



DAYLIGHT SAVING TIME

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The second Sunday of March 2010 marks the start of the fourth year of extended Daylight Saving Time (DST) in most Canadian provinces. At 2:00 a.m. local time, March 14, the clocks “spring forward” by an hour. This does not always occur automatically—in most cases people manually advance their clocks on Saturday before turning in and/or spend part of Sunday adjusting clocks and appliances. Yet another adjustment is required to offset the spring changeover to DST. Growing awareness of the importance of sleep to public health and safety has prompted safety researchers to encourage people to get more sleep prior to the changeover. This advice seeks to promote alertness among drivers on the roads and employees in hazardous occupations in the days following the time change. This backgrounder examines basic questions, history, and interesting facts related to both Standard Time and Daylight Saving Time (DST).

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INTRODUCTION

The second Sunday of March 2010 marks the start of the fourth year of extended Daylight Saving Time (DST) in most Canadian provinces. At 2:00 a.m. local time, March 14, the clocks “spring forward” by an hour. This does not always occur automatically—in most cases people manually advance their clocks on Saturday before turning in and/or spend part of Sunday adjusting clocks and appliances. Yet another adjustment is required to offset the spring changeover to DST. Growing awareness of the importance of sleep to public health and safety has prompted safety researchers to encourage people to get more sleep prior to the changeover. This advice seeks to promote alertness among drivers on the roads and employees in hazardous occupations in the days following the time change. This backgrounder examines basic questions, history, and interesting facts related to both Standard Time and Daylight Saving Time (DST).

WHAT IS DAYLIGHT SAVING TIME?

The practice of advancing the clock one hour ahead of Standard Time for a period of approximately six months is known as Daylight Saving Time (DST). Daylight Saving Time, also known as “summer time” in some countries, is a deviation of Standard Time (see <http://www.sierrapapa.it/time.htm>). Since 2007, DST has begun in Canada and the United States at 2:00 A.M. local time on the second Sunday of March and ended at 2:00 A.M. on the first Sunday of November. The goal of DST is to shift the hours of human activity to make better use of the daylight.¹ DST provides a longer period of daylight to enjoy outdoor activities during summer evenings. The decline in the use of artificial light and appliances conserves fuel and energy thereby generating financial savings. Studies done by the U.S. Department of Transportation in the 1970s show that the country’s electrical usage declined by about one percent each day with DST.²

The need to conserve fuel and energy has taken on a new urgency in several American states over the past several years. In 2000, the experience of brownouts and rolling blackouts prompted legislators from California and several Western states to consider year-round DST or even Double Daylight Saving Time (DDST) as a means of reducing power consumption.³ In 2005, the U.S. Congress passed

¹ David S. Prerau, *Seize the Daylight: The Curious and Contentious Story of Daylight Saving Time* (New York: Thunder’s Mouth Press, 2005), p. xv.

² California Energy Commission, Bob Aldrich, *Saving Time, Saving Energy: Daylight Saving time, Its History and Why We Use It* (2005), Internet site at <http://www.energy.ca.gov/daylightsaving.html> accessed on October 6, 2005.

³ Year-round DST occurs when countries advance their clocks ahead by one hour throughout the entire year. The U.S. Congress placed the United States on DST in 1974 and 1975 for eight and ten months respectively as an energy conservation measure in response to the OPEC oil embargo. The effort worked, but Congress discontinued the practice in 1975 due to opposition from the farming states. Double Daylight

the *Energy Policy Act of 2005*. President George W. Bush signed it into law on August 8, 2005. As an energy conservation measure, the Act declared that commencing in 2007, DST will start three weeks earlier in the spring and end one week later in the fall. The Act also called upon the U.S. Department of Energy to evaluate the effect of the DST extension upon energy consumption and submit a report to Congress. The Act further states that Congress retains the right to revert EDST back to the 2005 time schedule, once the Department study is complete.⁴ In October 2008 analysts submitted their report to Congress indicating that the total electricity savings of EDST were 1.3 trillion watt-hours or 0.5% per day of Extended Daylight Saving Time, or 0.03% of electricity consumption over the year. The total 2007 electricity consumption in the United States was 3,900 trillion watt-hours.⁵

Some studies dispute the anticipated energy savings associated with DST. An examination of electricity usage and billing in Indiana since the state adopted DST in 2006 found that the time change led to a 1% overall *rise* in residential electricity use. This cost the state an extra \$9 million, according to the researchers. And, a study by the California Energy Commission concluded that Extended Daylight Saving Time in 2007 had a neutral effect on energy use in the state.⁶

WHAT IS STANDARD TIME?

Sir Sandford Fleming, a Canadian railroad planner, engineer and citizen of Peterborough, Ontario created Standard Time. Prior to the establishment of Standard Time, local time was set by the position of the sun at midday (solar time, see <http://www.encyclopedia.com/doc.aspx?id=1E1:solartim>). As a result, time varied from community to community. Prior to 1883, there were 100 or more local time zones in the United States based on solar time.⁷ The development of the railways in the mid-19th century put local time in one community at odds with local time in another. This led to much confusion and annoyance in terms of scheduling.

Saving Time or DDST would advance the clocks by two hours in the summer months only, and is thought to yield energy savings. During WWII, Great Britain used DDST during summer months (known as "Double Summer Time") and experienced more energy savings than with DST. To date, the United States has not experimented with Double Daylight Saving Time. See U.S. House of Representatives, Committee on Science, Subcommittee on Energy, Hearing Charter for Hearing on "Energy Conservation Potential of Extended and Double Daylight Saving Time," (24 May 2001)

⁴ The *Energy Policy Act of 2005*, Section 110.

⁵ U.S. Department of Energy, Energy Efficiency and Renewable Energy, *Impact of Extended Daylight Saving Time on National Energy Consumption: Report to Congress* (Energy Policy Act of 2005, Section 110) October 2008, p. i. Internet site at http://www1.eere.energy.gov/ba/pba/pdfs/epact_sec_110_edst_report_to_congress_2008.pdf (accessed on February 23, 2009).

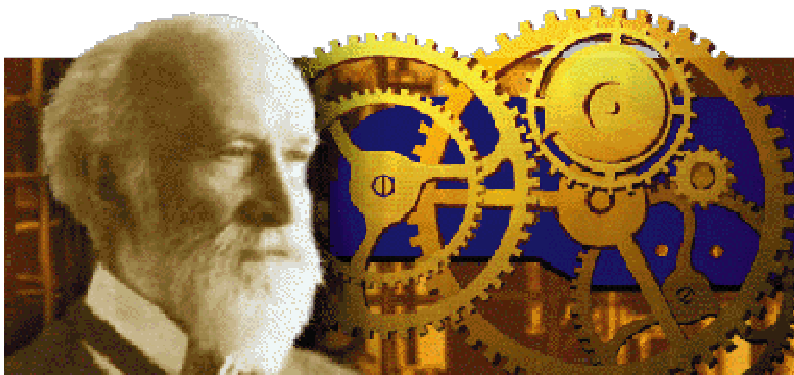
⁶ Charles Q. Choi, "Spring Forward or Not?" *Scientific American*, March 2009, p. 18.

