

State of Washington  
Joint Legislative Audit & Review Committee (JLARC)



**Department of Natural Resources  
Helicopter Cost and Use**

**Report 11-3**

January 5, 2011

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The Joint Legislative Audit and Review Committee (JLARC) works to make state government operations more efficient and effective. The Committee is comprised of an equal number of House members and Senators, Democrats and Republicans.

JLARC's non-partisan staff auditors, under the direction of the Legislative Auditor, conduct performance audits, program evaluations, sunset reviews, and other analyses assigned by the Legislature and the Committee.

The statutory authority for JLARC, established in Chapter 44.28 RCW, requires the Legislative Auditor to ensure that JLARC studies are conducted in accordance with Generally Accepted Government Auditing Standards, as applicable to the scope of the audit. This study was conducted in accordance with those applicable standards. Those standards require auditors to plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on the audit objectives. The evidence obtained for this JLARC report provides a reasonable basis for the enclosed findings and conclusions, and any exceptions to the application of audit standards have been explicitly disclosed in the body of this report.

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### **Committee Approval**

Subsequent to the January 5, 2011 meeting, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

### **Acknowledgements**

We appreciate the assistance provided by the Department of Natural Resources in conducting this study. In particular, we would like to thank the Division of Resource Protection for their availability and responsiveness especially as much of the study was conducted during the wildland firefighting season.

# DNR Helicopter Cost and Use Report 11-3

January 5, 2011



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## REPORT SUMMARY

### Helicopters Used in Fighting Wildland Fires

The Department of Natural Resources (DNR) has lead responsibility for fighting wildland fires on 12.7 million acres of state, private, and tribal lands in Washington. These are primarily forest lands, but also include some adjacent and intermingled sagebrush and grass areas.

The primary objective of DNR's wildland fire suppression program is rapid initial attack and control of wildfires when small. To aid in this objective, DNR operates nine firefighting helicopters. The helicopters are used for dropping water or fire retardant and delivering firefighters and supplies to difficult to reach fire sites.

Other state and federal agencies also use helicopters in their wildland firefighting efforts. Some agencies rely on helicopters that they maintain and operate themselves, while other agencies contract for the exclusive use of helicopters owned by private vendors. Agencies also make use of call-when-needed and interagency agreements for additional helicopter support.

In the 2010 Supplemental Operating Budget (ESSB 6444), the Legislature directed JLARC to review the use and cost of helicopters for wildland fire suppression. The Legislature specifically requested information on how DNR's costs for maintaining and operating its helicopters compare to the costs of entering into contracts that provide exclusive use of private vendor helicopters.

### DNR Operating Its Own Helicopters Costs Less Than Exclusive Use Contracts

We could not find any kind of formula in use in Washington, elsewhere, or in the literature that identifies a "best" way to determine how many helicopters or what types of helicopters to have, or what approach to take to acquire helicopters. We did compare the cost of DNR operating its own fleet of helicopters with three different options for exclusive use contracts:

- **Option A** provides contract coverage for six helicopters for 120 days, similar to DNR's goal of having six of its nine helicopters always ready for immediate deployment during the fire season;
- **Option B** expands the coverage period ramping up the number of helicopters for the peak of the fire season; and
- **Option C** provides coverage for the same time period as Option B, but substitutes two smaller helicopters for two medium-sized helicopters similar to what DNR currently operates.

In all three cases, the costs for DNR to operate its helicopters are less than the costs of the exclusive use contract options.

**DNR Helicopter Costs Are Less Than Exclusive Use Costs**

	Operating Own Helicopters	Exclusive Use Contract Alternatives		
		Option A	Option B	Option C
2009 State Operating Costs	\$2.19 Million	\$4.60 - \$5.43 Million	\$4.11 - \$5.00 Million	\$3.78 - \$4.51 Million

Source: JLARC analysis of DNR, USFS, BLM, and Idaho data.

**Availability of Helicopters for Fire Suppression Is Limited**

The Legislature also asked for information about the availability of sufficiently outfitted helicopters that are privately owned or owned by nonstate governmental entities. Separate from costs, overall availability of helicopters rated and equipped for fire suppression is limited. The availability of private vendor helicopters is largely dependent upon the need for helicopters in the private sector (e.g., logging, mineral exploration, and oil rigs). Demand by other state and federal agencies is also a factor, although to a lesser degree. Nonstate government-owned helicopters in the region are either currently accessed through interagency agreements, or they are not an option because the helicopters do not meet firefighting standards.

**DNR’s Helicopter Fleet May Be Larger Than Needed**

DNR currently maintains and operates nine helicopters. The agency tries to manage its maintenance schedule to keep six of the helicopters ready for immediate deployment at all times during the fire season.

JLARC’s review of five years of DNR helicopter flight data calls into question whether DNR needs all nine helicopters in its fleet and six ready for immediate deployment. Six helicopters are seldom used at one time.

**Recommendation:**

**The Department of Natural Resources should conduct an analysis of how many helicopters should be in its fleet and how many helicopters must be maintained for immediate deployment and report back to JLARC and the fiscal and natural resource committees of the Legislature.**

# PART ONE – HELICOPTERS USED IN FIGHTING FIRES

## DNR Is Responsible for Wildland Fire Suppression Across the State

The Department of Natural Resources (DNR) has lead responsibility for fighting wildland fires on 12.7 million acres of state, private, and tribal lands in Washington. These are primarily forest lands, but also include some adjacent and intermingled sagebrush and grass areas.

Over the past five years, DNR has averaged \$28.5 million per year in fire suppression expenditures. The cost of fighting wildland fires varies each year, as do the number of fires and the number of acres burned. Weather conditions play a major role in this variability. Exhibit 1 illustrates this variation in wildland fires from year to year.

**Exhibit 1 – Wildland Fires Vary Each Year**

	2005	2006	2007	2008	2009
<b>Number of DNR Fires</b>	645	1,021	981	830	1,044
<b>Number of DNR-protected Acres Burned</b>	30,962	48,802	23,535	32,680	16,907
<b>DNR Firefighting Expenditures (includes all funding sources)</b>	\$18.0 M	\$22.0 M	\$47.5 M	\$24.7 M	\$30.1 M

Source: JLARC analysis of DNR data.

A 2008 DNR analysis of fire costs over the preceding five years showed that, if a fire can be kept to less than 10 acres, the cost of putting it out averaged \$3,100. When a fire grew to be between 10 and 100 acres, the cost jumped by more than \$50,000. If the fire became larger than 100 acres, the cost was more than \$884,000. According to state and federal fire managers, fires can grow quickly. A rapid initial response by a helicopter can be the difference in containing the fire or having it become a large, expensive fire. DNR data show that more than 94 percent of the fires in the past five years have not exceeded 10 acres and nearly 86 percent of the fires have been controlled within one day.

## Helicopters a Tool in Fighting Wildland Fires

Helicopters do not put out fires. Ground crews put out fires, but helicopters can provide a quick, efficient “initial attack” in an effort to keep the fires from growing out of control and help contain the fires until other types of fire equipment and personnel arrive.

Helicopter-delivered firefighting assistance includes:

- Dropping of water or retardant;
- Delivering firefighting personnel;
- Transporting cargo in support of fighting fires;
- Observing and directing fire fighting activities; and
- When medical emergencies arise, transporting injured firefighters from the fire to emergency medical facilities.

