

How Would a 24-Hour Pay System Affect Suppression Costs?*



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The severe 2000 and 2002 fire seasons highlighted the long-term disruption in historic fire cycles and the increased risk of severe wildland fires. Beyond rising concerns about the magnitude of the fire suppression costs, firefighter safety remains the priority during any fire event.

The current pay system is complex, costly to administer, and might provide monetary incentives, such as working excessively long shifts, for firefighters to engage in unsafe practices. The problem is extensive, given that the total number of people employed by the Forest Service for firefighting activities in, for example, fiscal year 2000 (FY00) was about 51,000 (USDA Forest Service 2001) in an organization with a permanent workforce of only about 28,000 (USDA Forest Service 2002).

Our study tested the hypothesis that a 24-hour pay system would help control the rising cost of fire suppression and improve firefighter safety. Under this system, emergency firefighting employees would receive their regular base pay 24 hours a day, regardless of the length of the shift worked. Sometimes called "portal-to-portal," this system is much simpler to adminis-

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Salaries and other compensation paid to employees on fire duty consume more than one-third of the staggering cost of fire suppression.

ter and might improve safety by removing the incentive to work excessively long hours.

Compared to Current System

We examined Forest Service pay records for FY96, using a stratified, random sample of 527 fire-related personnel to determine the effect of a 24-hour pay system on (1) total personnel costs during fire suppression; and (2) different groups of employees in terms of pay grade (lower than GS-9 or GS-9 and higher), job type (administrative or operations), and fire type (type 1 or type 2). We considered the type of incident management team assigned to the fire as an indication of the fire's size and complexity. A type 1 incident management team has a larger staff and more types of positions than a type 2 team. We also examined how hazard pay and restricting the shift length would affect compensation.

We calculated pay as follows:

• **24-hour Pay System.** We calculated pay at an employee's regular pay rate from the time that they left their home unit until the time they returned to their home unit. Although a 24-hour pay system does not usually include

hazard pay, we used hazard pay rates of 0, 5, 15, and 25 percent. Employees were not eligible for 24-hour pay if they:

- Worked less than 12 hours on a fire;
- Consistently worked less than 12-hour shifts;
- Charged time to an unrelated funding code on the same day that time was charged to the fire; or
- Continued to work at their home unit (for example, a dispatcher).

• **Current Pay System.** We calculated pay by multiplying the hours worked at the appropriate pay rate, which is regular pay, overtime (1.5 times regular pay), hazard pay (0.25 times regular pay), night differential (1.1 times regular pay), Sunday differential (1.25 times regular pay), Sunday night differential (1.1 times regular pay), and holiday (2 times regular pay). When more than one pay rate applied, the rates were totaled. Shift-length restrictions, using the same assumptions as mentioned below, were also imposed for the current pay system.

• **Shift Length.** Because the number of hours worked relates to safety, we restricted the shift lengths to 12, 14, or 16 hours. We assumed that:

- The amount of firefighting time needed to suppress a fire was constant, despite the shift length. By holding constant the amount of firefighting time needed but restricting the shift length, firefighters would not work as many hours per day, and more firefighters would be needed to achieve the same effort.
- Employees would work only the amount of the restricted shift length.
- No travel time was required for any of the additional personnel; calculations were made for only the middle days of the fire, excluding travel days and the associated pay uncertainties.

compensation differences account for removal of the overtime cap in 2000—see the sidebar.) When hazard pay is included, compensation increases another 3 percent for

every 5-percent increase in the hazard rate. When the shift lengths are shortened, compensation increases dramatically, by up to 44 percent.

EFFECTS OF OVERTIME CAP REMOVAL

Compensation under the 24-hour pay system was compared to compensation under the current pay system, after accounting for removal of the overtime cap. In December 2000, Congress passed legislation removing the overtime cap that had existed up to that time (a maximum hourly overtime rate of GS-10, step 1). However, the increased pay rates have not been fully incorporated into the pay system, and fire suppression expenditures do not yet reflect the increase.

In an earlier phase of the study (Gebert and Schuster 2000), we estimated that removing the overtime cap would add approximately 7 percent to personnel compensation expenditures for fire suppression efforts. If, in addition to the overtime cap removal, a 24-hour pay system were adopted, total employee compensation expenditures would increase by 20 percent (13 percent due to the 24-hour pay system and 7 percent due to overtime cap removal), compared to the old system before overtime cap removal. The increase does not include hazard pay; if it did, the increase in total personnel compensation would be even higher.

Higher Costs

A 24-hour pay system would increase personnel costs substantially (table 1). Even without shift length restrictions or hazard pay, total employee compensation would cost 13 percent more under the 24-hour pay system than under the current pay system. (It should be noted that

Table 1—Percentage change in total compensation, 24-hour pay system compared to current pay system, for employees working on large fires in FY96 by hazard pay rate and shift length restriction.