⁷ U.S. House of Representatives, "Energy Conservation Potential of Extended and Double Daylight Saving Time," n.p.

Before Sanford Fleming invented Standard Time, 12 P.M. in Kingston was twelve minutes later than 12 P.M. in Montreal and thirteen minutes before 12 P.M. in Toronto. Noon was the time when the sun stood exactly overhead. This was the way clocks were set all over the world. In the old days, locally-based time made sense to everyone, but with the introduction of railways, it became highly inconvenient and inefficient. Imagine travelling across the country by train. At every stop along the way, you would have to reset your timepiece by the local clocks. Travellers sometimes carried a number of watches, or one with six different faces, each labelled with the name of a different city. It was also a nightmare for railway stationmasters, who could not deal with train schedules based on local time. The result was chaos for a transcontinental railway.⁸

The solution was to adopt a system by which the clocks would read consistently in one large region. In the late 1870s, Sanford Fleming advocated the adoption of a world-wide standard or mean time. He was instrumental in convening an International Prime Meridian Conference (<http://wwp.greenwich2000.com/millennium/info/conference-finalact.htm>) in Washington in 1884 at which the system of international Standard Time was adopted with 24 meridians, each 15 degrees (one hour) apart in longitude, starting from Greenwich, England (<http://wwp.greenwichmeridian.com/>) the prime meridian. Each time zone would keep the local time of the meridian that bisected it. Standard Time zones were first used by the railroads in the United States and Canada on November 18, 1883. Standard Time was not enshrined into U.S. law, however, until March 19, 1918 when the *Standard Time Act* came into force.⁹

Sir Sanford Fleming (1827 – 1915)



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⁸ The CRB Foundation Heritage Project, "Sanford Fleming makes trains run on time." Internet site at <http://heritageproject.ca/media/minutes/expanded/ssflem.htm> accessed on 4 October 1999 (link no longer active).

⁹ Institute for Dynamic Educational Advancement (IDEA), WebExhibits, "Daylight Saving Time – First there was Standard Time." Internet site at <http://www.webexhibits.com/daylightsaving/d.html>, accessed on 4 October 1999.

Resources on Sir Sandford Fleming

(A call number indicates the item is in the Legislative Library. Call 325-3901)

Sir Sandford Fleming

(http://www.sciencetech.technomuses.ca/english/about/hallfame/u_i02_e.cfm)

Canadian Science and Engineering Hall of Fame

Sir Sandford Fleming

(http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&TCE_Version=A&ArticleId=J0002857&MenuClosed=0)

The Canadian Encyclopedia

Clark Blaise, *Time Lord: The Remarkable Canadian who Missed His Train, and Changed the World*. Toronto: Random House, 2000.

Lawrence J. Burpee, *Sir Sandford Fleming Empire Builder*.

[London]: Oxford University Press, 1915.

B F 629 B (old class)

Hugh Maclean, *Man of Steel The Story of Sir Sandford Fleming*,

Toronto: the Ryerson Press, 1969

B F 629 M (old class)

Lorne Edmond Green, *Sandford Fleming, The Canadians*.

Don Mills: Fitzhenry & Whiteside Limited, 1980.

625.1 G 82 1980

Doris J. Unitt, Andrew Osler, Edward McCoy, *Sir Sandford Fleming*.

Peterborough: Review Printing Co. Ltd., 1968.

B F 629 Un (old class)

Resources on Standard Time

(A call number indicates the item is in the Legislative Library. Call 325-3901)

The New Encyclopaedia Britannica, Volume 11, 15th ed., Micropaedia.

Chicago: Encyclopaedia Britannica, 1998, p. 208.

CORE 031 N 42 1998 v.1-32

Ian R. Barkky and Elizabeth Harrison, "Standard and Daylight Saving Time."

Scientific American, Vol. 240 No. 5 (May 1979), pp. 46-53.

Per

Standard Time

(<http://www.bartleby.com/65/st/stndtime.html>)

The Columbia Encyclopedia, Sixth Edition. 2001.

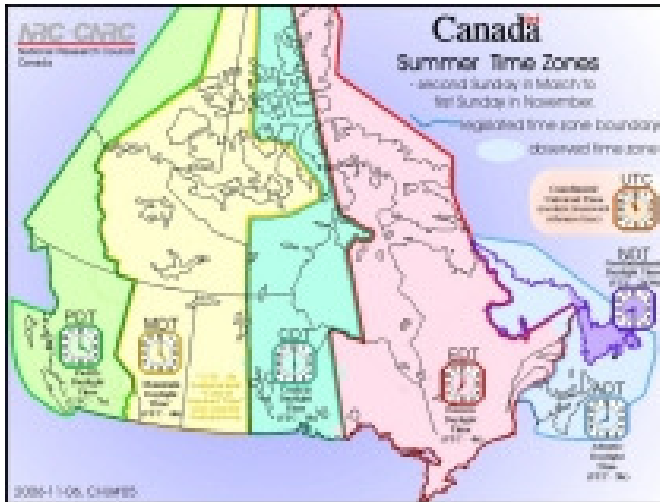
The Invention of Standard Time

(http://www.thecanadianencyclopedia.com/index.cfm?PgNm=ArchivedFeatures&TCE_Version=A&FeatureId=31&MenuClosed=0)

The Canadian Encyclopedia

The Time Zones of Canada

There are six time zones in Canada, identified by their hours from the Greenwich meridian:



Newfoundland Standard Time (NST), 3½ hours;

Atlantic Standard Time (AST), 4 hours;

Eastern Standard Time (EST), 5 hours;

Central Standard Time (CST), 6 hours;

Mountain Standard Time (MST), 7 hours;
and

Pacific Standard Time (PST), 8 hours.

Map reproduced with the kind permission of the Institute for National Measurement Standards, National Research Council of Canada. Click http://inms-ienm.nrc-cnrc.gc.ca/images/time_services_images/TZ06SSE.jpg for a better view, or http://inms-ienm.nrc-cnrc.gc.ca/time_services/daylight_saving_e.html for more information.

Newfoundland's Unique Time Zone

Many people wonder why the Province of Newfoundland has a time zone that varies by the half-hour rather than the standard one hour. While the system of Standard Time employs 24 meridians, and each are theoretically the centres of 24 Standard Time zones, some adjustments have been made to the time zones for the convenience of inhabitants within the zones. Newfoundland – but not Labrador – lies squarely in the eastern one-half of its time zone, exactly three and a half hours from Greenwich. The Newfoundland government attempted to bring the province into conformity with the other Atlantic Provinces in 1963, but withdrew in the face of stiff public opposition. Other jurisdictions that operate on a half-hour time difference are Suriname, Iran, India, Sri Lanka, and Central Australia.¹⁰

BRIEF HISTORY OF DAYLIGHT SAVING TIME

Benjamin Franklin made one of the first references to saving daylight in 1784 in a whimsical letter to the *Journal de Paris*, while serving as the U.S. Minister to France. Awakened by an unexpected noise at 6:00 A.M., he noticed the room was filled with daylight. His servant had forgotten to fasten the shutters before

¹⁰ "Timed by the zone," Write to Know – Answers to Readers' Perplexing Questions, *Canadian Geographic*, 1998. Internet site at <http://www.canadiangeographic.ca/JF98Write.htm>, accessed on 12 July 1999, link no longer active.