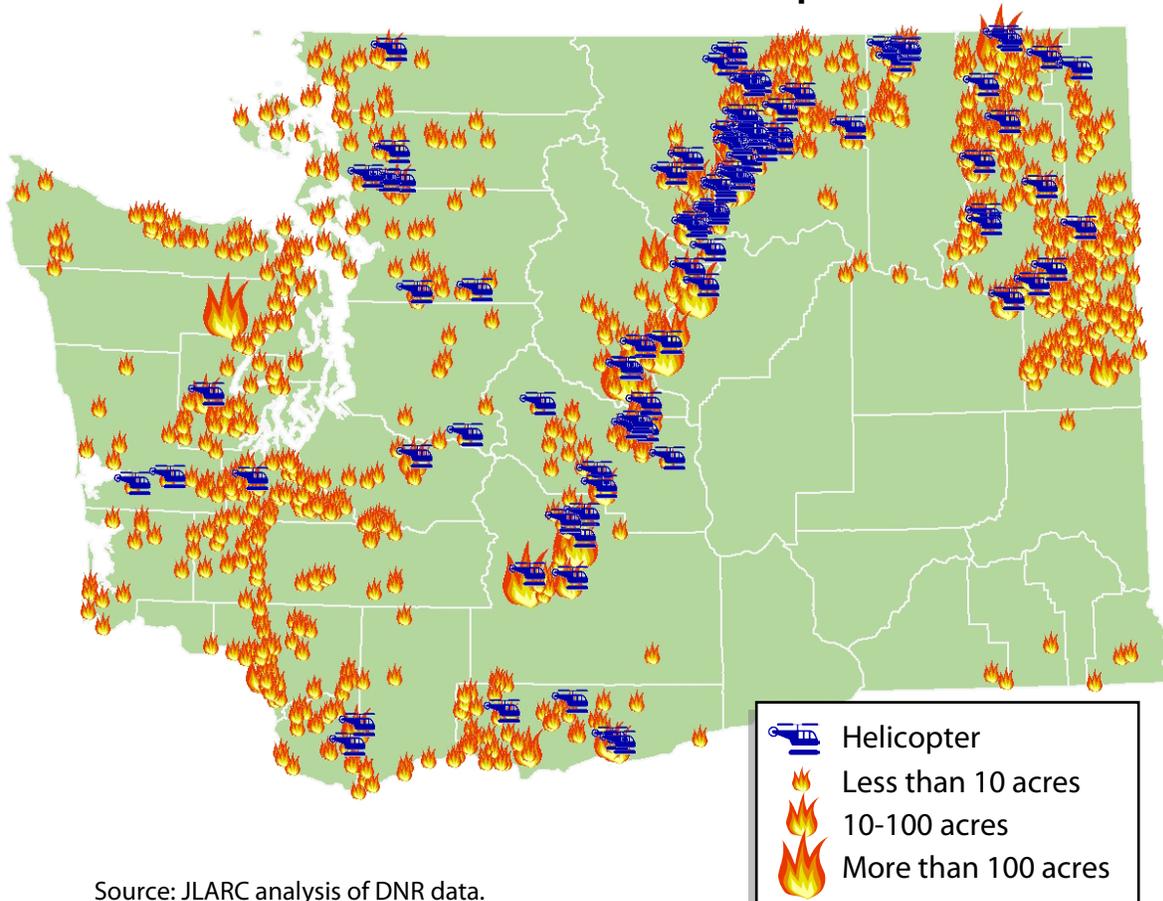


DNR’s use of helicopters started in 1967 when DNR acquired two light helicopters to search for fires and report what was occurring with the fires. Since then, the number and types of helicopters in DNR’s fleet has varied. In 2002, DNR fire managers decided that to effectively suppress forest fires, six helicopters should be available on a daily basis during the fire season. DNR currently operates a total of nine helicopters.

DNR’s helicopters are strategically pre-positioned every day during fire season. The objective is to have them in areas where the potential for new fires is greatest. Helicopters are normally based in Ellensburg, Omak, and Colville, with other locations assigned each day as needed during times of high fire activity. During the off-season, the helicopters are based in Olympia, where the hangars and major maintenance facilities are located.

Wildland fires occur on both sides of the Cascade Mountains. On average, about 45 percent of the fires are in western Washington and 55 percent are in eastern Washington. However, more than 90 percent of the burned acres are in eastern Washington. In 2009, DNR responded to more than 1,000 fires. The agency helicopters were deployed on 135 of those fires. The map in Exhibit 2 shows where the wildland fires occurred in 2009 and the fires on which helicopters were deployed.

**Exhibit 2 – DNR Wildland Fires and Helicopter Use in 2009**



## **Legislature Directs JLARC to Review Use and Cost of Helicopters for Wildland Fire Suppression**

In Engrossed Substitute Senate Bill 6444 (2010), the Legislature directed the Joint Legislative Audit and Review Committee (JLARC) to complete a report on the use and cost of helicopters for wildland fire suppression.

- **Part Two** of this report describes choices agencies must make about types of helicopters and different arrangements for acquiring helicopters, and the choices that Washington, four other western states (Oregon, Idaho, Montana, and California), and the U.S. Forest Service have made;
- **Part Three** provides a comparison of the costs for DNR to maintain its existing helicopter fleet versus entering into exclusive use contracts with private vendors, and an analysis of the availability of sufficiently outfitted private vendor or nonstate government helicopters; and
- **Part Four** presents the results of JLARC’s review of DNR helicopter flight data and the concern that DNR’s helicopter fleet may be larger than needed.



# PART TWO – DETERMINING WHICH HELICOPTERS BEST SUIT NEEDS AND HOW TO ACQUIRE THEM

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State and federal agencies must make choices related to the capabilities and the costs associated with the helicopters they use for wildland fire suppression. There are also different approaches to acquiring the necessary helicopters. Understanding some of the decisions agencies must make is preliminary to understanding the cost comparison presented in Part Three of this report. This part of the report describes:

- Different types of firefighting helicopters;
- Four approaches to acquire use of helicopters;
- Helicopter choices DNR has made;
- Choices the U.S. Forest Service and other western states have made; and
- Funding for helicopter use in other western states.

## **There Is No Formula that Determines Which Helicopters Will Best Suit an Agency’s Needs or How the Helicopters Should Be Acquired**

We could not find any kind of formula in use in Washington, elsewhere, or in the literature that identifies a “best” way to determine how many helicopters to use, what types of helicopters to have, or what approach to take to acquire helicopters. Situations are different in different parts of the country. Decisions by fire managers in other states and in federal agencies vary depending on the need and what will be most advantageous in meeting that need.

## **Different Types of Firefighting Helicopters**

There is a wide variety of helicopters with different capabilities and costs available to agencies for wildland fire suppression use. Helicopters are divided into types based on the helicopter’s size and performance specifications. The three primary types of helicopters used in firefighting efforts are: Type 1 – heavy; Type 2 – medium; and Type 3 – light. The costs to acquire, maintain, and operate each type of helicopter can vary significantly. The number and type or types of helicopters an agency elects to use can vary based on the agency’s needs and the costs of the helicopter. Exhibit 3 shows the three types of helicopters and the associated performance specifications of each type.

**Exhibit 3 – Helicopter Types and Performance Specifications**

Type 1 – Heavy	Type 2 – Medium	Type 3 – Light
		
<b>Boeing Chinook</b>	<b>Bell Huey</b>	<b>Hughes Cayuse</b>
Allowable Payload: <b>5,000</b> lbs. Passenger Seats: <b>15+</b> Retardant or Water Carrying Capability (Gallons): <b>700</b> Maximum Gross Takeoff/Landing Weight: <b>12,501+</b> lbs.	Allowable Payload: <b>2,500</b> lbs. Passenger Seats: <b>9-14</b> Retardant or Water Carrying Capability (Gallons): <b>300</b> Maximum Gross Takeoff/Landing Weight: <b>6,000 – 12,500</b> lbs.	Allowable Payload: <b>1,200</b> lbs. Passenger Seats: <b>4-8</b> Retardant or Water Carrying Capability (Gallons): <b>100</b> Maximum Gross Takeoff/Landing Weight: <b>Up to 6,000</b> lbs.

Source: JLARC analysis of USFS data.

**Helicopter Ratings**

All helicopters regardless of type are equipped and rated as “restricted” or “standard.”

- Restricted helicopters can only be used for cargo and bucket operation.
- Standard helicopters are authorized to perform all types of functions such as passenger transport, reconnaissance, bucket operations, and cargo.

The major operational difference between the two ratings is whether or not the helicopter is allowed to carry passengers. The pilot is the only person allowed in a restricted helicopter during flight. Because the standard rating allows the transport of firefighting personnel, state and federal agency fire managers prefer helicopters with this rating for fire suppression work. However, to receive a standard rating, the helicopter must meet more stringent performance specifications and have additional on-board equipment than a restricted category helicopter. These requirements can significantly add to the cost of a standard helicopter.

### ***Federal Card***

State and federal firefighting agencies use helicopters that have been “federally carded.” This means the helicopter, the pilot, and the fuel truck and driver that accompany the helicopter have met certain federal requirements to operate in a firefighting capacity. Examples of the federal carding for specific uses include: transporting cargo suspended on a long line beneath the helicopter because a suitable landing spot is not available; helitorch (setting backfires using helicopters); and passenger transport.

For safety and liability reasons, DNR and other state and federal agencies insist that all helicopters used in their firefighting operations – whether operated by the agency, owned by a private vendor, or other state or federal agency – be federally carded.

### **Four Approaches to Acquire Use of Helicopters**

State and federal agencies have two predominate and two supplemental arrangements available to them to acquire the use of helicopters for wildland fire suppression. Agencies can operate their own helicopters; enter into exclusive use contracts; have call-when-needed agreements; and participate in interagency agreements to assist one another when needed.

State and federal agencies responsible for forest lands and with significant fire suppression needs typically either operate their own helicopters or have exclusive use contracts. These two approaches assure maximum control and availability of the helicopters during fire season.

Agencies will usually have call-when-needed and interagency agreements for additional helicopter support when needs go beyond the helicopters they operate or have under exclusive use contract. Exhibit 4 describes the four arrangements and how each works.

