

# Shiftwork Solutions



**Effective Shiftwork Operations Management**

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## **Rising Fuel Prices and Compressed Workweeks**

According to the Energy Information Administration, U.S. regular gasoline prices averaged \$4.11 a gallon as of July 14, 2008. Worse, the prices seem to be increasing every week. As a result, an increasing number of workplaces around the country are thinking about ways to reduce the number of commute trips their employees have to make. One of the most popular solutions is the compressed work week consisting of four 10-hour days.

### **Potential Energy Savings**

For the roughly 103 million people who are on a traditional 8-hour work schedule, changing to four 10-hour workdays will eliminate one commuting trip each week. With the average U.S. round-trip commute of 30.6 miles and the average fuel consumption rate of 20.2 miles per gallon, this could theoretically save 7.8 billion gallons of fuel a year if everyone adopted 4x10 schedules [see Table 1]. We say “theoretically” because eliminating a commute trip doesn’t mean people won’t drive somewhere on their day off. However, as the price of gasoline continues to rise, people will tend to use their cars only when absolutely necessary.

### **Potential Air Quality Improvements**

By reducing the miles driven each week, compressed workweeks also will reduce vehicle emissions. This theoretically could be equivalent to removing 12.6 million cars from the road [see Table 2].

### **Employee Benefits**

As shown in Table 1, individual employees would save an average of \$312 per year in fuel costs by working a 4x10 schedule. With a mean U.S. commute time of 25.0 minutes, employees also would save almost 42 hours a year in time spent commuting to and from work [see Table 3].

Many employees believe that they can achieve a better balance between time at work and time away from work by adopting a compressed work schedule. This is often referred to as “work-life balance.” In our surveys of over 20,000 shiftworkers, we found that 75% prefer longer hours of work in order to get more time off each week.

With extra weekdays off, employees can schedule medical appointments, have parent-teacher conferences, shop at stores that are

## Table 1 Reduced Gasoline Consumption with 10-Hour Workdays

**Background:**

- 10-hour shifts will reduce the number of commutes by 1 per week
- If workers average 50 weeks of work per year (with 2 weeks of vacation) = 50 fewer commutes/year
- Full-time workers = 102,889,000 (Source #1)
- Average two-way commute = 30.6 miles (Source #2)
- Average fuel economy = 20.2 miles/gallon (Source #3)
- Average price per gallon for regular gasoline in U.S. = \$4.113 (Source #4)

**Calculations:**

50 fewer commutes \* 30.6 miles/commute / 20.2 miles/gallon = 75.74 gallons saved per year by each worker

75.74 gallons/worker \* 102.9 million workers = 7.8 billion gallons of fuel saved per year in U.S.

75.74 gallons/worker \* \$4.113 /gallon = \$312 savings/year for each worker

**Sources:**

- #1 Full-time workers with traditional work arrangements in U.S. in 2005  
Source: *The 2008 Statistical Abstract*  
U.S. Census Bureau
- #2 Average U.S. two-way commute to work in 2003  
Source: *Omnibus Household Survey*  
U.S. Dept. of Transportation, Bureau of Transportation Statistics
- #3 Average U.S. fuel economy in 2007  
Source: *Light-Duty Automotive Technology and Fuel Economy Trends: 1975-2007*  
Environmental Protection Agency
- #4 Average U.S. regular gasoline price as of July 14, 2008  
Source: *Gasoline and Diesel Fuel Update*  
Energy Information Administration

## Table 2 Reduced Vehicle Emissions with 10-Hour Workdays

**Background:**

- 10-hour shifts will reduce the number of commutes by 1 per week
- If workers average 50 weeks of work per year (with 2 weeks of vacation) = 50 fewer commutes/year
- Full-time workers = 102,889,000 (Source #1)
- Average two-way commute = 30.6 miles (Source #2)
- Average annual mileage = 12,500 miles/year (Source #3)

**Calculations:**

102,889,000 workers \* 50 fewer commutes \* 30.6 miles/commute = 157.4 billion miles per year

157.4 billion miles/year / 12,500 miles/year = 12.6 million cars removed

**Sources:**

- #1 Full-time workers with traditional work arrangements in U.S. in 2005  
Source: *The 2008 Statistical Abstract*  
U.S. Census Bureau
- #2 Average U.S. two-way commute to work in 2003  
Source: *Omnibus Household Survey*  
U.S. Dept. of Transportation, Bureau of Transportation Statistics
- #3 Average annual vehicle mileage in 2000  
Source: *Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks*  
Environmental Protection Agency, Office of Transportation and Air Quality

## Table 3 Commute Time Reductions with 10-Hour Workdays

**Background:**

- 10-hour shifts will reduce the number of commutes by 1 per week
- If workers average 50 weeks of work per year (with 2 weeks of vacation) = 50 fewer commutes/year
- Average one-way commute time = 25.0 minutes (Source #1)

**Calculations:**

50 fewer commutes \* 25.0 minutes/commute \* 2 times a day = 41.67 hours/year

**Sources:**

- #1 Mean travel time to work of workers 16 years and over who did not work at home in 2006  
Source: *2006 American Community Survey*  
U.S. Census Bureau

normally closed on weekends, or run errands. Best of all, they don't have to use their vacation or sick days when doing these things.