bedtime. This realization about daylight intrigued Franklin. For the next six months (between March 20 and September 20), he estimated that, on average, Parisians would sleep seven hours after sunrise, and therefore could save seven hours of candlelight if they changed their habits and rose earlier with the sun. Thus, Benjamin Franklin became one of the earliest proponents of altering the hours of human activity to make better use of the daylight. With half seriousness he advocated a four-fold proposal known as an “Economical Project.” In it he suggested 1) levying a tax on closed shutters; 2) supplying families with only one pound of candles per week; 3) forbidding coaches in the street after sunset; and 4) having the church bells toll every morning as soon as the sun rises. Where church bells were unsuccessful in rousing citizens, cannons should be used.¹¹

Next, in 1907, William Willett (<http://wwp.greenwichmeantime.com/info/daylightsaving.htm>), a London builder, proposed setting clocks ahead by 80 minutes in four moves of 20 minutes each during the spring and summer. In his pamphlet called *The Waste of Daylight*, he wrote,

Everyone appreciates the long, light evenings. Everyone laments their shortage as Autumn approaches; and everyone has given utterance to regret that the clear, bright light of an early morning during Spring and Summer months is so seldom seen or used.¹²

In 1908, an MP of the British Parliament (Robert Pearce) became intrigued with the ideas of William Willett. The Member introduced a daylight saving bill for the purpose of advancing the clock by one hour in the spring and returning to Greenwich Mean Time in the fall. The ensuing debate was highly contentious. The bill was rejected, as were several subsequent DST bills. In 1914, World War I erupted across Europe; subsequently, the idea of energy conservation for the war effort grew in importance. Many British miners had enlisted and the output of coal was diminishing. DST, though still controversial, was now viewed in a more positive light.¹³

Germany was the first country to adopt DST. On April 6, 1916 the German Federal Council declared that summer daylight saving time would be adopted in Germany as a wartime measure, starting the last Sunday of April and continuing until the first Sunday in October. Countries with close economic or political ties to

¹¹ Prerau, *Seize the Daylight: The Curious and Contentious Story of Daylight Saving Time*, p. xii-xiv.

¹² Dynamic Educational Advancement (IDEA), WebExhibits, “Daylight Saving Time – Rationale and Original Idea.” Internet site at <http://www.webexhibits.com/daylightsaving/d.html>, accessed on 13 May 2003.

¹³ Prerau, *Seize the Daylight: The Curious and Contentious Story of Daylight Saving Time*, pp. 52-53.

Germany soon followed that country's lead (e.g., Austria-Hungary, Holland, Denmark and Sweden).¹⁴

On May 17, 1916, the *Summer Time Act of 1916* was passed into law by the British Parliament. It established British Summer Time for 1916 and permitted extensions for the duration of the War. This event transpired eight years after MP Robert Pearce had sponsored the first DST bill and one year after the death of William Willet, the man whose ideas had been the inspiration for the first DST bill.¹⁵

Clocks were advanced one hour ahead of Greenwich Mean Time during the summer months. During World War I, clocks in several countries, including Australia, Great Britain, Germany and the United States, were advanced one hour in an effort to save energy used for artificial lighting. In the United States, the measure proved unpopular, so it was repealed after the war. During World War II, Congress reinstated DST from February 2, 1942 until September 30, 1945. England used "double summer time," advancing the clocks two hours from Standard Time in the summer and one hour in the winter. In Canada, federal legislation established DST during a limited portion of the Second World War.

Between 1945 and 1966, there was no federal law regulating DST, and the U.S. allowed states and municipalities to observe DST or not. By 1966, 100 million Americans were observing DST through local laws. This brought havoc to industries in the transportation and communications sectors. Trains and buses had to publish new schedules each time a state or town began or ended DST. A transportation industry committee began to organize in support of time uniformity. During their campaign the committee was horrified to learn that on the 32-mile stretch of highway (Route 2) between Moundsville, West Virginia and Steubenville, Ohio, the bus driver and passengers had to endure seven time changes.¹⁶ Congress decided to end the disorder and establish one pattern across the country with the *Uniform Time Act of 1966* (U.S. Code, Title 15, Subchapter IX: <http://www4.law.cornell.edu/uscode/15/ch6schIX.html>). The legislation decreed that DST would begin on the last Sunday of April and end on the last Sunday of October. The U.S. Department of Transportation oversees DST in the United States.¹⁷

¹⁴ Ibid., p. 53.

¹⁵ Ibid., p. 57.

¹⁶ Institute for Dynamic Educational Advancement (IDEA), WebExhibits, "History and Information – Daylight Saving Time, Early Adoption, U.S. law." (2001) Internet site at <http://webexhibits.org/daylightsaving/e.html> accessed on 13 May 2003.

¹⁷ Aldrich, "Saving Time, Saving Energy: Daylight Saving Time, Its History and Why We Use It," n. p.

In response to the OPEC oil embargo, in 1974 and 1975 Congress placed the country on year-round DST on a trial basis in an effort to conserve energy and to explore what advanced-time period would be most acceptable to the country.¹⁸ Congress discontinued the extended DST period in 1975 due to an outcry from the farming states and reinstated the six-month practice. At the end of the two-year trial, the U.S. Department of Transportation concluded that DST saves energy, prevents traffic injuries (except for the months of November through February), and reduces peoples' exposure to crime.

In 1986, President Reagan amended the law to commence DST three weeks earlier, to the first Sunday of April. No change was made to the end date. This was done to conserve energy for the entire month of April. It is estimated that extending DST from the last Sunday of April to the first Sunday yields savings of 300,000 barrels of oil nationwide.¹⁹ Today, the change to DST on the first Sunday in April and the last Sunday in October also marks the more recent, semi-annual ritual where households are encouraged to change the nine-volt batteries in their smoke alarms.²⁰

As noted earlier, the United States Congress has decided to once again change the start and end dates of DST. A provision of the U.S. *Energy Policy Act of 2005* proposed to extend Daylight Saving Time by two months – one month earlier in the spring and one month later in the fall. Opposition to the proposal caused the Congress to shorten its planned extension of DST to one month instead of two. The *Energy Policy Act of 2005* was signed into law by President George W. Bush on August 8, 2005. The extension of DST first took effect in 2007, commencing on the second Sunday of March and continuing until the first Sunday in November. In the U.S., it is recognized that the impact of DST on net energy consumption remains unclear. The Act stipulates that the U.S. Department of Energy (DOE) is required to study the impact of DST on energy consumption and report its findings to Congress by the end of 2007 at the latest. Moreover, the U.S. Congress retains the right to revert back to the “traditional” DST schedule once the DOE study is complete.²¹ In October 2008, analysts from the U.S. Department of Energy concluded in their report to Congress that extended DST tends to slightly alter energy consumption. In total, about 0.5% of the nation's electricity

¹⁸ Ian R. Barkky and Elizabeth Harrison, "Standard and Daylight-saving Time," *Scientific American* (May 1979), p. 50.

¹⁹ Institute for Dynamic Educational Advancement (IDEA), Web Exhibits, (2001). Internet site at <http://webexhibits.org/daylightsaving/i.html> accessed on 13 May 2003.