**Exhibit 4 – Four Helicopter Acquisition Arrangements**

<b>Arrangement for Acquiring Helicopter</b>	<b>How Does the Arrangement Work and What Are the Cost Items?</b>
<b>Operate Own</b> (Availability Guaranteed)	State agencies that operate their own helicopters used for wildland fire suppression might purchase the aircraft, but it is far more common that they lease the helicopter from the U.S. Forest Service through the Federal Excess Personal Property (FEPP) program. FEPP provides state agencies with surplus military aircraft specifically for wildland firefighting purposes. This option is not available to federal agencies. State agencies pay: <ul style="list-style-type: none"> <li>• \$1 for an indefinite lease;</li> <li>• Demilitarizing and refurbishing costs; and</li> <li>• All maintenance and operations costs including mechanics, pilot, fuel, fuel truck driver, supplies, and hangar/maintenance facilities.</li> </ul>
<b>Exclusive Use Contract</b> (Availability Guaranteed)	State and federal agencies request bids from private vendors to supply a helicopter for a specified number of days. Exclusive use contracts have two major components: the daily availability rate (the cost of having the helicopter for each day of the contract period); and the hourly flight rate (the cost for each hour the helicopter is being used). Private vendors will bid on the daily availability rate. Agencies vary and will either specify the hourly flight rate or let the vendors bid this as well. State and federal agencies pay: <ul style="list-style-type: none"> <li>• Daily availability rate (paid whether the helicopter is used or not);</li> <li>• Hourly flight rate;</li> <li>• Fuel truck mileage; and</li> <li>• Crew per diem and overtime.</li> </ul>
<b>Call-When-Needed Agreement</b> (Availability Not Guaranteed)	State and federal agencies ask that any interested private vendor submit an offer to supply a helicopter and specify the hourly flight rate to be paid when the helicopter, if available, is used. State and federal agencies pay: <ul style="list-style-type: none"> <li>• Hourly flight rate (often for a minimum number of hours);</li> <li>• Fuel truck mileage; and</li> <li>• Crew per diem and overtime.</li> </ul>
<b>Interagency Agreement</b> (Availability Not Guaranteed)	State and federal agencies sign an agreement with other state and/or federal agencies to supply a helicopter when needed, if available, at a predetermined hourly flight rate. The helicopter remains under the control of the supplying agency and can be recalled at any time. State and federal agencies pay: <ul style="list-style-type: none"> <li>• Hourly flight rate</li> </ul>

Source: JLARC analysis.

For additional information about exclusive use contract terminology and how the exclusive use contracts work, see Appendix 3.

## Helicopter Choices DNR Has Made

DNR has elected to operate its own helicopters and one additional helicopter the agency rents from Chelan Fire District #1. The Chelan helicopter is included in the DNR rotation for fire deployment. DNR also has call-when-needed and interagency agreements for additional helicopter capacity.

In FY 2009, the cost for the various helicopters used for wildland fire suppression was nearly \$2.8 million. Approximately 80 percent of the expenditures were for DNR operated helicopters. Ten percent went to call-when-needed private vendors, and the other 10 percent reimbursed the U.S. Forest Service for the use of its helicopters under an interagency agreement.

### *DNR Operates Its Own Helicopters*

All nine DNR helicopters are Type 2 - medium and are equipped and rated as standard. Each DNR helicopter is inspected annually by a federal government inspector and is federally carded.

The primary objective of DNR's wildland fire suppression program is rapid initial attack and control of wildfires when small. To best meet this objective, DNR believes the major advantages for operating its own helicopters include:

- Complete control over where and when to pre-deploy for rapid initial attack;
- Guaranteed availability when needed;
- Quality control for pilots and mechanics; and
- Cost effectiveness compared to other alternatives for procuring similar helicopters.

DNR acquired its eight helicopters through the Federal Excess Personal Property (FEPP) program. FEPP allows state forestry agencies to obtain surplus military helicopters for \$1 through indefinite leases. While there is almost no cost to acquire a federal helicopter, DNR has paid an average of \$521,000 (current dollars) to demilitarize and refurbish each of the eight helicopters for firefighting purposes. In comparison, the cost for a private vendor to acquire and outfit a similar helicopter for fire suppression purposes is \$3.5 to \$5.5 million.

Exhibit 5 shows the expenditures DNR has made over the past five fiscal years to maintain and operate all nine helicopters including the Chelan helicopter. DNR provides the maintenance, pilot, fuel, and other expenditures to operate the Chelan helicopter and the costs are included in DNR's operating expenditures. The exhibit shows the rental payments made to Chelan Fire District #1 for the helicopter, an accompanying fuel truck, and hangar space separately. The costs have varied through the years based on the number of days the helicopter has been available to DNR for use.

### **Exhibit 5 – DNR Helicopter Operation Expenditures**

<b>Expenditures for:</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
DNR Operations*	\$1,454,200	\$1,254,000	\$1,849,400	\$1,872,200	\$2,003,800
Chelan Rental Cost	\$167,800	\$23,500	\$212,100	\$89,800	\$186,600
<b>Total</b>	<b>\$1,622,000</b>	<b>\$1,277,500</b>	<b>\$2,061,500</b>	<b>\$1,962,000</b>	<b>\$2,190,400</b>

\*Costs of refurbishing and demilitarizing the DNR helicopters occurred in past biennia and are not included.

Source: JLARC analysis of DNR supplied AFRS data.

### ***DNR Uses Call-When-Needed Agreements***

DNR benefits from the availability of additional suitably equipped helicopters through call-when-needed agreements. The call-when-needed helicopters used by DNR are also federally carded and are inspected annually by federal inspectors to ensure the helicopters are sufficiently outfitted for fire suppression purposes.

DNR accepts call-when-needed agreement offers from any qualified private vendor. When multiple vendors are available for immediate dispatch to an emerging fire, DNR reports that it chooses the lowest-cost qualified vendor first. In 2009, DNR used five call-when-needed vendors.

DNR fire managers have recognized the value of call-when-needed contractors to supplement the capacity of DNR’s helicopters. According to DNR, call-when-needed helicopters have been used:

- In western Washington where several contractors can respond quickly – especially when DNR helicopters are engaged in operations east of the Cascade Mountains;
- During larger, more complex fires, freeing DNR’s helicopters for initial attack on new fires; and
- When sustained periods of extreme firefighting cause demand to exceed DNR’s capacity to respond to new fires.

Exhibit 6 shows the expenditures DNR has made over the past five fiscal years for private vendor call-when-needed helicopters.

**Exhibit 6 – DNR Expenditures for Call-When-Needed Helicopters**

<b>Expenditures for:</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
Private Vendors	\$165,100	\$114,700	\$49,000	\$220,600	\$278,000

Source: JLARC analysis of DNR supplied AFRS data.

### ***DNR Uses Interagency Agreements***

Due at least in part to the intermingled land ownership pattern across the Washington landscape, DNR participates with federal firefighting agencies and the Oregon Department of Forestry in an arrangement formalized in the 2009 Region 6 Master Cooperative Fire Protection Agreement. This agreement establishes agreed-upon and standardized personnel training and qualifications, equipment standards, and business practices.

The interagency agreement also provides DNR with access to both Type 1 - heavy and Type 3 - light helicopters. In large fire situations, heavy helicopters can be especially valuable because of their capacity to deliver large quantities of water. Likewise, light helicopters are sometimes employed on large fires as a cost-effective reconnaissance tool.

In addition, DNR has an agreement with the U.S. Bureau of Indian Affairs for exclusive use of single engine airtanker that is based in northeastern Washington. DNR states that the use of its helicopters would be increased between 50 and 75 hours a year if not for this fixed wing aircraft.

DNR’s medium helicopters are also used reciprocally by the federal agencies when they need additional resources. DNR is reimbursed by these federal agencies when its helicopters are used on federal jurisdiction fires. Exhibit 7 shows DNR’s estimates of payments the agency has made over the past five fiscal years to the U.S. Forest Service (USFS) for the use of its Type 1 and Type 3 helicopters. It also shows DNR’s estimates of payments USFS has made to DNR for the use of DNR helicopters.

**Exhibit 7 – DNR Payments To and From the U.S. Forest Service for Helicopters**

<b>Payments:</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
To USFS	\$57,400	\$31,100	\$75,800	\$135,800	\$300,100
From USFS	\$0	\$11,400	\$0	\$0	\$197,200

Source: DNR supplied data.

### **Choices the Forest Service and Other Western States Have Made**

The U.S. Forest Service (USFS) enters into exclusive use contracts to acquire the helicopters it needs for fighting wildland fires. USFS contracts for all types of helicopters on a national basis.

In 2009, USFS paid private vendors with a Type 2 – medium standard helicopter located in Washington approximately \$600,000 for a 120 day exclusive use contract (\$5,000 per day). In addition, USFS paid \$1,546 for each hour the helicopter was flown. For the 2010 fire season, USFS’s payment for a 120 day exclusive use contract for the same helicopter was unchanged, but the hourly flight rates nearly doubled to \$2,850 to \$3,335 per hour.

