



## CONTRACTED SUPPRESSION RESOURCES PRIVATE ENGINE DISPATCH AND SHARING IN THE NORTHWEST

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**W**ildfire activity has increased across the globe, leading to growing demand for wildfire response resources. In the western U.S., where large tracts of land are publicly owned, a central challenge for land management agencies has been to ensure that necessary resources are at the right place at the right time while balancing the need for sufficient but not excessive resources. In this context, private service and equipment contractors have become increasingly important in supporting highly variable agency suppression needs. For effective pre-season planning and wildfire response, it is necessary to understand the capacity of contracted resources, and how these resources are shared as demand ebbs and flows with wildfire threats in unpredictable locations.

In this study, researchers used data from the US Forest Service's National Resource Ordering and Status System to investigate how private sector resources were dispatched to fires. In particular, they examined the dispatch of private engines in the Northwest Geographic Area (GA), which encompasses Oregon and Washington, from 2008 to 2015. The researchers also investigated how private sector engine capacity compared to demand by focusing on engine dispatch during the 2015 fire season, which was widely considered the most severe in the Northwest's modern history.



Engine on the Stouts Creek Fire, OR. 2015. Photo courtesy of Grayback Forestry, White City, OR.



Engine on the Mad River Fire, CA. 2015. Photo courtesy of Grayback Forestry, White City, OR.

## KEY FINDINGS

- Northwest dispatch centers routinely shared engines within and outside of their geographic areas; sharing outside of host centers increased as seasons progressed.
- The number of times and days engines were on assignment increased during the study period.
- At peak demand during one of the largest fire seasons in the Northwest, not all available engines were recorded as utilized at the same time USFS reported a lack of available resources.
- Ongoing wildfire suppression planning and management will need to continually gauge private sector resource capacity and availability as well as resource ordering to adequately respond to wildfire activity.

*The Northwest Fire Science Consortium is a regional fire science delivery system for disseminating knowledge and tools, and a venue for increasing researcher understanding of the needs of practitioners.*



## RESULTS

### Private sector engine dispatch

From 2008-15, private engines were dispatched 7044 times to 739 fires in the Northwest. Dispatch started in mid-May to June each year, and peaked in August. The number of times engines were dispatched increased throughout the study period, as did the number of days that engines were out on assignment (from 5 days in 2009 and 2010 to 10 days in 2015). The number of engines and number of businesses in the dispatch system increased only slightly compared to the increase in dispatches, suggesting that engines in the system were used increasingly more frequently.

### Private sector engine sharing

Overall, 34% of dispatched engines were used within the dispatch center host area, 55% went to another dispatch center in the northwest, and 11% went to 33 other dispatch centers in the western U.S. The number of engines dispatched outside the Northwest GA increased during the study period. Dispatch centers were more likely to use their own resources earlier in the season, and share more resources as the season progressed. There was considerable variability between dispatch centers in how they shared and received engines: some centers shared widely across the northwest, some shared many engines but mostly with close neighbors, and some shared relatively few engines and were dependent on engines from other areas. Individual dispatch centers were able to cover from 23% to 79% of their own engine needs.

### Private sector engine capacity

For the 2015 fire season, 14 of the 20 dispatch centers in the Northwest had a total of 387 engines with preseason contracts available, and the number of engines per dispatch center ranged from 2-68 engines, with 28 engines on average. On average, centers dispatched engines on 61% of the days during the fire season, although this ranged from 29-87% of the days of the fire season between centers. As peak period began in July 2015, engines were dispatched within host centers and between dispatch centers in the Northwest GA, but

a considerable portion were also dispatched outside the GA (mainly to California). As peak period progressed, engines dispatched in the GA increased and by the end of August 2015, nearly all dispatched engines were within the GA but outside of host centers (see figure). During the 2015 fire season, 12% of engines with preseason agreements were not used at all, and on the peak day for the season nearly 30% of private contracted engines were not dispatched. Only two dispatch centers that had relatively few engines had days during the season when all their engines were dispatched, and four dispatch centers had 10 or more engines that remained unassigned even during peak engine use. At the same time, USFS post-fire reports noted a lack of available resources on those peak days; dispatch data do not indicate why ordered engines were unavailable.

## MANAGEMENT IMPLICATIONS

Because fire season activity is highly variable across time and space, fire managers need flexibility in sharing important resources such as engines, and resource capacity must be great enough to meet demand even in extreme fire years. This study shows that within the Northwest GA, contracted engines were used with increasing intensity, and a growing number of engines were sent to other Geographic Areas during the study period. In addition, the number of contracted engines in the region grew, meaning that both the number of available engines and the demand for them grew. As reliance on contracted resources for fire suppression continues to increase, it is important to consistently gauge whether contract resource capacity is sufficient, both for agency fire response and for business sustainability.

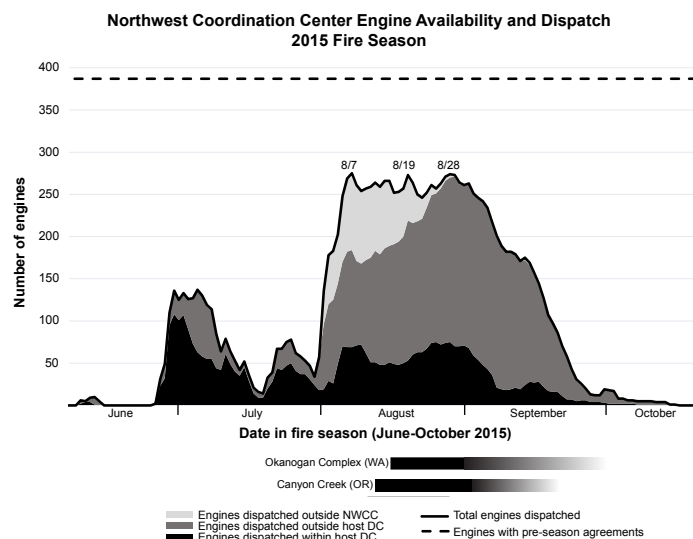
This study also showed that some Northwest dispatch centers were able to cover most of their own engine needs while others depended more on other centers. Where fire response equipment is located has implications for suppression: locally available resources impact initial attack capacity while resources at the regional and national level impact extended attack capacity. Thus, considering local capacity and appropriate buffers for available resources alongside projected needs, and ensuring that local capacity is engaged and available if needed is critical for adequate response, particularly during extreme fire years. As demand for wildfire response resources continues to grow, agency preparation for and management of future fire seasons will benefit from growing understanding of how and where private partner resources are used.

## MORE INFORMATION

**This brief is based on the following article:**

Lyon, K.M., H.R. Huber-Stearns, C. Moseley, C. Bone, and N.A. Mosurinjohn. 2017. Sharing contracted resources for fire suppression: Engine dispatch in the Northwestern United States. *International Journal of Wildland Fire* 26(2) 113-121. Available at: <https://doi.org/10.1071/WF16100>.

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