²⁰ Aldrich, "Saving Time, Saving Energy: Daylight Saving Time, Its History and Why We Use It," n. p.

²¹ Canada, Library of Parliament, Frédéric Beauregard-Tellier, *Daylight Saving Time and Energy Conservation*, (July 29, 2005), Internet site at <http://www.parl.gc.ca/information/library/PRBpubs/prb0518-e.htm> accessed on October 21, 2005.

per day, or 1.3 trillion watt-hours (TWh) were saved following the four-week extension of DST in 2007.²²

This U.S. proposal initially took Canada by surprise. Many commercial stakeholders and provincial leaders expressed concern about confusion and economic disruption if the two countries fell out of alignment with respect to time. After the U.S. Bill was signed into law, the premiers added the topic to the agenda of their 2005 annual summer meeting.

History of DST in Ontario

Within Canada, all 10 provinces and three territories regulate time through legislation or regulation. As early as 1895, Ontario enacted a brief time statute known as *An Act respecting the Legal Meaning of Expressions relative to Time*. The first section (i) stated that expressions of time in the Province would refer to Standard Time, and (ii) provided for two time zones. The parts of the province to the east and west of 87° W longitude (present day Terrace Bay) would be deemed to be five and six hours (respectively) behind Greenwich Time. The Act of 1895 is interesting in alerting us to the time zone boundaries of the 1890s. Few may be aware that the 1895 boundary between the Eastern and Central Time Zones fell east of today's boundary of 90° W longitude near Shebandowan, a small hamlet west of Thunder Bay (and about 225 km. west of Terrace Bay). In section 2, the act allowed either the 24-hour or 12-hour clock to be used in naming the time of day.

The Act read as follows:

1. Where an expression of time occurs in any Act of this Legislature, whether heretofore or hereafter passed, or in any by-law, deed or other legal instrument, whether heretofore or hereafter executed, the time referred to shall, unless it is otherwise specifically stated, be held to be Standard time, and as regards that part of the Province which lies east of the meridian of eighty-seven degrees west longitude, Standard time shall be reckoned as five hours behind Greenwich time; and as regards that part of the Province which lies west of the

²² Charles Q. Choi, "Spring Forward or Not?" *Scientific American* (March 2009), p. 18. See also U.S. Department of Energy, Energy Efficiency and Renewable Energy, *Impact of Extended Daylight Saving time on National Energy Consumption: Report to Congress* (Energy Policy Act of 2005, Section 110) October 2008, i. Internet site at http://www1.eere.energy.gov/ba/pba/pdfs/epact_sec_110_edst_report_to_congress_2008.pdf (accessed on February 23, 2009).

said meridian, Standard time shall be reckoned as six hours behind Greenwich time.

2. The hours of the day may in any locality be numbered in one series up to 24 according to the 24-hour notation so called, and the numbers so used shall be equally valid with the numbers used in the division of the day into two series of 12 hours, distinguished as “a.m.” and “p.m.”

3. This Act may be cited as *The Definition of Time Act, 1895*.

Between 1895 and 1958 *The Definition of Time Act* was amended several times. In 1912, the (current) time zone boundary of 90° W longitude between the Eastern and Central Time Zones was enacted. *The Definition of Time Act* was repealed and replaced by *The Time Act* in 1958. No reference to “Daylight Saving Time” was made in any Ontario time statute until 1986.

Although Ontario’s time statute made no mention of Daylight Saving Time (DST), various Ontario communities did observe DST on an *ad hoc* basis, some as early as 1908.²³ Some permitted DST through by-law while others did so by consensus.²⁴

Between 1984 and 1986, New Democratic MPPs, Michael Cassidy (Ottawa Centre) and Ross McClellan (Bellwoods) introduced Private Members’ Bills 47, 40 and 58 endorsing the extension of DST in an effort to maximize sunshine during leisure hours.²⁵

At First Reading of Bill 47, *An Act to amend the Time Act*, Mr. Cassidy explained that the purpose behind his Private Member’s Bill was to preserve daylight. He pointed to the long dark winters and the need to maximize existing daylight, particularly for those who suffer from “the wintertime blues”. In his view, the benefits of extended DST included potential savings in energy costs, fewer traffic accidents and improvement in the quality of life resulting from more hours of sunshine.

²³ Prerau, *Seize the Daylight, The Curious and Contentious Story of Daylight Saving Time*, n. p.

²⁴ Correspondence with officials from the Ministry of the Attorney General, (February 27, 2007). The Ministry of the Attorney General administers the *Time Act*.

²⁵ Mr. Cassidy’s Bill 47, introduced April 26, 1984, and Mr. McLellan’s Bill 40 (October 24, 1985), both proposed extending DST from the first Sunday in March to the first Sunday in November. Mr. McLellan’s Bill 58, introduced April 22, 1986, proposed starting DST on the first Sunday in April. It immediately received Second Reading, and was then amended in Committee of the Whole so that DST would finish on the last Sunday in October. Bill 58 received Third Reading and Royal Assent on November 27, 1986 (Chapter 56, S.O. 1986).

Mr. Speaker, the purpose of this bill is to extend daylight saving time by two months per year so it would begin on the first Sunday in March and go until the first Sunday in November, whereas nowadays it begins on the last Sunday in April and goes to the last Sunday in October. . .

Since we have four months of daylight saving time after the summer equinox, after June 21, this bill would give us four months of daylight saving time before the summer equinox by adding the months of March and April.

The proposal in this bill has gained wide support at the municipal level across Ontario in the past year. . . . the Association of Municipalities of Ontario passed a motion last November endorsing a move to extend daylight saving time by two months a year as per the provisions of this bill. . . .

This bill would ensure social gains, including fewer traffic accidents, a higher quality of life and something approaching a half a billion additional people-hours of sunlight every year for the people of Ontario.²⁶

At the beginning of 1986, the period of DST in Canada extended from the last Sunday in April until the last Sunday in October. Daylight Saving Time was not authorized by provincial or federal legislation but by municipal ordinance.²⁷ In that same year, the U.S. Congress enacted P.L. 99-359 amending the *Uniform Time Act*, extending DST by three weeks. Congress shifted the start date of DST to the first Sunday in April (rather than the last Sunday in April) but did not adjust the end date which remained the last Sunday of October.

Mr. McClelland's Bill 58 was introduced for First Reading on April 22 1986. It proposed starting DST on the first Sunday in April continuing until the first Sunday in November. The Legislative Assembly subsequently amended Bill 58. DST would start on the first Sunday in April ending the last Sunday of October, thus providing for nearly seven months of DST in Ontario. The Bill was given Royal Assent on November 27, 1986.

In a March 1987 news release issued to municipal clerks in all 839 municipalities, Municipal Affairs Minister Bernard Grandmâitre directed their attention to the

²⁶ Ontario, Legislative Assembly, *Official Report of Debates (Hansard)*, Fourth Session, 32nd Parliament (26 April 1984), pp. 960-1.