We looked across the country to see what arrangements other states have made to acquire helicopters for wildland fire suppression. We found that states with forest lands and significant wildland fire suppression activity either entered into exclusive use contracts or operated their own helicopters. States were about evenly split in which arrangement was selected. Type 2 - medium standard helicopters were the predominate helicopter selected by fire managers.

The Legislature asked JLARC to compare Washington’s choices about numbers and types of helicopters and the arrangements for acquiring them with choices made in Oregon, Idaho, Montana, and California. Exhibit 8 provides information about each of these states, as supplied by the states. The exhibit includes the primary arrangement for acquiring helicopters, number and types of helicopters used, average annual flight hours, and the average cost of operating or contracting for a helicopter on a per hour of actual flight basis.

**Exhibit 8 – Helicopter Arrangements, Use, and Costs  
in Washington and Other Western States**

State	Acquisition Arrangement	Helicopter Numbers and Types	Average Annual Flight Hours per Helicopter	Average Total Cost per Flight Hour
Washington	DNR operates its own helicopters acquired through FEPP and a rental agreement with Chelan Fire Protection District #1.	9 medium standard	80 hours	\$2,750
California	The Department of Forestry and Fire Protection operates its own helicopters acquired through FEPP.	11 medium standard	300 hours	\$2,483
Idaho	The Department of Lands has exclusive use contracts (77 days).	1 medium and 1 light	91 hours	\$5,500
Montana	The Department of Natural Resources and Conservation operates its own helicopters acquired through FEPP.	5 medium standard and 1 light	110 hours	\$2,820
Oregon	The Department of Forestry has exclusive use contracts (60 and 75 days).  Oregon’s contracts guarantee payment for a minimum of 120 flight hours. There is no daily availability rate.	3 medium standard	50 hours	\$6,696

Source: JLARC interview data; not verified.

***Other Factors Impacting Helicopter Use by Other States and the Forest Service***

In reviewing the use of helicopters by other state and federal agencies we found that:

- Like Washington, all of the other state and federal agencies have agreements with other state and federal agencies to provide wildland fire suppression assistance, including helicopters, when needed;
- All of the other state and federal agencies, with the exception of Montana, have private vendor call-when-needed contracts or agreements to supplement the helicopters the agencies operate or have under exclusive use contract. Montana has an arrangement to use federal call-when-needed contracts;
- Half of Oregon’s 12 fire protection districts also have exclusive use contracts for helicopters within the districts which can supplement the three Oregon Department of Forestry contracted statewide helicopters;

- In addition to the 11 helicopters California operates, many of the counties and some of the larger cities operate their own helicopters. The California Department of Forestry and Fire Protection makes use of these helicopters, if they are available, on a call-when-needed basis;
- Similar to Washington, the other state and federal agencies either operate or contract for fixed wing airtankers as well. All of the other agencies claimed their need for helicopters would increase if the number of fixed wing aircraft available to them was decreased;
- The Idaho Department of Lands noted that current budget situations are limiting the number and/or length of exclusive use contracts;
- The Idaho Department of Lands also noted that it had considered operating its own helicopters, but abandoned the idea because of the start-up costs of acquiring the helicopters, building or leasing facilities, and hiring personnel, particularly pilots and mechanics. As part of its consideration, Idaho inquired if the state might be able to contract with DNR to provide maintenance if Idaho did decide to operate its own helicopters; and
- All of the fire managers from the state and federal agencies stated that decision-making about when to deploy an initial attack helicopter is not dependent upon the number of helicopters, the types of arrangements, and/or cost of the helicopter. Decisions are based on the nature of the fire with the ultimate goal of stopping the fire at the smallest size possible thereby providing the most cost-effective outcome.

## **Funding for Helicopter Use in Washington and Other States**

Washington and all the other states we examined use General Fund-State dollars to fund wildland fire suppression activities. This includes funding of helicopters regardless of the approach used to acquire the helicopters. However, there are a few differences worth noting.

### ***Funding of DNR Helicopters***

DNR has an Equipment Revolving Fund, of which a portion (Program 86K) is dedicated to the maintenance and operation of the agency helicopters. Each year, DNR develops an hourly rate for the use of the helicopters. The rate is based on the expected cost of maintaining and operating the helicopters divided by the average annual flight hours. When a DNR helicopter is used on land for which DNR is responsible, the Emergency Fire Suppression Account is billed for the number of hours the helicopter is used. When another state or federal agency is responsible for the land, DNR will bill that agency for the flight hours. Payments received from the Emergency Fire Suppression Account or the other agencies for the flight hours used are deposited in the Equipment Revolving Fund to pay for the costs of operating and maintaining the helicopters.

Washington's Emergency Fire Suppression Account is funded primarily with General Fund-State dollars, but some federal dollars and a small amount of funding from landowners also go into the Suppression Account. Landowners pay some of the costs of fire suppression in two ways: First, there is the Landowner Contingency Forest Fire Suppression Account that is funded by assessing landowners a fee based on the number of acres owned. The Contingency Fund can be accessed if a fire is the result of non-negligent landowner operations. If the fire is caused through landowner negligence, and it can be proved, DNR can recover some of the costs of suppressing the fire from the landowner. However, the recovered costs are deposited in the State General Fund.

**Funding of Helicopters in Other Western States**

There are similarities and differences in the ways helicopters for wildland fire suppression are funded in other states, some of which are highlighted in Exhibit 9.

**Exhibit 9 – Funding for Helicopter Use in Other Western States**

State	Sources of Helicopter Funding	Special Fund or Account for Helicopter Use
California	<p>California has an emergency fire suppression fund similar to Washington’s which is primarily funded with General Fund-State dollars</p> <p>The state has an aggressive civil cost recovery system from negligent property owners and other responsible parties. <b>Recovered funds go back into the state General Fund.</b></p>	<p>Direct General Fund-State appropriations are made for base costs (e.g., base salaries, helicopters, maintenance, parts, hangar facilities).</p> <p>Emergency fire suppression fund or other responsible parties are billed for operating costs directly associated with response to a wildland fire (e.g., overtime, fuel).</p>
Idaho	<p>Idaho has an emergency fire suppression fund similar to Washington’s that pays for the exclusive use contracts. <b>About 50 percent of funding for forest fire preparedness comes from forest landowners who are charged 60 cents per acre per year.</b> The other half of the funding is General Fund-State dollars.</p>	No
Montana	<p>Montana has an emergency fire suppression fund similar to Washington’s which is primarily funded with General Fund-State dollars</p> <p>The Montana Department of Natural Resources and Conservation, similar to Washington, also develops an hourly rate for the use of its helicopters. However, the <b>hourly flight rates must be approved by the Montana Legislature.</b></p>	<p>Helicopter operations are partially funded by an internal special aviation proprietary account, similar to Washington Equipment Revolving fund. All operating costs are covered by this account with any fixed costs (personnel, rent, insurance) covered by appropriated funding.</p>
Oregon	<p>Oregon has a Special Purpose Appropriation which pays for the state’s exclusive use contracts. It is funded with General Fund-State dollars.</p> <p>The exclusive use helicopter contracts that six fire districts have are funded with districts funds of which about <b>half comes from landowner acreage assessments</b> and half matching General Fund-State dollars.</p>	No

Source: JLARC analysis of interview information from the other states.

# PART THREE – DNR OPERATING ITS OWN HELICOPTERS COSTS LESS THAN EXCLUSIVE USE CONTRACTS

---

The Legislature directed JLARC to conduct a comparison between the costs of DNR maintaining and operating its own fleet of helicopters and the cost of exclusive use contracts. JLARC compared DNR’s costs with three exclusive use contracting options. In all three cases, the costs for DNR to operate its own helicopters are less than exclusive use contract costs. In addition to the cost factor, a lack of sufficiently outfitted helicopters may limit some options in Washington for acquiring helicopter use. This part of the report describes how:

- Costs for DNR to operate its helicopters are less than exclusive use contract costs;
- Analyses in Oregon and Montana reached similar conclusions;
- Relocating DNR maintenance facilities does not affect results of cost comparison; and
- A lack of helicopter availability may limit some options for Washington.