### **Employer Benefits**

Many employers have found that compressed work schedules can improve employee retention. Since the compressed work week is a popular benefit among employees, companies can leverage this to retain and/or attract top talent. According to the Jan. 2008 Hudson survey of 1,634 U.S. workers, nearly a third now consider work-life balance and flexibility to be the most important factor in considering job offers (compensation was the second most important factor).

Compressed work schedules also can reduce last minute absenteeism, especially with the two-thirds of absences that are done for reasons other than physical illness.

According to the 2007 CCH Unscheduled Absence Survey, U.S. employers rated the compressed work week as the third most effective tool in combating unscheduled absenteeism. Only alternative work arrangements and telecommuting were rated higher.

Compressed work weeks also can expand an organization's capacity in certain situations. We worked with an insurance company that was constrained by its office space and the number of computer workstations and mail scanners available. The company offered several new compressed work schedules that extended the operating hours, increased the equipment utilization and gave many employees schedules they willingly chose over the traditional Monday through Friday workweek. Over half the employees elected to work the alternative schedules. This avoided: (1) expansion to a larger office, (2) purchase of more equipment, and (3) forcing

employees to the unpopular second shift to extend the hours of operation.

### **Employer Concerns**

Many employers are reluctant to offer compressed workweeks. Common concerns include: (1) health/safety, (2) productivity, (3) customer convenience, (4) adequate coverage, (5) multiple-shift operations, and (6) pay policies.

The first concern is health and safety associated with 10-hour shifts. The belief is that employees on longer shifts get less sleep and therefore won't be alert or will develop health problems over time. In reality, people working longer shifts get more sleep than those on 8-hour shifts. This is because they have more days off and they sleep longer on those days off.

Another concern is the impact on productivity. If the organization is open for 8 hours a day and employees are working 10 hours, what do they accomplish during those extra two hours? Even when there are tasks to be done, will employees still produce at the same rate as the first 8 hours? Will they pace themselves so they only finish 8 hours of work over a 10-hour period? Employers must be able to measure productivity and set targets to avoid losing one day of work each week.

A third concern is customer convenience. Restricting the operations to four days a week may be an option for government offices with no competition. The state of Utah, for example, recently began a year-long trial in which the offices are only open Monday through Thursday. They admit that it may be inconvenient to people who need to use state services and find certain offices closed on Fridays. But the state will save about \$3 million a year in energy bills by turning off the lights, the heat and air

conditioning in 1,000 government buildings. It's not likely that private businesses will take a similar position.

To avoid shutting down every Friday, the organization could offer both Mondays and Fridays off. Some would work Monday through Thursday while others would work Tuesday through Friday.

Alternatively, the organization could divide the employees into five groups and rotate each group's day off. For example, one group gets Monday off, another gets Tuesday off, and so on. Each week (or each month), the day off for each group rotates. The group that had Monday off now gets Tuesday off. The group that had Tuesday off now gets Wednesday off, and so on. This continues until the day off has rotated through all five weekdays. Four of the five groups will be working each day of the week.

A fourth concern is maintaining adequate coverage. If the organization must maintain the same level of staffing each day of the week, they may have to hire more personnel. For example, suppose a receptionist is needed every Monday through Friday. If he or she starts working 10-hour shifts, a temporary employee will have to be hired to cover the day the receptionist is off each week.

Organizations with around-the-clock operations rarely adopt 10-hour shifts. Three 10-hour shifts are needed to cover the 24-hour day. This means the operation would need more personnel because employees would be working 30 hours a day instead of 24. With three 10-hour shifts covering a 24 hour period, the shifts will overlap for 6 hours a day so that two shifts are working at the same time. In many cases, this will exceed the physical capacity of the facilities. Finally, more supervisors will be needed and

they will no longer be working with a specific crew since most 10-hour schedules for 24/7 operations are crewless.

To offer compressed workweeks in 24/7 operations, the company must use 12-hour shifts. 12-hour shifts are the most popular choice today in multi-shift operations. Among our hundreds of clients, roughly 90% have chosen 12-hour schedules over other alternatives. 12-hour shifts provide twice as many days off each year (compared to 8-hour shifts) and employees can get up to half of their weekends off.

The last concern is one that some employers fail to consider. Most companies have pay policies that were designed for 8-hour workdays. When they change to 10-hour workdays, they need to tailor their pay policies accordingly. Traditional vacation systems often track vacation time in days or weeks. This no longer works when a day is not eight hours long. Other issues that arise include how to handle holiday pay if an employee is not scheduled to work on that holiday and when to allow breaks and lunches.

### **Summary**

There are substantial benefits associated with compressed workweeks. We have shown that the potential fuel savings can be as much as 7.8 billion gallons per year. Vehicle emissions can be reduced by the equivalent of removing 12.6 million cars from the road. Employees save time and money with fewer commuting trips. They also attain improved work-life balance. Employers can improve retention and reduce absenteeism. In some cases, they can gain additional capacity by extending the hours of operation with the longer shifts. Although, employers have several concerns about compressed workweeks, in most cases there are ways to get around them.