²⁷ See "Explanatory Note" Bill 58 (Private Member's Bill) *An Act to amend the Time Act* (Mr. McClelland), 33rd Legislature, Second Session (April 22, 1986).

three-week extension of DST. He noted that all-party agreement had been achieved to endorse Bill 58. The three-week extension was compatible with action taken by the United States Congress earlier that year.²⁸ The passage of Bill 58 is significant for a couple of reasons. It was one of those rare occasions when a Private Member's bill successfully passes in the Legislature and becomes law. It also marked the beginning of DST being decided at the provincial rather than the local level (with some exceptions—see **Ontario's Time Zone Anomalies**).

Ontario's Response

The Ministry of the Attorney General (AG) administers the *Time Act* (http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90t09_e.htm) in Ontario. In 2005, Attorney General Michael Bryant delegated the task of investigating the impact that the extension of DST could have on the different sectors in Ontario to his Parliamentary Assistant (PA), David Zimmer. Mr. Zimmer led an inter-Ministry committee over a period of three months with the goal of preparing a report with recommendations for Cabinet. The PA also created a website and held consultations with different levels of government on the question of harmonizing with the United States on DST. According to Attorney General Bryant,

Representatives from finance and capital markets, trade, manufacturing and industry unanimously urged us to harmonize daylight saving with the U.S. In fact, they told us that any misalignment could have a real and negative impact, namely: trade disruption as well as cost coordination, delivery system supply chain and border pressures.²⁹

On October 20, the Attorney General announced that Ontario would synchronize its DST schedule with the United States. PA David Zimmer told the *National Post* that “a good, solid 75% [of Ontarians consulted] were in favour of extending DST.”³⁰

In April 2006 the Ontario government enacted Ontario Regulation 111/06 (http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_060111_e.htm) under the *Time Act*. The regulation, which came into force on January 1, 2007, refers to a variation of time in the Act so that

²⁸ Ontario, Ministry of Municipal Affairs, *News Release* (March 10, 1987).

²⁹ Ontario, *Hansard: Official Report of Debates* (38th Parliament, 2nd Session) October 20, 2005, Internet site at http://www.ontla.on.ca/web/house-proceedings/house_detail.do?Date=2005-10-20&Parl=38&Sess=2&locale=en#P494_128192 accessed on March 4, 2008.

³⁰ Lee Greenberg, “Ontario to extend daylight savings,” *National Post*, (October 21, 2005), p. A4.

(a) daylight saving time shall be in effect during the period between 2 a.m. standard time on the second Sunday in March and 2 a.m. daylight saving time on the first Sunday in November; and

(b) standard time shall be in effect during the rest of the year.

(Ontario Regulation 111/06)

Daylight Saving Time Resources

(A call number indicates the item is in the Legislative Library. Call 325-3901)

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David S. Prerau, *Seize the Daylight: the Curious and Contentious Story of Daylight Saving Time*
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DOES EVERYONE OBSERVE DST?

Saskatchewan

All provinces observe daylight saving time except Saskatchewan, which remains on Central Standard Time (CST) year-round. The question of daylight saving time in Saskatchewan has been overshadowed by the more pressing question of whether to accept Mountain Standard Time (MST) or Central Standard Time as the uniform time in the province.

There are some in the province who argue that, in a sense, Saskatchewan is already observing Daylight Saving Time. This is because Saskatchewan observes Central Standard Time as the official time of the province instead of Mountain Standard Time (which is the “true” time associated with the 105° W meridian which runs through the middle of the province). Thus, Saskatchewan is observing time that is one hour ahead of the official Greenwich Time for that part of the hemisphere.³¹

Prior to the implementation of the *Time Act* in 1966, the question of time in the province was the responsibility of Saskatchewan’s municipalities. According to some observers, Saskatchewan presented the most complicated time picture of any province in Canada. Under provincial legislation, bylaws could be passed at any time by conducting a plebiscite on the question of observed time. This resulted in a patchwork of time zones in Saskatchewan with urban communities favouring CST, rural communities preferring MST and still others favouring Daylight Saving Time (DST) as their local time.³²

In 1966, the *Time Act* established the current system. The Act was introduced to allow residents of Saskatchewan to have one uniform time in the summer, while allowing residents in selected areas on the western side of the province to vote on whether to observe either MST or CST during the winter months.³³

The *Time Act* is silent on the question of Daylight Saving Time. During the summer months, all of Saskatchewan observes Central Standard Time. During the winter, only the Battle River (Lloydminster) Time Option Area follows Mountain Standard Time. The rest of the province is on Central Standard Time year round.³⁴

From time to time, various interests in the province have argued that Saskatchewan should “spring forward” and synchronize its clocks with the rest of North America in April. According to proponents, this would alleviate confusion

³¹ This anomaly was explained in a 1966 paper submitted to the government by an Astronomy professor from the University of Saskatchewan, Earl R.V. Milton. Professor Milton concluded that Saskatchewan should be observing Mountain Standard Time. He pointed out that the province is physically located within the Mountain Standard Time (MST) zone. Moreover, Professor Milton took the view that it would not be feasible for the province to cooperate with the rest of North America on a continent-wide shift to DST in the summer months unless the province of Saskatchewan is observing Mountain Standard Time. See: Earl R. V. Milton, A submission to the Government of Saskatchewan Regarding Time Zoning in Saskatchewan, 1966 (in) Saskatchewan, Government Relations and Aboriginal Affairs, *A Scientific and Historical Background Regarding the Time System in Saskatchewan*, (November 2002). Internet site at http://www.iaa.gov.sk.ca/History_of_Time_System.pdf accessed on September 11, 2003; link no longer active.

³² Ibid. p. 2.

³³ Ibid.

³⁴ Saskatchewan, Government Relations, “Time System in Saskatchewan,” *Fact Sheet* (2005). Internet site at <http://www.gov.sk.ca/news-archive/2005/3/21-237-attachment.pdf> accessed on September 29, 2006.

and the necessity for airlines, buses and trains to change their arrival/departure schedules twice a year.³⁵ The Saskatchewan Chamber of Commerce (SCC) passed a resolution during its 2001 annual meeting calling for the Saskatchewan government to adopt DST. The SCC argued that adopting DST would “reduce energy consumption and increase tourism by using more of the available daylight for production and leisure activities.”³⁶ The Saskatchewan Urban Municipalities Association (SUMA) approved a similar resolution at its 2001 convention. The Association president wrote Premier Lorne Calvert in the fall of 2003 asking him to consider holding a provincial plebiscite in conjunction with the next provincial election on the matter of joining the rest of the country in adopting DST.

Responding to SUMA’s request, Premier Calvert stated that the issue of time change is too divisive and the province would be better dealing with more unifying issues.³⁷ The Saskatchewan Auto Dealers Association began a petition campaign in October 2004 requesting a two-year trial period of Daylight Saving Time. A total of 7,300 signatures were collected and the outcome was 2.7 to 1 in favour of a trial period. The auto dealers’ announcement prompted media inquiries which led to a false assumption that the government was considering changes to the *Time Act*. According to the Minister of Government Relations: “We’re not considering changes to the *Time Act*. We have simply requested a background paper on options. One of those options could be change; one of them could be no change. We have simply asked to be updated on current thinking and options.”³⁸ In March 2005, the Government declared that the Province will retain the current time system established by the *Time Act*. During the November 2007 provincial election, Saskatchewan Party Leader Brad Wall promised a referendum on the matter of DST, in conjunction with the next (2011) provincial election, if his party formed the government.³⁹ Winning a majority of seats in the general election of November 7, 2007, the Saskatchewan Party formed the government.