## Costs for DNR to Operate Its Helicopters Are Less Than Exclusive Use Contract Costs

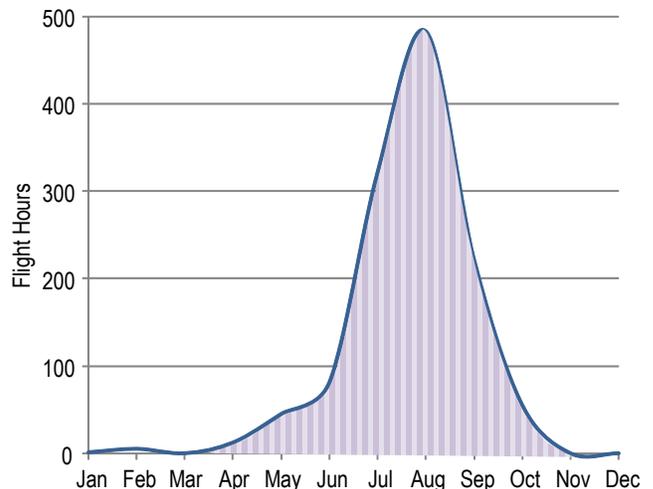
### *How JLARC Compared DNR’s Helicopter Costs with Exclusive Use Contracts*

For our cost comparison we used historical DNR fire and helicopter flight data; DNR’s expenditures for operating and maintaining its own fleet of nine Type 2 – medium standard helicopters in 2009; and contract rates paid by the U.S. Forest Service and the U.S. Bureau of Land Management in 2009.

To determine the number of exclusive use contracts, possible contract lengths, and what types of helicopters might be used in our comparative cost analysis, we first examined DNR fire and helicopter use data from 2005 through 2009. Exhibit 10 shows and describes how these data were used.

**Exhibit 10 – Maximum Monthly DNR Helicopter Flight Hours, 2005-2009**

In the graph, the shaded area under the line shows the highest flight hours for each month over the past five years. Our first objective in the analysis was to develop realistic exclusive use contract options that would ensure adequate helicopter firefighting coverage for much or all of the shaded area.



Source: JLARC analysis of DNR data.

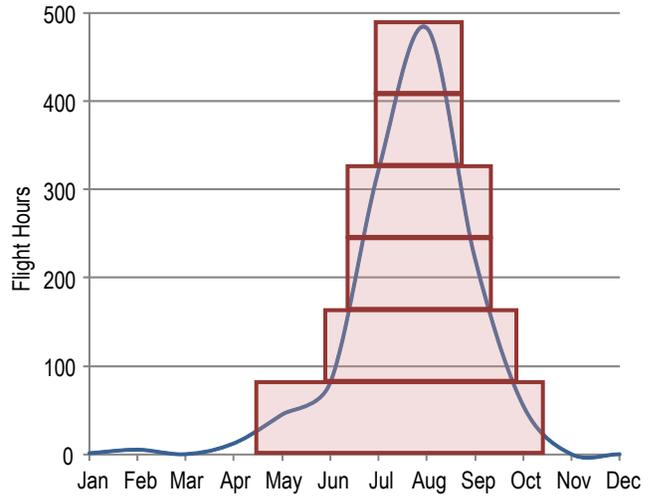
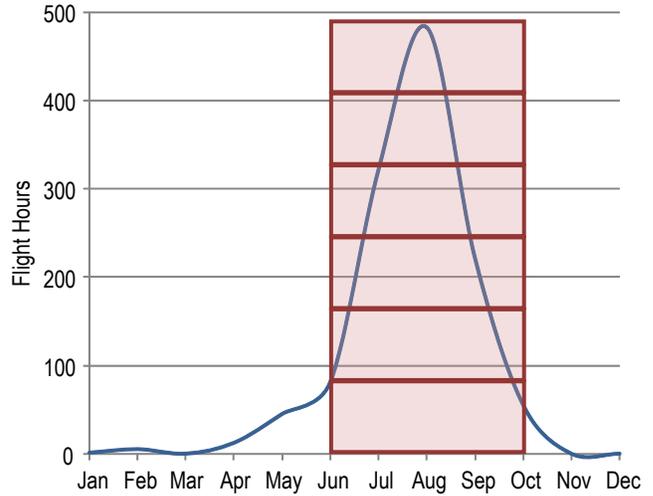
While DNR has nine helicopters in its fleet, the agency tries to ensure that six are always available for immediate deployment during fire season. Therefore, this analysis uses six (rather than nine) exclusive use helicopters as the basis for comparison. Each of the three options includes six exclusive use contract helicopters. In Option B, we varied the contract lengths. In Option C, we introduced some lighter helicopters. The three options are shown and explained in Exhibit 11.

**Exhibit 11 – Six Contracts Cover Maximum Flight Hours**

**Option A** provides coverage through exclusive use contracts for six helicopters for 120 days (the standard USFS contract length). This option provides more coverage than may be needed at times during the year. However, it does not provide coverage at times when helicopters have been used in the past. This option most closely mirrors the coverage provided by DNR’s current approach except DNR has helicopters available year-round. All six are Type 2 – medium standard helicopters.

**Option B** uses six contracts. This option takes advantage of tailoring exclusive use contract lengths to meet the coverage needs. Contract lengths are adjusted to ramp up coverage during the peak of the fire season and provide coverage for more of the year. All six contracts are for Type 2 – medium standard helicopters similar to what DNR currently operates.

**Option C** provides coverage for the same time period as Option B, but substitutes two less expensive Type 3 – light standard helicopters for two of the Type 2 – medium standard helicopters.



— Flight Hours    □ Contracts

Source: JLARC analysis of DNR data.

For further information about the methodology used to compare exclusive use contract costs with DNR’s expenditures for operating its own helicopters, please see Appendix 3.

### **Analysis Comparing DNR Costs to Exclusive Use Contract Costs**

In the analysis of costs, we used actual U.S. Forest Service and the Bureau of Land Management exclusive use contract rates. We selected from different contracts and combined the lowest daily availability rates and the lowest hourly flight rates we could find with the most conservative estimates of other costs. However, such a combination of rates would likely not be obtainable.

Exhibit 12 shows that the cost of having six exclusive use helicopters under contract would have been more than DNR’s expenditures for having and using nine helicopters throughout the year. Even if the private vendors do not respond to any fires, the daily availability costs exceed DNR costs.

#### **Exhibit 12 – DNR Helicopter Costs Are Less Than Exclusive Use Costs**

<b>Option</b>	<b>2009 Costs of Each Option</b>
<b>DNR Operating Own Helicopters</b>	<b>\$2.19 million</b> (actual)
<ul style="list-style-type: none"> <li>• 9 Type 2 – medium standard helicopters</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanics (7 full-time) \$0.50 M</li> <li>• Pilots (1 full-time, 9 part-time) \$0.39 M</li> <li>• Equip/Parts \$0.035 M</li> <li>• Fuel \$0.34 M</li> <li>• Chelan lease \$0.19 M</li> <li>• Hangar/Maintenance Facility \$0.15 M</li> <li>• Supplies and Other Misc. \$0.14 M</li> <li>• Travel \$0.13 M</li> </ul>
<b>Exclusive Use – Option A</b>	<b>\$4.60 - \$5.43 million*</b> (estimated)
<ul style="list-style-type: none"> <li>• 6 Type 2 – medium standard helicopters each for 120 days</li> </ul>	<ul style="list-style-type: none"> <li>• Daily availability \$2.93-\$3.63 M</li> <li>• Hourly flight rate \$1.17-\$1.30 M</li> <li>• Per diem and overtime \$0.2 M</li> <li>• Fuel truck mileage \$0.1 M</li> </ul>
<b>Exclusive Use – Option B</b>	<b>\$4.11 - \$5.00 million*</b> (estimated)
<ul style="list-style-type: none"> <li>• 6 Type 2 – medium standard helicopters:                             <ul style="list-style-type: none"> <li>○ 1 for 180 days;</li> <li>○ 1 for 120 days;</li> <li>○ 2 for 90 days; and</li> <li>○ 2 for 60 days</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Daily availability \$2.44-\$3.25 M</li> <li>• Hourly flight rate \$1.17-\$1.25 M</li> <li>• Per diem and overtime \$0.2 M</li> <li>• Fuel truck mileage \$0.1 M</li> </ul>
<b>Exclusive Use – Option C</b>	<b>\$3.78 - \$4.51 million*</b> (estimated)
<ul style="list-style-type: none"> <li>• 4 Type 2 – medium standard helicopters:                             <ul style="list-style-type: none"> <li>○ 1 for 180 days;</li> <li>○ 1 for 120 days; and</li> <li>○ 2 for 90 days</li> </ul> </li> <li>• 2 Type 3 – light standard helicopters for 60 days</li> </ul>	<ul style="list-style-type: none"> <li>• Daily availability \$2.21-\$2.83 M</li> <li>• Hourly flight rate \$1.07-\$1.18 M</li> <li>• Per diem and overtime \$0.2 M</li> <li>• Fuel truck mileage \$0.1 M</li> </ul>

\*Each exclusive use contract option includes \$100,000 for DNR contract management and helicopter inspection.

Source: JLARC analysis of DNR, USFS, BLM, and other state data.

DNR costs to acquire and refurbish its current helicopter fleet took place in past biennia and as “sunk costs” do not figure into our cost comparison. However, if a comparative cost analysis was conducted at a time when DNR was seeking to replace any of its current fleet, the acquisition and refurbishing costs should be included.

