014	390	3,664,909
2015	243	2,206,558

CWN airtankers were used extensively in 2015. CWN LATs flew 890 hours and delivered 3.1 million gallons of retardant (Table 18); CWN VLATs flew 273 hours and delivered 2.5 million gallons of retardant (Table 19).

Table 18 – CY 2012-2015 CWN LAT Use Summary

Calendar Year	Flight Hours	Retardant (gallons)
2012	658	Unknown
2013	Unknown	Unknown
2014	0	0
2015	890	3,123,859

Table 19 – CY 2012-2015 CWN VLAT Use Summary

Calendar Year	Flight Hours	Retardant (gallons)
2012	336	2,963,276
2013	Unknown	Unknown
2014	4	0
2015	273	2,517,189

MAFFS

The Forest Service utilizes military C-130 aircraft with a Modular Airborne Fire Fighting System (MAFFS) to support surge capacity mission needs. The totals represented in the summary tables shown are not included elsewhere in this report because MAFFS aircraft do not report their flight hours into ABS for payment.

Table 20 – CY 2012-2015 MAFFS Use Summary

Calendar Year	Flight Hours	Gallons of Retardant	Total Costs
2012	356	531,403	Unknown
2013	767	1,291,295	Unknown
2014	133	253,356	Unknown
2015	332	762,446	\$4,141,080
4-Year Average	397	709,625	Unknown

Table 21 – CY 2012-2015 MAFFS Activation Summary

Due to data limitations at the time of the analyses, MAFFS summaries are not available in CY 2015

Table 22 – CY 2012-2015 MAFFS Costs by Charge Category

Due to data limitations at the time of the analyses, MAFFS summaries are not available in CY 2015

Water Scoopers

The Forest Service contracted two water scoopers on EXU contracts in 2015. The aircraft flew 576 hours, roughly twice the total scooper hours from 2014, which had one plane on EXU contract (Table 23). Total costs in ABS were \$22.4 million; and the aircraft delivered 3.9 million gallons of water. \$17.0 million, or 75.9% of total costs were attributed to aircraft availability charges.

Table 23 – CY 2014-2015 Scooper Use Summary

Calendar Year	Flight Hours	Water Delivered (gallons)	Availability Costs	Flight and Other Costs	Total Costs
2014	276	1,465,673	\$10,902,850	\$2,476,007	\$13,378,857
2015	576	3,877,200	\$17,010,576	\$5,403,655	\$22,414,231

Agency-Owned Aircraft Summary

The Forest Service owned and operated 24 aircraft in 2015, including one HC-130H aircraft bailed from the US Coast Guard for use as a large airtanker.

Agency aircraft accounted for 5,042 (7.4%) of the 68,137 total flight hours billed in ABS in 2015.

Table 24 – CY 2015 Agency Aircraft Use Summary by Aircraft Make and Model

Registration #	Make	Model	Flight Hours
N149Z	BEECH	KING AIR 300	454
N182Z	BEECH	KING AIR 300	189
N106Z	BELL	206A	60
N109Z	BELL	209 COBRA	255
N107Z	BELL AH-1	209 COBRA	286
N4704A	CESSNA	185 SKYWAGON	425
N111Z	CESSNA	206 STATIONAIR	85
N126Z	CESSNA	206 STATIONAIR	35
N166Z	CESSNA	206 STATIONAIR	224
N144Z	CESSNA	CITATION I 500	504
N191Z	DE HAVILLAND	BEAVER	215
N192Z	DE HAVILLAND	BEAVER	139
N106FS	DE HAVILLAND	BEAVER FLOAT	48
N193Z	DE HAVILLAND	BEAVER FLOAT	159
N141Z	DE HAVILLAND	TWIN OTTER DHC-6	225
N143Z	DE HAVILLAND	TWIN OTTER DHC-6	195
N115Z	DOUGLAS	DC-3 TURBINE	98
N147Z	GULFSTREAM	COMMANDER 500 B	166
N118Z	LOCKHEED	C-130	146
N4340Z	PIPER	SUPER CUB PA-18	331
N173Z	SHORT	3-30	199
N175Z	SHORT	3-30	173
N178Z	SHORT	3-30	296
N179Z	SHORT	3-30	137
Total			5,042