



Colorado
Legislative
Council
Staff

ISSUE BRIEF

Number 07-10

A Legislative Council Publication

October 25, 2007

DAYLIGHT SAVING TIME

by Jeanette Chapman

Daylight saving time (DST) is used around the world to save energy by taking advantage of the lengthened daylight hours during the spring and summer months. In March 2007, DST in the United States began earlier than previous years when clocks were moved ahead one hour on the second Sunday of March. Daylight saving time will end when clocks "fall back" one hour on the first Sunday of November. The Colorado General Assembly passed House Bill 07-1367 to reflect observation of this change.

Since the early seventies, Congress has modified the schedule for DST numerous times, varying the length between four and six months. Most recently, Congress passed the Energy Policy Act of 2005, changing the dates for DST beginning in 2007, with the goal of reducing nationwide electricity use by one percent. The U.S. Secretary of Energy is required to report the impact of this change to Congress in 2008. Congress reserves the right to resume the old DST schedule if little energy savings are realized.

This issue brief provides a history of DST, discusses possible energy savings, identifies drawbacks to DST, and describes alternatives to observing daylight saving time.

The History of Daylight Saving Time

Benjamin Franklin first proposed something akin to DST in a 1784 essay on the thrift of natural versus artificial light. He pointed out that families could save candle wax by going to bed when it was dark and rising with the sun. In 1916, the British first instituted a schedule of daylight saving during World War I, in an attempt to save energy for the war effort.

In 1918, Congress adopted four standard time zones based on those established by the railroad companies. That same year, Congress put the country on DST for the remainder of the war. The law was so unpopular, particularly among farmers, that it was repealed in 1919. Upon entering World War II, Congress again instituted mandatory DST in February of 1942 and remained one hour ahead until 1945.

From 1945 to 1966, states and local communities were free to observe DST, and could choose the monthly schedule on which it was based. This lack of uniformity caused considerable confusion, particularly in travel and media, as trains and television stations were continually republishing their schedules to reflect the time changes.

The Uniform Time Act (Public Law 89-387), passed by Congress in 1966, adopted a uniform time, called "Standard Time," within each of the time zones. It further established a schedule for DST, mandating that clocks be advanced one hour the last Sunday in April and turned back one hour on the last Sunday of October. Congress last altered the DST schedule in 1986 by beginning DST on the first Sunday in April. In the United States only Hawaii and Arizona (excluding the Navajo Indian Reservation, which lies within three states) do not observe DST.

The Effect on Energy Use and the Environment

The United States and other countries have struggled to determine whether observing DST in the summer months does indeed save energy.

Electricity savings. In 2001 and 2007, California studied the effect of daylight saving time on electricity use. Both studies found that daylight saving time would cut peak electricity use by about three percent as a result of a shift in electricity use to low-demand, cheaper, morning hours. The California Energy Commission study indicated that, while an earlier start to DST would not necessarily reduce electricity use overall, the decrease in the evening peak load would likely lower capacity requirements.

There is speculation that daylight saving time actually increases energy use during the summer months. Without DST, it is reasoned, people would go home later from work and would not need to run their air conditioning as much when they get home. The 2001 California study showed that the opposite was true; peak use actually increases without DST as commercial use of air-conditioning during the workday outweighs the home air-conditioning load.

Reduced carbon monoxide levels. In the 1980s Colorado considered implementing permanent DST as a means to reduce carbon monoxide (CO) levels in metropolitan areas. Near sunset, auto emissions are trapped near the ground by winter temperature inversions. Sunlight helps to break up the CO and reduce emissions trapped by the cold air. A report from the Denver Metropolitan Air Quality Council found that the additional hour of sunlight afforded by DST could aid in dispersing CO concentrations during the evening rush hour. When Denver switches from DST to standard time, CO concentrations increase. The report indicated that Denver could realize a nine percent reduction in carbon monoxide through observing DST year round, but this has never been implemented.

Oil savings. The U.S. Department of Transportation conducted studies of energy consumption during the mid-1970s and determined that DST could save the equivalent of 100,000 barrels of oil per day. Sponsors of the Energy Policy Act estimate that an additional 30 days of DST will save an additional 3 million barrels.

Drawbacks of Daylight Saving Time

Farmers have historically opposed DST. Most agricultural activities are based on daylight hours as

opposed to clock hours, and crops and livestock maintain their schedules regardless of the time reflected on the clock.

A Canadian study in 1991 found an eight percent increase in traffic accidents on the Monday after clocks are moved forward, suggesting the lost hour of sleep negatively affects driving ability. However, a 1995 study by the Insurance Institute for Highway Safety found that DST reduced the number of traffic fatalities as a result of brighter evening driving conditions.

However, inconvenience is generally cited as the main problem with DST. It was one thing to move clocks forward an hour and then back again in 1966. In our high-tech society, clocks, computers, cell phones, and personal data assistants all need to be readjusted twice a year.

Daylight Saving Time or Not

A state cannot elect to observe daylight saving time for its time zone year round. It is possible for a state to petition the U.S. Department of Transportation to change time zones. The state legislature must enact a resolution requesting the department consider the change, and provide a socio-economic study to assure the convenience of commerce.

A state that lies entirely within one time zone may also exempt itself from observing DST, as Arizona and Hawaii have done, if the entire state will observe *standard* time for its time zone. In Colorado, such change would require legislation. Colorado law establishes mountain standard time as the standard time for Colorado and enacts observance of daylight saving time.

The Colorado General Assembly has made several unsuccessful attempts to opt out of DST or to experiment with year-round DST. A 1987 resolution urged Congress to allow Colorado to experiment with year-round DST to cut air pollution. That resolution failed in the state House of Representatives, and further attempts to strike the Colorado law outlining the observance of daylight saving time in the state have been similarly unsuccessful.