Additional cost analysis using other assumptions is contained in Appendix 3. In every case, the conclusion holds that DNR operating its own helicopters costs less than exclusive use contracts or provides greater wildland fire suppression coverage.

## **Analyses in Oregon and Montana Reached Similar Conclusions**

During our review of other states, we found two reports dealing with the same question of what is more advantageous, an agency operating its own helicopters or entering into exclusive use contracts.

In 2003, the Oregon Secretary of State’s Audit Division completed a report suggesting that the Oregon Department of Forestry should acquire a helicopter for wildland fire suppression purposes. The report found that the ability to acquire helicopters through the Federal Excess Personal Property program made operating its own helicopters less expensive than entering into exclusive use contracts. The Oregon Department of Forestry conducted its own analysis and also found that operating its own helicopters could be less expensive. However, to date Oregon has elected to continue the use of private exclusive use contracts.

The Montana Legislative Audit Division published a study in 2008 that included a comparison of the Montana Department of Natural Resources and Conservation’s helicopter costs to U.S. Forest Service contract costs. The Legislative Audit Division found that Montana’s costs to operate its own helicopters were about one-third what the U.S. Forest Service paid its exclusive use contractors and that the period of availability was much greater for state operated aircraft.

## **Relocating DNR Maintenance Facilities Does Not Affect Results of Cost Comparison**

In the 2009 Operating Budget (ESHB 1244), the Legislature directed DNR to lease maintenance and hangar facilities for the DNR helicopter fleet in eastern Washington by June 30, 2011. Because the facilities are items in the overall DNR helicopter maintenance and operation expenditures, we looked at whether or not relocation of the facilities would have an impact on the comparative costs of DNR operating its own helicopters or entering into exclusive use contracts.

DNR supplied us with its expected expenses and ongoing costs of relocating the maintenance and hangar facilities to eastern Washington. Based on DNR’s analysis, the relocation will add \$314 per flight hour to the cost of operating the helicopters in the first two years after a relocation of the facilities and then \$150 per hour after that. We reviewed DNR’s cost analysis, and the costs estimates appeared reasonable. However, we did not verify the cost figures because they did not alter our conclusion regarding whether DNR should operate its own fleet of helicopters or enter into exclusive use contracts. Even with this potential increase in DNR expenses (\$100,000 to \$220,000 per year), it is more advantageous to the state for DNR to operate its own helicopters than to switch to exclusive use contracts.

### ***Other Cost-Related Factors to Consider***

During the course of our study, we found two other factors to consider in making a decision about an agency operating its own helicopters versus entering into exclusive use contracts.

First, if a state that has operated its own helicopters elects to go with exclusive use contracts, the state realizes no value from its previous investments to demilitarize and refurbish its helicopters for wildland fire suppression. The state does not own the helicopters or parts and cannot sell them, nor can the state recover any of its investment in the helicopters. Because the helicopters were acquired using the Federal Excess Personal Property program, the helicopters and the parts are the property of the U.S. Forest Service and must be returned if no longer needed to fight wildland fires.

Second, states operating their own helicopters typically decided to do so many years ago. Idaho, which has exclusive use contracts, cited start-up costs as a barrier to operating its own helicopters. If a state switches to exclusive use contracts, it would be costly to reverse that decision.

### **Availability of Helicopters for Fire Suppression Is Limited**

The Legislature asked JLARC to look at the availability of “sufficiently outfitted” helicopters located in eastern Washington that are privately owned or owned by nonstate governmental entities. For the purposes of determining availability, we defined sufficiently outfitted as any helicopter that is federally carded. We primarily focused on the availability of Type 2 – medium standard helicopters that DNR and many other state and federal agencies prefer.

We found that the availability of Type 2 – medium standard helicopters, especially in eastern Washington, is limited. However, overall availability of helicopters is significantly increased if out of state and Type 2 – medium restricted and/or Type 3 – light helicopters are included.

### ***Availability of Private Vendor Helicopters***

Availability of private vendor helicopters for fire suppression is largely dependent upon the need for helicopters in the private sector (e.g., logging, mineral exploration, and oil rigs). Availability can also change from year to year depending upon national and international economic conditions. If activity in the private sector increases, the availability of private helicopters for firefighting purposes decreases. Montana noted the reduced availability of private helicopters for fighting fires when the private sector is strong.

Demand by other state and federal agencies is also a factor, but to a lesser degree. However, in the last contract bid period, Idaho had only two bids from private vendors and then one withdrew when the vendor signed an exclusive use contract with the U.S. Forest Service. The reduced availability of Call When Needed (CWN) private helicopters for fighting fires has been a concern for Oregon during very active fire seasons in the western United States. These aviation assets move from state to state depending on fire loads making it difficult to guarantee availability when most needed.

To better determine potential availability of sufficiently outfitted private vendor helicopters in Washington, we first looked to see how many helicopters are on DNR’s call-when-needed list. We found 91 federally carded helicopters of all types. Thirty-two of these helicopters are Type 2 – medium standard helicopters. However, none of these helicopters is located in Washington. They

are all located in Oregon and Idaho. We did find three Type 2 – medium restricted helicopters on DNR’s call-when-needed list that are located in Washington (two in western Washington and one in eastern Washington).

Next, we compared the 32 Type 2 helicopters on DNR’s call-when-needed list to U.S. Forest Service and U.S. Bureau of Land Management exclusive use contract lists. We found that 14 of the helicopters on DNR’s call-when-needed list are under three year exclusive use contracts with the federal agencies thereby lowering the available out-of-state helicopters.

Lastly, we looked at the helicopters under exclusive use contract with the U.S. Forest Service or the U.S. Bureau of Land Management that are not on DNR’s call-when-needed list. There were 31 additional helicopters located out of state that we could identify as Type 2 helicopters, but it was not specified if the helicopters were standard or restricted. We did note that seven of the 31 helicopters are the same make and model as the helicopters DNR currently operates. All of these helicopters are currently under three year exclusive use contracts.

### ***Availability of Nonstate Government Helicopters***

Besides Chelan Fire Protection District #1, two counties own helicopters that could be equipped as Type 2 fire suppression helicopters. Both counties are on the west side of the state, and the helicopters have not met the federal carding process. Use of federal agency helicopters is already being realized through the interagency agreement.

### ***Additional Helicopter Availability Considerations***

If Washington pursued exclusive use contracts, the increased demand could prompt more helicopter owners to invest in equipping their helicopters for wildland firefighting. Alternatively, the increased competition for the currently available helicopters might raise the rates for exclusive use contracts.

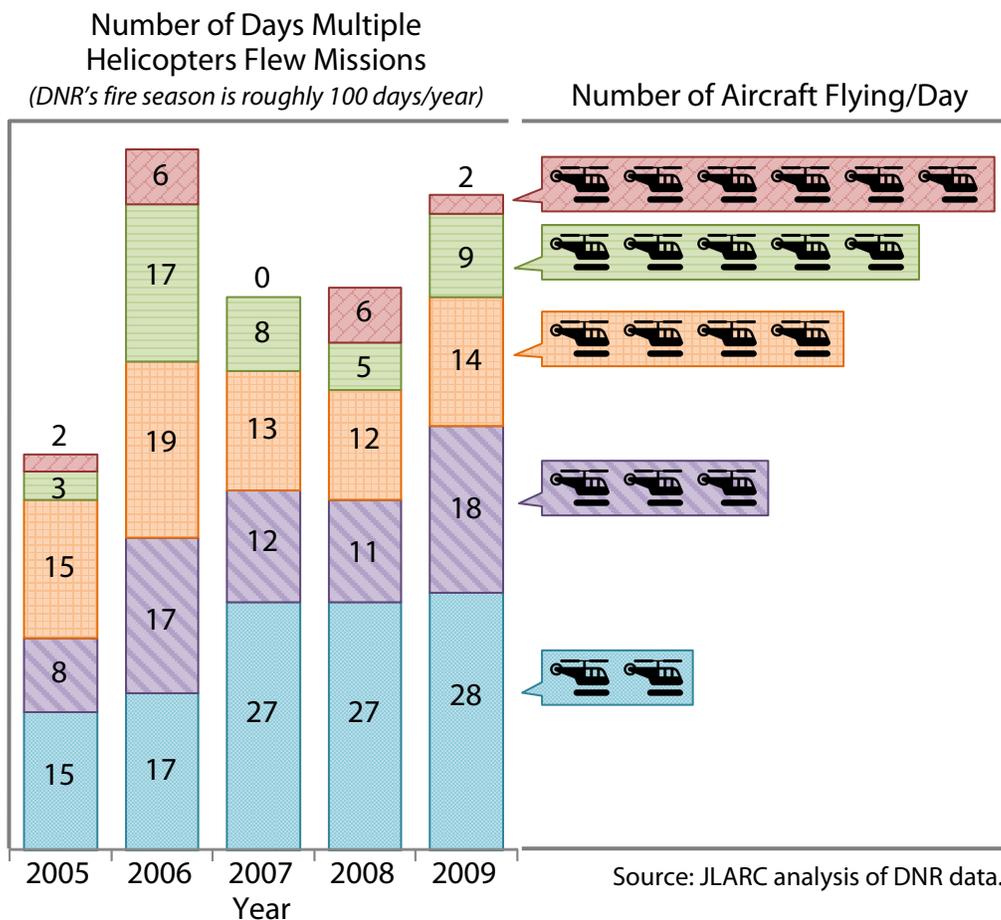
# PART FOUR – DNR’S HELICOPTER FLEET MAY BE LARGER THAN NEEDED

During the course of this study, JLARC found that DNR’s maintenance and operation costs for its own fleet of helicopters was less expensive than exclusive use contracts. However, we believe DNR should conduct an analysis with two parts: the number of helicopters that should be in its fleet; and the number of helicopters that should be kept ready for immediate deployment.