Pay system	Hazard pay	Shift length restriction ^a			
		12-hour	14-hour	16-hour	None ^b
Current	25%	-3	-1	0	—
24-hour	0%	28	17	13	13
	5%	31	20	16	16
	15%	38	26	21	21
	25%	44	32	27	27

^a Restricting the maximum allowable shift length to 12, 14, or 16 hours increased the number of person hours by 18.6%, 5.8%, and 0.7%, respectively.

^b The differences between compensation using unrestricted shift length and the 16-hour shift length restriction were statistically insignificant ($\alpha = 0.05$).

The current pay system is complex, costly, and might inadvertently provide monetary incentives for firefighters to engage in unsafe practices.

Although the average shift length for the sampled employees was 12 hours, many employees worked shifts in excess of 16 hours, which can adversely affect safety. Assuming that the time required to suppress the fire remains constant across workforces, with 16-hour shifts the size of the workforce increases by only 1 percent. This increase results in additional costs, relative to 24-hour pay with no shift length restriction, of only 0.5 percent. If we restrict shifts to 14 hours, 6 percent more firefighters are needed to do the same job, which increases the suppression costs an additional 4.5 percent. When shifts are restricted to 12 hours, the total workforce needed to do the same job is 19 percent higher, and costs increase an additional 16 percent.

Although compensation increases substantially when the shift lengths are restricted under the 24-hour pay system, this is not the case under the current pay system. Under a 24-hour pay system, employees are paid for 24 hours, whether they work 12 or 16 hours; therefore, adding additional employees increases costs. Conversely, if the shift length is restricted under the current pay system, existing employees lose overtime hours and earn less money. The hours worked by the additional employees would be at base wages or at a combination of base and overtime wages; either rate is less expensive than straight overtime. Safety is the priority, and it is accomplished less expensively under the current pay system than under a 24-hour pay system.

Differences in Pay

To determine how a 24-hour pay system would affect the compensation of different types of firefighting employees, we used the actual shift lengths worked for each sampled employee. Depending on the type of fire, job type, pay grade, and hazard pay rate, we found substantial differences in compensation under a 24-hour pay system (table 2). Compensation changes under a 24-hour pay system range from no change for high-grade administrative employees working on type 2 fires to increases of 36 percent for high-grade operations employees working on type 1 fires using a 25-percent hazard pay rate.

Hazard pay under a 24-hour pay system significantly affects compensation differences among groups. Without hazard pay, which is typical under a 24-hour pay system, operations personnel below a GS-9 level receive a smaller increase in compensation than any other group. In fact, more than half the employees receive less compensation under the 24-hour pay system.

Table 2—Percentage change in employee compensation, 24-hour pay system compared to current pay system, for large fires in FY96 and unrestricted shift length, by hazard pay rate, fire type, job type, and grade level.

Hazard pay rate	Type 1 fire^a				Type 2 fire^a			
	Administration		Operations		Administration		Operations	
	<GS-9	≥GS-9	<GS-9	≥GS-9	<GS-9	≥GS-9	<GS-9	≥GS-9
0%	11	13	1	9	12	0	4	6
5%	11	13	6	14	12	0	9	11
15%	11	13	16	25	12	0	18	21
25%	11	13	25	36	12	0	28	31

^a Type 1 and type 2 fires are assigned a type 1 and a type 2 incident management team, respectively.

Conversely, only 5 percent of the administrative employees receive less compensation under the 24-hour pay system. However, operations personnel earn more than administrative personnel when a hazard pay rate of at least 15 percent is included. On average, these employees then receive an 8-percent larger increase under the 24-hour pay system than do administrative personnel. Overall, for each 10-percent increase in hazard pay, operations employees receive about a 5-percent pay increase.

Fire type is the next most influential factor. Despite job type, high-grade employees receive a larger percentage pay increase when working on type 1 fires than on type 2 fires. Conversely, employees below the GS-9 level receive a larger percentage pay increase when working on type 2 fires than when working on type 1 fires. Administrative employees, whatever their pay grade, receive a larger percentage pay increase when working on type 1 fires than when working on type 2 fires. Operations employees receive approximately the same percentage pay increase, whatever the fire type.

If firefighter safety is a primary consideration, restricting shift length under the current pay system would be less expensive than under a 24-hour pay system.

24-Hour Pay: Is It Worth It?

Adopting a 24-hour pay system would increase personnel costs during fire suppression efforts. Depending on whether hazard pay is included and the hazard pay rate, the cost increase ranges from 13 to 27 percent. Even if the 24-hour pay system eliminated all of the problems and costs associated with the current pay system, a cost increase averaging 20 percent negates any efficiency otherwise realized. Additionally, because firefighter safety is the primary consideration, restricting shift length under the current pay system would be less expensive than under a 24-hour pay system.

Restricting shift length under the 24-hour pay system would involve a higher cost to Government but no change in employee compensation.

Whether personnel receive 24 hours of pay for working 20 or 12 hours a day, their compensation is the same. However, if the shift length were restricted under the current pay system, employees would receive less compensation because they would work fewer overtime hours. Under the current pay system, changing the shift length would reduce the cost to Government as well as individual employee compensation.

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