In early 2010, press articles appeared about the promised referendum regarding DST in the province. In one article, Premier Brad Wall appeared to be questioning the need for a referendum when he suggested that citizens of Saskatchewan might first be polled to see whether they favoured change or the status quo. If results

³⁵ Bruce Penton, “Why won’t Saskatchewan spring forward?” *Globe and Mail*, 25 April 1995.

³⁶ “Chamber backs DST,” *The Leader Post* (Regina), 19 September 2001, p. A1.

³⁷ Saskatchewan Urban Municipalities Association (SUMA), “Reply of Oct. 2, 2003, from Premier Lorne Calvert on Time Issue,” Internet site at <http://www.suma.org/modules.php?name=Sections&op=viewarticle&artid=238> accessed on March 14, 2005; link no longer active.

³⁸ Leo Paré “Sun never sets on Saskatchewan time debate,” *Lloydminster Meridian Booster* (October 17, 2004), Internet site at <http://www.meridianbooster.com/story.php?id=121074> accessed on October 18, 2004; link no longer active.

³⁹ “Brad Wall promises a referendum or plebiscite on daylight saving time issue,” *Leader-Post*, November 2, 2007.

showed a majority of Saskatchewan residents opposed to change, the Premier said that holding a referendum might not merit the time, effort and cost. He did acknowledge, however, that as the referendum would be held in conjunction with a general election, the effort and cost would be minimal.⁴⁰ The Premier further indicated that he would consult with his own Saskatchewan Party caucus, as well as the Opposition New Democratic Party on the issue of the referendum.⁴¹

One factor possibly weighing against holding a referendum on DST is the potentially polarizing debate that might ensue. On the other hand, some have pointed out that Saskatchewan voters have never had a direct say in how time is regulated in their province and want to be consulted. Still others suggest that the prospect of a referendum on this important matter would give voters an incentive to show up at the polling booth.⁴² Daylight Saving Time watchers will undoubtedly hear much more on the Saskatchewan DST debate as the 2011 General Election draws closer.

For further information about time in Saskatchewan refer to *The Saskatchewan Time System (A Scientific and Historical Background* (<http://www.municipal.gov.sk.ca/publications/pdf/policy/timesys.pdf>) prepared by Municipal Relations Division, Saskatchewan Government Relations and Aboriginal Affairs, 2002.

Nunavut

Canada's newest territory, Nunavut straddles three time zones – Eastern, Central and Mountain. When the Territory was first created, however, elected representatives wished to have all the people of Nunavut within a single time zone in an effort to create unity and ease of communication across the entire 2.1 million square kilometre area. Thus, on October 31, 1999, the new territory changed from three time zones to a single time zone (Central Standard Time). This immediately created concern for people in the eastern region, where, during the winter, the sun was setting at 1 p.m. School children who set out in daylight were arriving home in complete darkness. Residents of Baffin Island in the eastern part of the Territory refused to adopt Central Standard Time. Hunters observed that the sun rose at 3:00 a.m. and unless they set out at that time, they would be short-changed by an hour of precious daylight.⁴³

⁴⁰ "Daylight savings issue best settled via referendum," *Star-Phoenix*, 21 January 2010, p. A.10.

⁴¹ James Wood, "Vote on time issue not a sure thing," *Leader Post*, 14 January 2010, p. A.8.

⁴² "Daylight savings issue best settled via referendum," *Ibid*.

⁴³ Adrian Humphreys, "Nunavut clocks in with solution for time zones: Territory will split year between Central and Eastern Time," *National Post*, 10 October 2000, p. A10.

In response to worries about the safety of school children and other concerns, the Nunavut government polled residents, business leaders and service organizations of every region within the territory seeking a compromise. In October 2000, the press reported the government's solution to the time zone conundrum. The Territory's time would conform to the Eastern Time zone for six months (starting October 29, 2000), and to the Central Time Zone for the next six months. Thus, at 2:00 a.m. local time on the last Sunday of October, when most Canadians were "falling back" from Daylight Saving Time to Standard Time, residents of Nunavut were instructed not to set back their watches. This one hour "gain" would thus move Nunavut time into conformity with the Eastern Standard Time zone. It was further announced that at the end of six months when the first Sunday of April 2001 arrived and most Canadians were advancing their clocks forward an hour to Daylight Saving Time, that Nunavut clocks would, again, remain unchanged, thus moving the territory's time into conformity with the Central Standard Time zone for the next six months.⁴⁴

The revised plan was not popular. On March 1, 2001, Nunavut's Minister of Justice, the Hon. Paul Okalik issued a statement explaining that effective Sunday, April 1, 2001, three time zones (Eastern, Central and Mountain) would be re-established for Nunavut. Mr. Okalik noted that the single time zone model had proved controversial since its inception. While changes were made to the single time zone model, these too had had their shortcomings. Consulting with mayors and MLAs across the Territory, the Justice Minister heard that people favoured returning to three time zones for Nunavut. The government responded by amending the *Interpretation Act* accordingly.⁴⁵

Ontario's Time Zone Anomalies

The Northwestern Ontario communities of Atikokan, Pickle Lake and Mishkeegogamang (formerly New Osnaburgh) are located west of the 90th meridian and therefore fall within the Central Time Zone. Like Saskatchewan, they do not observe DST and have no plans to change the status quo. As a further anomaly, the community of Pickle Lake, which is situated quite near to the 90th meridian, has chosen to observe Eastern Time as local time, even though it is physically located within the Central Time Zone. There are a number of these time zone anomalies located throughout Canada.

International Exceptions to DST

In the U.S., all states observe DST with the following exceptions: Hawaii, American Samoa, Guam, Puerto Rico, the Virgin Islands, the Commonwealth of

⁴⁴ Ibid.

⁴⁵ Nunavut, Ministry of Justice, "Time Zone", Ministerial Statements, 1 March 2001.

Northern Mariana Islands, and Arizona. However, the Navajo Nation (located within Arizona and other states) does observe DST. [See www.webexhibits.org] In 2005, the State of Indiana passed a law to create a more unified system of time. Effective April 2, 2006, Indiana (which falls predominantly in the Eastern Time Zone) began observing DST.⁴⁶ The reason Arizona does not observe DST is partially based upon energy conservation concerns. Residents want the effect of sunset to be felt closer to the end of the workday. Observing DST would result in people staying indoors longer and using more air conditioning.⁴⁷ In the southern hemisphere, Queensland, the Northern Territory and Western Australia do not observe DST.

WHO REGULATES DST IN CANADA?