First, including the Chelan helicopter, DNR currently maintains a fleet of nine helicopters. DNR has a coordinated approach to regular maintenance, and usually no more than two helicopters are undergoing major maintenance at any time. This means that seven helicopters are available for duty. However, DNR has said that only six helicopters are needed for immediate deployment to meet its fire response objectives.

Second, as shown in Exhibit 13, further review of DNR’s flight data showed that six helicopters are seldom used at one time. DNR should examine whether six helicopters are needed for immediate deployment or if DNR might be able to meet its fire response objectives with fewer helicopters ready for immediate deployment.

**Exhibit 13 – DNR Seldom Flies Six Helicopters on the Same Day**



**Recommendation**

**The Department of Natural Resources should conduct an analysis of how many helicopters should be in its fleet and how many helicopters must be maintained for immediate deployment and report to JLARC and the fiscal and natural resources committees of the Legislature.**

<b>Legislation Required:</b>	None
<b>Fiscal Impact:</b>	JLARC assumes that this can be completed within existing resources.
<b>Implementation Date:</b>	June 2011

# APPENDIX 1 – SCOPE AND OBJECTIVES

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## USE AND COST OF HELICOPTERS FOR WILDLAND FIRE SUPPRESSION REVIEW

### SCOPE AND OBJECTIVES

JULY 21, 2010



STATE OF WASHINGTON  
JOINT LEGISLATIVE AUDIT AND  
REVIEW COMMITTEE

#### STUDY TEAM

John Bowden

#### PROJECT SUPERVISOR

David Dean

#### LEGISLATIVE AUDITOR

Ruta Fanning

Joint Legislative Audit & Review  
Committee  
1300 Quince Street SE  
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e-mail: [neff.barbara@leg.wa.gov](mailto:neff.barbara@leg.wa.gov)

## Why a JLARC Review of the Use and Cost of Helicopters for Wildland Fire Suppression?

In Engrossed Substitute Senate Bill 6444 (2010), the Legislature directed the Joint Legislative Audit and Review Committee (JLARC) to complete a report on the use and cost of helicopters by the Department of Natural Resources for wildland fire suppression.

## DNR Responsible for Fighting Wildland Fires

The Department of Natural Resources (DNR) is the state's largest on-call fire department with 1,400 temporary and permanent employees who fight wildland fires on any of the 12.7 million acres of state, private, and tribal forest lands. In the 2009 fire season, DNR crews fought 1,045 fires, with nearly 95 percent of the fires being kept to less than 10 acres.

Helicopters are one of the tools used in DNR's efforts to suppress wildland fires quickly. Helicopters are used to:

- Drop water and fire retardant on fires;
- Deliver firefighting crews and supplies in difficult areas to access; and
- Observe and direct other resources to where they are most needed.

## Three Ways to Acquire Use of Helicopters

There are three ways for DNR to acquire the use of helicopters for fighting wildland fires:

- It can maintain its own helicopters;
- It can make arrangements with other governmental entities for the use of their helicopters; and
- It can make arrangements with private owners of helicopters.

DNR currently uses all three of these options for fire suppression. The agency has eight helicopters in its fleet and leases one from the Chelan County Fire District. DNR makes use of private helicopters on a call-when-needed basis. It also has arrangements with other governmental entities, such as the U.S. Forest Service, for assistance in fighting wildland fire which includes the use of helicopters.

## DNR Expenditures for Helicopters

The cost of fighting wildland fires varies each year, but over the past five years, DNR has averaged \$28.5 million per year in fire suppression expenditures. The average annual expenditure for helicopters was \$2.2 million (7.6 percent of total fire suppression costs). Of this amount, \$1.8 million was for DNR helicopters and the remainder was for private helicopters, U.S. Forest Service reimbursement, and the Chelan County Fire District lease.

## Study Scope

The JLARC performance review will examine whether it is more advantageous to the state for the Department of Natural Resources to use DNR helicopters for wildland fire suppression or to make other arrangements for helicopter support.

## Study Objectives

- 1) How does DNR determine how many helicopters will be needed for wildland fire suppression and the best mix of DNR helicopters and other arrangements?
- 2) How do DNR’s costs for maintaining and operating its existing helicopter fleet compare to costs of entering into other arrangements for use of helicopters that are privately owned or owned by nonstate governmental entities?
- 3) What is the availability of helicopters that are privately owned or owned by nonstate governmental entities that are sufficiently outfitted to participate in wildland fire suppression efforts by the Department of Natural Resources?
- 4) How does Washington’s use and funding of helicopters for wildland fire suppression compare to the use and funding of similar helicopters in other western states?

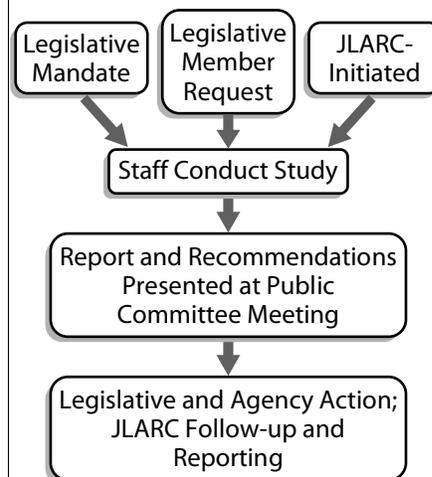
## Timeframe for the Study

Staff will present the preliminary report in December 2010 and the proposed final report in January 2011.

## JLARC Staff Contact for the Study

John Bowden (360) 786-5298 bowden.john@leg.wa.gov

## JLARC Study Process



### Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources? For example:
  - Is JLARC the most appropriate agency to perform the work?
  - Would the study be nonduplicating?
  - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

## APPENDIX 2 – AGENCY RESPONSES

---

- Department of Natural Resources
- Office of Financial Management





**Peter Goldmark**  
 Washington State  
 Commissioner of Public Lands

December 3, 2010

Ms. Ruta Fanning  
 Legislative Auditor  
 Joint Legislative Audit & Review Committee  
 PO Box 40910  
 Olympia, WA 98504

RE: Department of Natural Resources Helicopter Cost and Use – Preliminary Report

Dear Ms. Fanning:

This is in reply to your November 23, 2010 e-mail requesting DNR’s formal response to JLARC’s preliminary report. My response is summarized below in the requested format:

RECOMMENDATION	AGENCY POSITION	COMMENTS
Rec. 1	Concur	

The preliminary report provides a fair comparison of the main advantages and disadvantages of different approaches for procuring helicopters as a critical tool for safe, effective and cost-efficient wildland fire suppression. I’m pleased that the report’s main conclusion supports DNR’s own analysis and business decisions.

In addition to substantial cost advantages that are clearly described in the report, DNR’s helicopter program provides other advantages as compared to contracted resources. Operating our fleet provides for a degree of control and flexibility that is superior to alternative approaches: the pilots, mechanics and crews are DNR employees who are familiar with Washington firefighting operating conditions and DNR’s practices, and DNR has complete control over both the availability and the location of the aircraft and crews. These factors are instrumental to maintaining both DNR’s stellar safety record and its success in using helicopters as a critical resource for controlling nearly 95% of wildfires at less than 10 acres in size.

I concur with the report’s single recommendation that DNR analyze how many helicopters should be in its fleet and how many must be maintained for immediate deployment. In fact, we have been contemplating these very questions since last winter as a part of a continuous assessment of the effectiveness of DNR’s overall firefighting program. Therefore, we will be pleased to report to JLARC and the fiscal and natural resources committees of the legislature by June 2011.

Department of Natural Resources  
 1111 Washington ST SE  
 MS 47001  
 Olympia, Washington 98504-7001  
 (360) 902-1000



Ms. Ruta Fanning  
December 3, 2010  
Page 2 of 2

In closing, I wish to thank you and your staff for the courteous and professional manner in which this study was conducted.