While the federal government regulated DST as national policy during World War II, and municipal governments had jurisdiction thereafter, provincial governments now regulate it through the statutes presented in the following table:

Table: Provincial Legislation and DST

Province/ Territory	Title of Act [electronic link]	Responsible Ministry/Department
British Columbia	<i>Interpretation Act</i> [http://www.qp.gov.bc.ca/statreg/stat/I/96238_01.htm]	Attorney General
Alberta	<i>Daylight Saving Time Act</i> [http://www.qp.alberta.ca/574.cfm?page=D05.cfm&leg_type=Acts&isbncln=0779744950]	Justice and Attorney General
Saskatchewan	<i>Time Act</i> [and Regulation] [http://www.qp.gov.sk.ca/documents/English/Statutes/Statutes/T14.pdf] [http://www.qp.gov.sk.ca/documents/English/Regulations/Regulations/T14R2.pdf]	Municipal Affairs
Manitoba	<i>Official Time Act</i> [http://web2.gov.mb.ca/laws/statutes/ccsm/o030e.php]	Intergovernmental Affairs
Ontario	<i>Time Act</i> [http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90t09_e.htm]	Attorney General

⁴⁶ While at least 24 attempts to embrace DST have failed in the Indiana State Legislature over the past 30 years, on April 28, 2005 a bill did pass. In response to public petitions, the U.S. Department of Transportation (DOT) held public hearings on the location of the boundary between the Eastern Time Zone and the Central Time Zone within the state. It ruled on January 17, 2006 to move the eight counties from the Eastern Time Zone to the Central Time Zone. See: Greenwich 2000.ltd.uk – Greenwich2000, Indiana & DST, "USA State of Indiana – Daylight Saving Time from 2006" (2006), Internet site at <http://www.daylight-saving-time.com/usa/indiana/index.htm> accessed on March 30, 2006.

⁴⁷ United States, U.S. House of Representatives, Committee on Science, Subcommittee on Energy, Hearing Charter for Hearing on "Energy Conservation Potential of Extended and Double Daylight Saving Time." (24 May 2001) n.p.

Québec	<i>Legal Time Act</i> [http://www.ijcan.org/qc/laws/sta/t-5.1/20070910/whole.html]	Justice
New Brunswick	<i>Time Definition Act</i> [and Regulation] [http://www.gnb.ca/0062/acts/acts/t-06.htm] [http://www.gnb.ca/0062/PDF-acts/t-06.pdf]	Premier's Office
Nova Scotia	<i>Time Definition Act</i> [See <i>Regulations Act</i> (pp. 244-45) for DST provisions.] [http://www.gov.ns.ca/legislature/legc/statutes/timedefn.htm] [http://www.gov.ns.ca/just/regulations/rg2/2006/ma1206.pdf]	Justice
Prince Edward Island	<i>Time Uniformity Act</i> [http://www.gov.pe.ca/law/statutes/pdf/t-03_01.pdf]	Attorney General
Newfoundland and Labrador	Standard Time Act [http://assembly.nl.ca/Legislation/sr/statutes/s23.htm]	Municipal Affairs
Yukon	<i>Interpretation Act</i> See <i>O.I.C. 2006-07 Interpretation Act</i> , made under s. 33 of the Act [http://www.gov.yk.ca/legislation/acts/interpretation.pdf] [http://www.gov.yk.ca/legislation/regs/oic2006_127.pdf]	Justice
Northwest Territories	<i>Interpretation Act: Daylight Saving Time Reg.</i> [http://www.justice.gov.nt.ca/PDF/REGS/INTERPRETATION/Daylight_Sav_Time.pdf]	Justice
Nunavut	<i>Interpretation Act</i> See <i>Daylight Saving Time Regulations, 2001, amendment R-007-2007</i> [http://action.attavik.ca/home/justice-gn/attach-en_conlaw_prediv/Type1001.pdf] [http://action.attavik.ca/home/justice-gn/attach/2007gaz02part2.pdf]	Justice

OTHER COUNTRIES THAT OBSERVE DST

Approximately 70 countries worldwide observe DST. Japan, India, and China are the only industrialized countries that do not observe some form of DST. Japan abandoned it in 1952, citing opposition from farmers. Today, South Korea, Japan, and Iceland are the only countries in the 30-member Organization for Economic Cooperation and Development that do not observe DST.⁴⁸ China, which enacted a single time zone in 1980, observed DST between 1986 and 1991, but no longer does so. (See table at <http://webexhibits.org/daylightsaving/g.html>). The dates that

⁴⁸ South Korea is considering adoption of DST in the near future. It was last observed during the years 1986-1988. DST advocates (business and industry) have urged both the South Korean and Japanese governments to adopt DST to boost tourism in the summer months. Polls show that many people in both countries oppose DST fearing that it will lead to longer working hours. See "S. Korea, Japan urged to jointly adopt daylight savings time," *Yonhap News Agency of Korea*, 5 November 2009.

other countries observe DST vary. In 1996, the European Union (EU) standardized a EU-wide “summer time period” which extends from the last Sunday in March through the last Sunday in October. In the UK, a Summer Time Order established the period of summer time. The start date for summer time commenced on the last Sunday in March, extending to the last Sunday in October. As of 2002, the UK follows EU law on summer-time arrangements.⁴⁹

In Israel, DST is determined on a yearly basis, because religious considerations dictate that DST must end before the New Year. This can fall any time between early September and early to mid October. During the summer, Russia advances its clocks two hours ahead of Standard Time. During the winter, all 11 of the Russian time zones are one hour ahead of Standard Time. In the southern hemisphere, where summer arrives in December, DST is observed from October to March. Australian states observe DST from the last Sunday of October until the last Sunday of March. Equatorial and tropical countries do not observe DST since day and night are equal throughout the seasons.⁵⁰

WHY NOT “DAYLIGHT SAVINGS TIME”?

There is no “s” because what is saved is daylight, which is singular.

WHY NOT OBSERVE DST YEAR ROUND?

While some people would like DST year-round, there are practical reasons for avoiding it during the late sunrise months of November through February. At the end of the two-year trial in the U.S. in 1974-75, data compiled showed a statistically significant increase in fatal traffic accidents between 5:30 and 9:30 A.M. during the late sunrise months of January and February 1974, compared with 1973. While the increase in accidents could not be definitively attributed to Daylight Saving Time, DST as a factor in these accidents could not be ruled out either.⁵¹ The morning darkness was and remains a concern for parents whose children wait for school buses or walk to school in the morning during November through February. In the rural communities, there is concern when young children

⁴⁹ A common date and time has been established in all member states for the beginning and end of summer-time. From 2002 onward, the summer-time period begins in every member state at 1:00 A.M. Greenwich Mean Time (GMT) on the last Sunday in March and ends at 1:00 A.M. GMT on the last Sunday in October. The EU Directive defines summer-time as “the period of the year during which the clocks are put forward by 60 minutes compared with the rest of the year.” See: *European Union Law Directive 2000/84/EC of the European Parliament and of the Council of 19 January 2001 on Summer-time Arrangements* (March 2002). Internet site at <http://webexhibits.org/daylightsaving/eu.html> accessed on 13 May 2003.

⁵⁰ Aldrich, “Saving Time, Saving Energy: Daylight Saving Time, Its History and Why We Use It,” n. p.