Sincerely,



Peter Goldmark  
Commissioner of Public Lands

cc: Leonard Young, Department Supervisor  
Randy Acker, Deputy Supervisor for Resource Protection  
Heath Packard, Director of Legislative & External Affairs  
Joseph Shramek, Resource Protection Division Manager



STATE OF WASHINGTON  
OFFICE OF FINANCIAL MANAGEMENT

Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

December 17, 2010

**TO:** Ruta Fanning, Legislative Auditor  
Joint Legislative Audit and Review Committee

**FROM:** Marty Brown *MB*  
Director

**SUBJECT: JLARC PRELIMINARY REPORT ON THE DEPARTMENT OF  
NATURAL RESOURCES HELICOPTER COST AND USE**

Thank you for the opportunity to review and comment on the Joint Legislative Audit and Review Committee's (JLARC's) preliminary report on the "Department of Natural Resources Helicopter Cost and Use."

We appreciate JLARC's efforts to review the costs of operating and maintaining a helicopter fleet for wildland fire suppression, and how the cost of a state-owned fleet compares with a contracted fleet. While fire seasons vary from year to year, with little predictability, it is important to look at ways to make the current system as cost-efficient and effective as possible with the limited resources available.

Regarding the recommendation that the Department of Natural Resources conduct an analysis of how many helicopters should be in its fleet, and how many helicopters must be maintained for immediate deployment, we agree that this analysis is necessary in order to accurately budget for fleet costs in the future.

Thank you again for the opportunity to review the JLARC report.

cc: Kirstan Arestad, Senior Budget Assistant, Office of Financial Management  
Chris Stanley, Budget Assistant, Office of Financial Management



# APPENDIX 3 – EXCLUSIVE USE TERMS, COST METHODOLOGY, AND ADDITIONAL RESULTS

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In Part Two of the report we discuss exclusive use contracts as one approach available to government agencies to acquire the helicopters needs for wildland fire suppression. In this appendix we provide some additional information about exclusive use contracts. We then provide some additional explanation of how we came to the exclusive use contract costs presented in Part Three and the results of some additional analysis of costs.

## **Exclusive Use Contract Terms and Components**

Exclusive use contracts usually include the helicopter, the pilot, a mechanic, the fuel truck and driver. Exclusive use contracts can be either “wet” or “dry.” Wet means the private vendor pays for the fuel. Most exclusive use contracts are wet. However, there can be fuel surcharges paid to the vendor when the costs of fuel exceed a certain threshold.

**Contract length** – The contracting agency determines what contract length is needed to meet its needs. Contract lengths vary. The majority of the U.S. Forest Service (USFS) contracts are for 120 days, but USFS also has contracts of 60, 90, 110, 115, 150, and 180 days. The Bureau of Land Management (BLM) has contracts of 90, 100, 105, 120, and 130 days. Idaho has 77 day contracts. Oregon has contracts of 60 and 75 days.

**Daily availability rate** – The daily availability rate is the major component in the contract. This is the cost to the agency for having the helicopter under the agency’s control. The private vendor will bid an amount for the exclusive use of the helicopter for the length of the contract. The bid amount is divided by the number of days for the daily availability rate. Because the rate is bid by the private vendor, daily availability rates will vary for contracts of the same length and for the same type of helicopter. Daily availability rates tend to be lower the longer the contract length.

**Hourly flight rate** – The hourly flight rate is the amount paid to the vendor when the helicopter is in use.

**Remain Over Night and Extended Stay** – The terms remain over night (RON) and extended standby (ES) are similar in concept to per diem and overtime. However they are paid to the vendor whereas per diem and overtime are generally paid to individuals. When a vendor’s helicopter and flight crew operate away from the normal base of operation, the vendor is compensated. Extended stay pays the vendor for extending the number of hours the helicopter and crew are on duty beyond a normal work day.

**Fuel truck mileage** – Though the fuel truck and driver are usually included in the exclusive use contract, the mileage that the truck is driven to and from the fire site is reimbursed.

## Cost Comparison Methodology

To calculate potential exclusive use contract costs, we created a spreadsheet that would allow the inclusion of up to nine contracts. We included variables that allow different inputs for different scenarios to be tested. These variables include:

- Contract length;
- Helicopter type;
- Daily availability rate;
- Hourly flight rate;
- Total number of flight hours;
- Percentage of total flight hours each helicopter flies;
- Numbers of fires where helicopters are deployed;
- Remain overnight and extended stay charges;
- Fuel truck mileage rates;
- Number of fuel truck miles; and
- DNR contract management and helicopter inspection costs.

To compare DNR helicopter costs with potential exclusive use contracts costs, we first considered how many exclusive use contracts should be included in the analysis.

In Part Four of the report, we recommend that DNR conduct an analysis of how many helicopters must be maintained for immediate deployment. We present data that indicate having less than six helicopters ready for immediate deployment might still provide necessary coverage. However, even if DNR does not maintain six helicopters for immediate deployment, the other helicopters could be made ready within a short period of time.

Exclusive use contracts typically have provisions for time when the helicopter is not operational due to maintenance and/or repair. The down time is subtracted from what is paid the vendor, but the more critical factor might be whether the helicopter is available if needed. For this reason, we decided to use six exclusive use contracts in the options presented in report.

For the daily availability and hourly flight rates, we researched rates paid by the U.S. Forest Service, the Bureau of Land Management, and the state of Idaho. The spreadsheet allows us to use actual contract rates or to take the lowest daily availability rate from one contract and the lowest hourly flight rate from another.

Even though we saw that daily availability rates increased as the length of the contract decreased, we used the lowest daily availability rates in our comparisons regardless of the contract length.

We saw that both daily availability and hourly flight rates varied even for helicopters of the same type. Rates differed depending on the make and model of helicopter, and whether the helicopter is rated as standard or restricted. The spreadsheet allowed us to mix and match the helicopters and the accompanying rates for the different helicopters and we were not tied to just making cost comparisons using the same helicopters DNR currently has in its fleet.

## **Additional Cost Comparison Analysis and Results**

The cost comparison in Part Three of the report uses 2009 as the comparison year for two reasons: first, it is the most recent year with available data; and second, DNR's highest expenditures for helicopters occurred in 2009. We were looking for exclusive use arrangements that would be less expensive than DNR's highest cost year.

DNR helicopters flew 811 hours fighting 135 fires in 2009. The fuel trucks drove more than 49,000 miles. These figures are used as the basis for calculating flight hour cost totals and other costs. However, 2009 was also a higher than average fire year meaning that helicopter flight hours and fuel truck mileage was also higher than average. Therefore, we conducted cost comparisons – variations on Option C – for an average fire year and the mildest fire year in the past five years to see the impact these differences might make in total costs.

In addition, we started with DNR's 2009 expenditures and worked with different combinations of helicopter types, numbers of contracts, and contracts lengths to see what could be purchased for \$2.19 million or less. In these comparisons, we did not determine whether the arrangements are actually possible or not. Instead, we developed scenarios that would be most advantageous to the state even if it was unlikely that the state would be able to contract for the rates that were used. We simply calculated the costs as if the arrangements could be made.

**Cost Comparison for an Average Fire Year** – Over the past five years, there have been an average of 877 fires and DNR helicopters have flown an average of 711 hours each year. If these numbers had been known in advance, DNR might have been able to enter into exclusive use contracts to meet these needs (e.g., three Type 2 contracts: one 180 day; one 120 day; and one 90 day – and two Type 3 contracts: one 60 day and one 30 day). With these five contracts, the daily availability cost would have been about \$1.89 million and the hourly flight costs would have been \$958,000. Other costs would have brought the total expenditures to about **\$3.29 million**.

**Cost Comparison for the Mildest Fire Year** – In terms of helicopter usage, the mildest fire season in the past five years was in 2005. There were 644 wildland fires and DNR helicopters flew 503 hours. Again, if the number of fires and number of flight hours had been known in advance, and DNR could have arranged exclusive use contracts to meet the needs (e.g., three Type 2 contracts: one 180 day; one 90 day; and one 60 day – and one Type 3 contract for 30 days), the daily availability costs of the four contracts would have been about \$1.62 million and the hourly flight costs would have been more than \$675,000. Other costs would have brought the total expenditures to about **\$2.64 million**.

**Exclusive Use Contract Possibilities for the Same Cost as DNR Expenditures in 2009** – Because the DNR expenditures for helicopters in 2009 amounted to \$2.19 million, we looked at some of the possible exclusive use contract combinations that would be no more than this amount. The possibilities were far more limited than expected. As an example, DNR could have entered into four exclusive use contracts (three Type 3 contracts: one 180 day and two 30 day – and one Type 2 for 60 days). This combination would not have provided much ability to transport firefighting ground personnel to hard to reach fire sites and would have had limited water delivery capacity as well. Besides contracting for helicopters with fewer capabilities, the amount of **firefighting coverage** on any day and across the fire season would have been **significantly reduced**.