⁵¹ Ian R. Barkky and Elizabeth Harrison, “Standard and Daylight-saving Time,” *Scientific American* (May 1979), p. 50.

have to travel down long laneways to catch the school bus.⁵² Daylight Saving Time is most acceptable to the public when sunrises are not too late and sunsets are not too early.⁵³ Some experts believe that the best period for DST in terms of light symmetry, is the six month period starting on the first Sunday in April and ending on the last Sunday in September.⁵⁴

Following electricity shortfalls in California, in May 2001, the California state legislature sent a Senate Joint Resolution to the White House and Congress asking that the state be permitted to enact DST on a year-round basis. Initial reaction to the proposal by public officials showed that the idea had merit, but it would require more study. As of fall 2003, Congress and the White House had not yet acted on the request.⁵⁵

Similar efforts have followed. A Representative from California introduced legislation proposing year round DST and Double DST for the summer in four western states: California, Nevada, Oregon and Washington). California estimates that the practice would yield average energy savings of 0.5 percent during April to October. Critics argue that any benefits would be offset by the havoc it could cause. A senior official with the U.S. Department of Transportation recommended more study: "Clear and consistent time observance is crucial for maintaining bus, train and airline schedules. In addition, consistent time schedules and observance are crucial in assuring railroad safety because the same tracks are often used for trains heading in both directions."⁵⁶ The President of the Utility Consumers Action Network in San Diego observed that: "It has the potential of creating a lot of confusion if it is not done with some manner of uniformity." Some argue that the proposal is too far-reaching. The President of an Electric Utility Benchmarking Association pointed out that a two-hour change would be a nightmare: "We do a lot of business with those in Australia who are springing forward in time every time we fall back. To make the shift double would be way too chaotic."⁵⁷

Kyrgyzstan began observing year-round Daylight Saving Time in 2005.

⁵² Ontario, Legislative Assembly of Ontario, *Hansard: Official Report of Debates*, 33rd Parliament, 1st Session (12 December 1985): 2368.

⁵³ Barkky and Harrison, "Standard and Daylight-saving Time," p. 50.

⁵⁴ *Ibid.*, p. 53.

⁵⁵ Aldrich, "Saving Time, Saving Energy: Daylight Saving Time, Its History and Why We Use It," n. p.

⁵⁶ "California may take its time," *Tulsa World*, 29 May 2001.

⁵⁷ Daniel B. Wood, "Can 'time' fix energy problems? Power-strapped states urge Congress to let them extend daylight saving time," *Christian Science Monitor*, 3 July 2001.

OPPOSITION TO DAYLIGHT SAVING TIME

Earlier this century, farmers were opposed to Daylight Saving Time as it was more convenient to do their chores in the morning light. Farmers have historically been opposed to Daylight Saving Time because their rising patterns had more to do with the rhythms of their agricultural vocation than the hour on the clock. DST is no longer a contentious issue among farmers, however, because the pervasive use of electricity and artificial light permits them to work in the absence of sunlight. Opposition to DST has been dropped from the U.S. Farm Bureau's policy book within the last decade.⁵⁸

Some people resent the twice a year inconvenience of adjusting their alarm clocks, and resetting the clocks on their various appliances.⁵⁹ Others dislike adjusting their sleeping patterns and find the change disruptive and disorienting. They complain that adjusting to DST or back to Standard Time is "like getting jet lag without even leaving home."⁶⁰

Stanley Coren, who authored the book *Sleep Thieves*, published data claiming that the spring shift to DST increases driver fatigue resulting in an increase in automobile collisions.⁶¹ Other experts dispute these claims.⁶² However, a Hamilton sleep disorder specialist has observed that the loss of as little as one hour of sleep (as happens during the shift to DST) can have a significant impact on individuals already suffering from sleep deprivation.⁶³ The Swedish study referenced earlier noted that since 1987, the number of heart attacks had risen about 5% during the first week of daylight saving time. Writing in the *New England Journal of Medicine* in October 2008, researchers at the Karolinska Institute suggested that this may be due to disruption of sleep patterns and biological rhythms.⁶⁴

⁵⁸ Paul Wood, "Changing clocks a sore subject," *The News-Gazette Online* (Champaign, Illinois, 1998). Internet site at <http://www.news-gazette.com/story.cfm?Number=2495>, accessed on 13 May 2003; link no longer active.

⁵⁹ Sheila Danzig, "End Daylight Saving time," 1997. Internet Site at <http://www.standardtime.com>, accessed on 13 May 2003.

⁶⁰ Wood, "Changing clocks a sore subject."

⁶¹ Stanley Coren, "Sleep Deficit, Fatal Accidents and the Spring Shift to Daylight Savings Time" (1998). Presented at INABIS '98, 5th Internet World Congress at McMaster University, Canada, December 7-16th. Internet site at <http://www.mcmaster.ca/inabis98/occupational/coren0164/index.html> accessed on 13 May 2003.

⁶² Nicolas van Rijn, "Accident unrelated to time change: study – Statistics show losing sleep has little or no effect," *Toronto Star*, 17 October 1998, p. A4.

⁶³ Suzanne Morrison, "All work and no sleep plays havoc with lives; Studies say lack of sleep causes premature aging, weakens immune system and leads to accidents," *The Hamilton Spectator*, 31 March 2001, p. A1.

⁶⁴ Charles Choi, "Spring Forward or Not? *Scientific American*, March 2009, p.18.

Researchers at Stanford and Johns Hopkins universities claim that there may be a link between the spring change to DST and an increase in auto accidents. Reporting their findings in the journal *Sleep Medicine* the researchers observed a significant increase in the number of fatal auto accidents on the Monday following the spring change to DST. They reviewed records on fatalities kept by the U.S. National Highway Transportation Safety Administration from 1974 to 1995. The data showed an average of 78.2 fatalities had occurred during the weeks prior to the shift while an average of 83.5 fatalities occurred immediately following. According to the researchers: "As expected for this physiological change, the effect was significant for the first working day (Monday) after the change but not for the day of the change (Sunday) when people had a chance to sleep in."⁶⁵ Several economists from British Columbia have suggested that disrupted sleep routines lead to unusual declines on the stock market on the Monday following the start/end of DST.⁶⁶

Finally, Robertson Davies, who wrote under the pseudonym Samuel Marchbanks for the *Peterborough Examiner* in the 1940s, made these whimsical observations about Daylight Saving Time:

Went cheerfully through the whole day without realizing that the usual haphazard tinkering with the clocks was in progress, and that I should have been enjoying the benefits of Daylight Saving Time. I don't really care how time is reckoned so long as there is some agreement about it, but I object being told that I am saving daylight when my reason tells me that I am doing nothing of the kind. I even object to the implication that I am wasting something valuable if I stay in bed after the sun has risen. As an admirer of moonlight I resent the bossy insistence of those who want to reduce my time for enjoying it. At the back of the Daylight Saving scheme I detect the bony, blue-fingered hand of Puritanism, eager to push people into bed earlier, and get them up earlier, to make them healthy, wealthy and wise in spite of themselves.⁶⁷

⁶⁵ Ibid.

⁶⁶ Derek DeCloet, "Thank God it's Monday: Don't Call your Broker Yet (Stock Market Decline Follows Switch to Daylight Savings Time)," *Canadian Business*, April 3, 2000, pp. 19-20.

⁶⁷ Robertson Davies, *The Papers of Samuel Marchbanks* (New York: Viking Penguin, 1986), pp. 75-76.